Scandinavian-Mediterranean Core Network Corridor Study

Final Report

December 2014

Mandatory disclaimer

The information and views set out in this Final Report are those of the authors and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

The Final Report has been jointly prepared by the contractor consortium. The consortium partner responsible for a certain part of the report is indicated in the headline of the specific chapter.

Table of contents

List of Figures

List of tables

Abbreviations

AAGRlin	Linear average annual growth rate
ABS	Ausbaustrecke (upgraded railway line)
BMVI	Bundesministerium für Verkehr und digitale Infrastruktur (German Federal Ministry of Transport and Digital Infrastructure)
BMVIT	Bundesministerium für Verkehr, Innovation und Technologie (Austrian Federal Ministry for Transport, Innovation and Technology)
CEF	Connecting Europe Facility
CNC	Core network corridor
DG MOVE	European Commission – Directorate General for Mobility and Transport
EC	European Commission
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
EU	European Union
HGV	Heavy goods vehicle
HSL	High-speed line
IM	Infrastructure manager
IWT	Inland Waterway transport
IWW	Inland Waterway
MEUR	Million Euro
INEA	Innovative networks and executive agency
ITS	Intelligent Transport System
LNG	Liquefied natural gas
MoS	Motorways of the Sea
MS	Member State of the European Union
MTMS	Multimodal transport market study
NBS	Neubaustrecke (new railway line)
PP	Priority Project
RFC	Rail Freight Corridor
RU	Railway undertaking
ScanMed	Scandinavian-Mediterranean (Core Network Corridor)
TEN-T	Trans-European transport network
VTMIS	Vessel Traffic Monitoring and Information Systems
WP	Work package

Two-digit country codes according to ISO 3166

Abstract in English and the Corridor Languages

In 2014, the study on the Scandinavian-Mediterranean Corridor, the largest of the nine TEN-T core network corridors, was carried out by a consortium of consultancy firms on behalf of the European Commission. The main objective was the elaboration of a work plan that should serve as a guideline for the implementation of the corridor by the year 2030. The results of the study were continuously coordinated among national and regional authorities as well as infrastructure managers in Corridor Forum meetings.

The Final Report documents all findings, beginning with the detailed alignment of the corridor and the analysis of the technical parameters of the current infrastructure for all considered modes of transport (rail, road, airports, seaports and rail-road terminals). The data gathered by review of studies, statistics, network statements etc. were used to update the Commission's TENtec Information System. After this, the consortium evaluated the infrastructure in terms of the objectives given by TEN-T Regulation (EU) 1315/2013. A multimodal transport market study forecasted the transport situation in the year 2030 and analysed the respective future capacity needs. As a result from the previous tasks, the implementation plan presents about 394 measures or projects to overcome the identified deficits and achieve the objectives.

Tiivistelmä

Vuonna 2014 Skandinavia–Välimeri-käytävä-selvitys, joka on pisin ja laajin yhdeksästä TEN-T-ydinverkon käytävästä, toteutettiin Euroopan komissiolle konsulttikonsortion toimesta. Päätavoite oli työohjelman yksityiskohtainen valmistelu joka toimii ohjeena käytävän toteuttamiselle vuoteen 2030 mennessä. Selvityksen tuloksia ohjasivat koko prosessin ajan kansalliset ja alueelliset viranomaiset sekä infrastruktuurin hallinnot käytäväfoorumin kokouksissa.

Loppuraporttiin on dokumentoitu kaikki tulokset alkaen käytävän yksityiskohtaisesta linjauksesta ja nykyisen infrastruktuurin teknisten parametrien analyysista liittyen kaikkiin tarkasteltuihin kulkumuotoihin (rautatiet, maantiet, lentoasemat, merisatamat ja rautatie/maantieterminaalit). Komission TENtec-tietokanta päivitettiin tutkimusten, tilastojen, verkkoselostusten jne. analyysien tulosten perusteella. Tämän jälkeen konsulttikonsortio arvioi infrastruktuuria TEN-T asetuksen (EU) N:o 1315/2013 tavoitteiden kannalta. Multimodaalisen liikenteen markkinaselvityksen perusteella ennustettiin liikennetilannetta vuonna 2030 ja analysoitiin tulevaisuuden kapasiteettitarpeita. Edellä mainittujen toimenpiteiden tuloksena toteuttamissuunnitelmassa esitetään noin 394 toimenpidettä ja projektia, joiden avulla voidaan ratkaista tunnistettuja puutteita ja saavuttaa asetetut tavoitteet.

Sammanfattning

Under 2014 genomfördes studien av stomnätskorridoren Skandinavien-Medelhavet, den längsta av de nio TEN-T stomnätskorridorerna, av ett konsortium av konsultföretag på uppdrag av EU-kommissionen. Huvudsyftet var att utarbeta en arbetsplan som ska fungera som en riktlinje för införandet av korridoren fram till år 2030. Resultatet av studien samordnades kontinuerligt mellan nationella och regionala myndigheter samt infrastrukturförvaltare i möten med det inrättade korridorforumet.

Slutrapporten dokumenterar alla resultat och börjar med den detaljerade sträckningen av korridoren och en analys av de tekniska parametrarna för den nuvarande infrastrukturen för alla ingående transportsätt (järnväg, väg, flygplatser, hamnar och järnvägs-/vägterminaler). De uppgifter som samlats in genom en översyn av studier, statistik, järnvägsnätsbeskrivningar etc. användes för att uppdatera kommissionens informationssystem, TENtec. Därefter utvärderade konsortiet infrastrukturen i förhållande till de mål som anges i TEN-T-förordningen, (EU) 1315/2013. En multimodal transportmarknadsstudie redovisade prognoser för transportsituationen år 2030 och analyserade framtida kapacitetsbehov för respektive transportsätt. Som ett resultat av detta, presenterades en genomförandeplan för cirka 394 åtgärder eller projekt som syftar till att åtgärda identifierade brister och att uppnå målen.

Sammendrag

Studien av den såkalte “Skandinavia – Middelhavs Korridoren» (ScanMed Corridor), den største av de ni TEN-T Kjernenettkorridorene, ble utført i 2014 av et konsortium av konsulentfirmaer på vegne av den Europeiske Kommisjonen. Hovedmålsettingen var å utvikle en arbeidsplan som skulle tjene som en retningsgiver for implementering av korridoren innen 2030. Resultatet av studien ble kontinuerlig sjekket ut mot nasjonale og regionale myndigheter så vel som infrastrukturledere i Korridor Forum-møter.

Den endelige rapporten dokumenterer alle funn og åpner med en detaljert beskrivelse av korridoren og analysen av de tekniske parametrene for infrastruktur relevant for alle vurderte transportmodi. Disse er jernbane, vei, lufthavner, marine havner og jernbane-vei terminaler (gods). Innsamlede data fra undersøkelser av studier, statistikk, nettverks-uttalelser etc., ble brukt til oppdatering av Kommisjonens TENtec Informasjons System. Etter dette evaluerte konsortiet infrastrukturen etter målsettinger gitt i TEN-T Forordning (EU) 1315/2013. En multimodal transportmarkedsstudie ga prognoser for transportsituasjonen frem til år 2030 og analyserte de respektive og fremtidige kapasitetsbehovene. Som er resultat av dette arbeidet presenterer implementeringsplanen omtrent 394 mål eller prosjekter som bør gjennomføres for å overvinne de identifiserte svakhetene og nå målsettingene.

Sammendrag

I 2014 gennemførtes et studie af korridoren mellem Skandinavien og Middelhavet (ScanMed), den længste af de ni korridorer i det Transeuropæiske Transportnetværk (TEN-T). Undersøgelsen blev udført af et konsortium bestående af konsulentfirmaer på vegne af EU-kommissionen. Hovedmålsætningen var at udvikle en arbejdsplan, som skulle fungere som en retningslinje for implementeringen af korridoren frem til 2030. Resultaterne af studiet blev løbende præsenteret og diskuteret ved møder i det oprettede korridorforum, bestående af nationale og regionale myndigheder samt infrastruktur-forvaltere.

Den endelige rapport dokumenterer alle resultater og indledes med en detaljeret beskrivelse af korridoren og en analyse af de tekniske parametre for den nuværende infrastruktur for alle transportformer (jernbane, vej, lufthavne, havne og jernbane- og vejterminaler). Data indsamlet fra gennemgang af studier, statistik, udtalelser og beskrivelser omkring netværk etc., blev brugt til at opdatere kommissionens informationssystem, TENtec. Derefter evaluerede det udførende konsortium den eksisterende infrastruktur i henhold til de målsætninger som står angivet i TEN-T forordningen (EU) 1315/2013. En undersøgelse af det multimodale transportmarked (MTMS) dannede grund for prognoser for transportsituationen frem til 2030 og analyserede de aktuelle og fremtidige kapacitetsbehov for de enkelte transportformer. Som et resultat af dette præsenterer implementeringsplanen omkring 394 mål og projekter, som har til formål at imødekomme de identificerede udfordringer og bidrage til at opnå målsætningen.

Inhaltsangabe

Im Jahr 2014 wurde im Auftrag der Europäischen Kommission eine Studie über den Skandinavisch-Mediterranen Korridor, den längsten der neun TEN-Kernnetz-Korridore, erstellt. Die Hauptaufgabe bestand in der Ausarbeitung eines Arbeitsplans, der als Richtschnur für die Implementierung dieses Korridors bis 2030 dienen soll. Die Ergebnisse der Studie unterlagen einer laufenden Abstimmung mit den nationalen und regionalen Regierungsstellen sowie den Infrastrukturbetreibern im Korridorforum.

Der Schlussbericht dokumentiert alle Ergebnisse, beginnend mit dem detaillierten Korridorverlauf und einer Analyse der technischen Parameter der bestehenden Infrastruktur (Schiene, Straße, Flughäfen, Seehäfen und Schienen-Straßen-Terminals). Mit Daten aus Studien, Statistiken, Network Statements u.A. wurde das TENtec-Informationssystem der Kommission ergänzt und aktualisiert. Danach hat das Auftragnehmerkonsortium die Infrastruktur hinsichtlich der in der TEN-V-Verordnung (EU) 1315/2013 vorgegebenen Zielwerte evaluiert. In einer multimodalen Transportmarktstudie wurde die Verkehrssituation für das Jahr 2030 prognostiziert und der entsprechende Kapazitätsbedarf untersucht. Als Ergebnis der vorangegangenen Arbeiten enthält der Umsetzungsplan etwa 394 Einzelmaßnahmen oder Projekte zur Beseitigung der identifizierten Mängel und zur Zielerreichung.

Sommario

Nel 2014 per conto della Commissione europea, è stato realizzato da un consorzio di società di consulenza lo studio sul Corridoio Scandinavo-Mediterraneo, il più esteso dei nove Corridoi Core TEN-T. L'obiettivo principale è l'elaborazione di un piano di lavoro che serva come linea guida per la realizzazione del corridoio entro il 2030. I risultati dello studio sono stati coordinati insieme alle autorità nazionali e regionali, nonché ai gestori delle infrastrutture nel corso delle riunioni del Corridor Forum.

La relazione finale documenta tutti i risultati, a cominciare con il tracciato dettagliato del corridoio e con l'analisi dei parametri tecnici delle infrastrutture esistenti per tutti i modi di trasporto considerati (ferroviario, stradale, aeroporti, porti e terminal ferroviario-stradali). I dati raccolti dalla rassegna di studi, statistiche, prospetti informativi della rete, etc sono stati utilizzati per aggiornare il sistema informativo della Commissione TENtec. Successivamente, il consorzio ha analizzato l'infrastruttura in funzione degli obiettivi dati dal regolamento TEN-T (UE) 1315/2013. Uno studio di mercato sul trasporto multimodale ha previsto la situazione dei trasporti per l'anno 2030 e analizzato le rispettive esigenze di capacità future. Come risultato delle attività precedenti, il piano di attuazione presenta circa 394 misure o progetti per superare i deficit individuati e raggiungere gli obiettivi.

Fil-Qosor

Fl-2014, konsorzju ta’ aġenziji f’isem il-Kummissjoni Ewropeja għamlu studju dwar l-*Scandinavian-Mediterranean Corridor*, li hu l-ikbar wieħed mill-*Core Network* tat-TEN-T. L-għan prinċipali kien li jiżvillupaw pjan li jservi ta’ gwida għall-implimentazzjoni ta’ l-*Scan-Med Corridor* sas-sena 2030. Ir-riżultati ta’ l-istudju kienu kontinwament ikkordinati bejn awtoritajiet nazzjonali u reġjonali kif ukoll bejn *managers* tal-infrastruttura fl-laqgħat tal-*Corridor Forum*.

Ir-Rapport Finali jiġbor fiħ ir-riżultati kollha li jinkludu l-pożizzjoni dettaljata tal-*Corridor* u l-analiżi teknika tal-infrastruttura attwali għal kull mezz ta’ trasport (ferroviji, toroq, ajruporti, portijiet marittimi u *terminals* li jagħqdu infrastruttura ferrovjarja u toroq). L-informazzjoni miġbura permezz ta’ riċerka, statistika, dikjarazzjonijiet tan-network eċċ. ġiet użata biex taġġorna s-Sistema tal-Informazzjoni TENtec, tal-Kummissjoni. Wara dan, il-konsorzju evalwa l-infrastruttura b’referenza għall-objettivi pprovduti mir-regolamenti Europej dwar it-TENT-T (EU) 1315/2013. Sar studju dwar is-suq fuq diversi mezzi ta’ trasport li ppreveda s-sitwazzjoni tat-trasport fl-2030 u analizza il-kapaċitajiet tal-infrastruttura fil-futur. B’riżultat ta’ dan, il-pjan ta’ implimentazzjoni jippreżenta madwar 394 miżura jew proġetti li jissuperaw il-problemi identifikati fir-rapport u jilħqu l-objettivi neċessarji.

Executive Summary in English and the Corridor Languages

Alignment

The Scandinavian-Mediterranean (ScanMed) Corridor, the largest of the nine TEN-T core network corridors, links the major urban centres in Germany and Italy to Scandinavia (Oslo, København, Stockholm, Helsinki) and the Mediterranean (Italian seaports, Sicily and Malta). It covers seven EU Member States and Norway and represents a crucial axis for the European economy, crossing almost the entire continent from North to South.

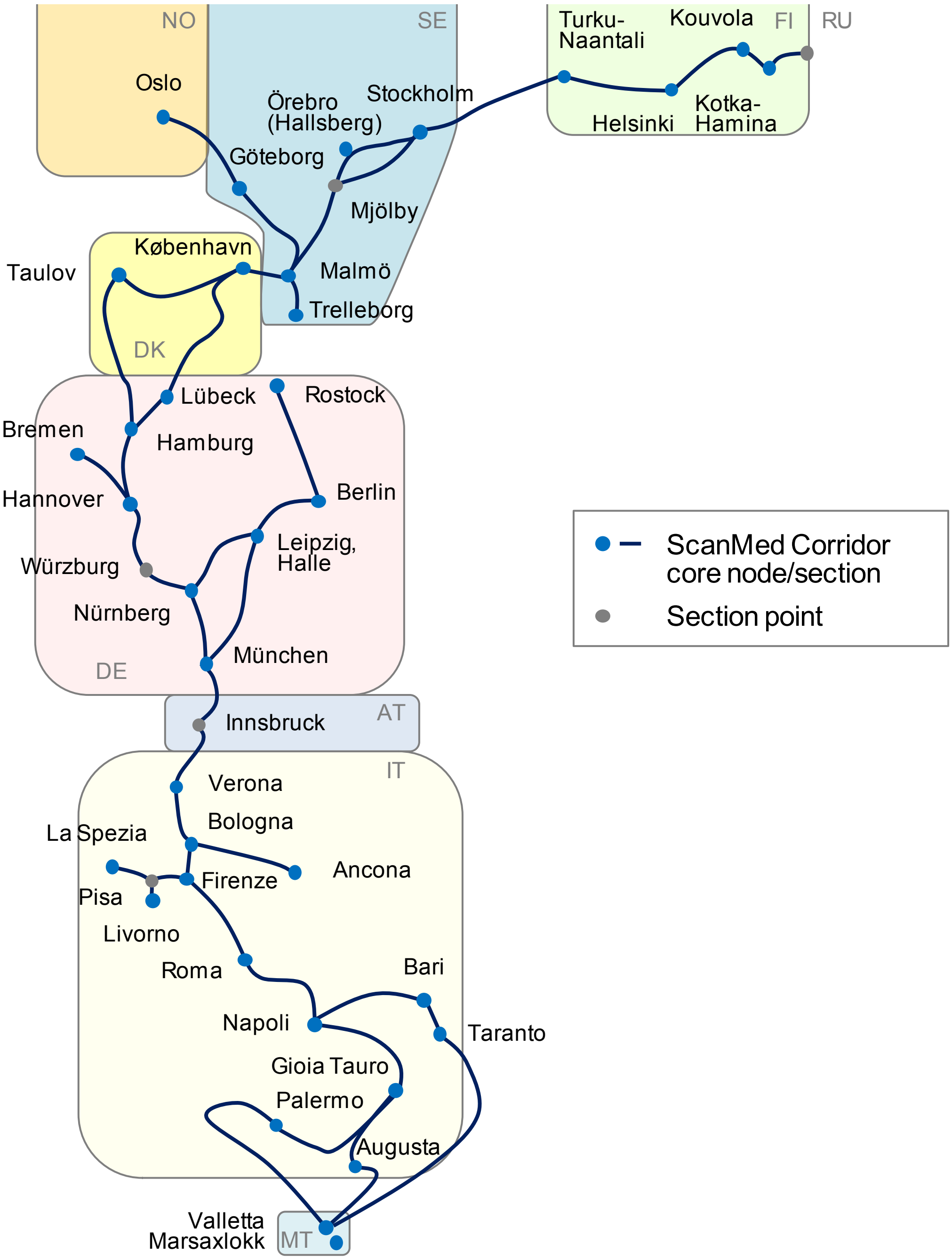
The regions along ScanMed Corridor constitute an important socio-economic area within the European Union. In 2011, the ScanMed Corridor regions include a population share of almost 23% of the EU 28. While comprising approximately 16% of the European territory, the ScanMed Corridor regions generated more than 27% of the European economic output (GDP) and thus outreached the European average GDP with a value of more than 30.000 € per capita.

The cartogram below shows the corridor's schematic alignment and its core nodes according to the Regulations (EU) 1315/2013 and 1316/2013.

"Linear" modes of transport that are assigned to the corridor are mainly rail and road.[1] A few sections of the alignment, in particular the connections Finland - Sweden and Italy - Malta, cross the sea. The other dimension of the corridor is composed of "punctual" infrastructure: airports, seaports and rail-road terminals of the core network. For modal interconnection as well as the connection of the trans-European transport network with infrastructure for local and regional traffic, "urban nodes" are of specific importance. According to Regulation (EU) 1315/2013, Annex II, urban nodes of the core network of the ScanMed Corridor are the following:

- FI: Helsinki and Turku;
- SE: Stockholm, Göteborg and Malmö;
- DK: København;
- DE: Hamburg, Bremen, Hannover, Berlin, Leipzig, Nürnberg and München;
- IT: Bologna, Roma, Napoli and Palermo; and,
- MT: Valletta.

[1] Inland waterways have not been studied as a separate mode due to their limited importance for the ScanMed Corridor.



Alignment of the Scandinavian-Mediterranean Corridor

Quantitative characteristics

In terms of network length of rail (> 9,300 km) and road (> 6,300 km) as well as the number of core ports, airports and rail-road terminals (RRT) (in total about 90 sites), the ScanMed Corridor is the largest among the nine TEN-T core network corridors. An overview of the quantitative characteristics of the corridor is provided in the table below.

Mode/ Node	Dimension	FI	NO	SE	DK	DE	AT	IT	MT	Total
Rail	network length [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Road		376	116	1.039	440	1.869	109	2.401	22	6.372
Airports	number	2	1	3	1	7	-	4	1	19
Seaports		4	1	4	1	4	-	9	2	25
RRT		5	1	7	2	16	0	13	-	44
Rail	Share of Corridor [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Road		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Airports		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Seaports		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
RRT		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

Characteristics of Scandinavian-Mediterranean Corridor

Technical parameters of the corridor infrastructure were collected by the comprehensive review of studies, official statistics, network statements as well as contacting infrastructure managers. All studies examined are documented in the Final Report. Finally, information required by the TENtec Information System could be gathered to a large extent and was integrated into the TENtec database. After passing the inbuilt validation process of the system, the task of data gathering and TENtec updating was completed by the end of August 2014.

Stakeholder involvement

The involvement of stakeholders at an early stage of the development of the work plan is essential for the successful implementation of the corridor. For this purpose, the contractor consortium identified stakeholders fulfilling the criteria set by the Regulation (EU) 1315/2013 for participation in the Corridor Forum as a consultative body to the European Coordinator. After the approval of the Commission and the Member States, respective groups of stakeholders were invited to the four meetings of the Corridor Forum which were prepared by the consortium. Eventually, 56 national and regional stakeholders and 65 infrastructure managers of rail, road, seaports and airports as well as the representatives of the ScanMed Rail Freight Corridor and two pre-identified cross border projects (Fehmarn Belt Fixed Link and Brenner Base Tunnel) contributed to the corridor study in the year 2014. The additional involvement of rail-road terminal infrastructure managers as well as the participation of users of the infrastructure has been proposed to become objective of the following years.

Compliance analysis

The compliance analysis compared the current (infrastructure) parameters and the target values set for the year 2030 in Regulation (EU) 1315/2013. The analysis uncovered the respective deficits on single TENtec sections and nodes.

With respect to the distinctive **rail** objectives, the following results were revealed:

- Standard track gauge of 1435 mm is supplied on all corridor lines with the exemption of Finland.
- Interoperability constraints resulting from different electrification and still a few non-electrified sections in Denmark and Germany require a change of locomotives and Diesel traction. Most non-electrified lines in Germany are about to be electrified in the framework of agreed projects.
- Different standards with regard to
  - train length in general and below standard parameters in particular on parts of the Swedish network, on a few sections in Germany, on the Brenner line until Firenze/Ancona, and on many sections in Italy south of Firenze;
  - axle loads below the standard parameter on 25% of the sections in Italy;
  - loading profile for the transport of semi-trailers ("P400") which is not achieved on the current lines in Italy south of Firenze/Bologna.
- A low rate of ETCS implementation, with the exception of Austria, time horizons being under discussion and resulting into a "patchwork" of ETCS implementation as well as detailed practical problems caused by different specifications used at the respective timelines.

There are significant congestion problems on the **road** network around most large cities during peak-periods which are generally taken into account in the national and regional plans for each country. Important measures not related to road infrastructure directly, but to other issues such as regulations, technological improvements or improved vehicle capacity unitisation, are initiated too. Whether issues such as safe parking or provision of alternative fuels are best addressed by the public or private sector is sometimes unclear. Therefore, a cooperation is recommended between all partners involved, public as well as private.

In all core **airports**, open access is basically granted. Connectivity with the TEN-T road network is ensured for all airports, whilst seven airports have no connection to rail. Helsinki, the only airport lacking a connection among the panel of airports due to be connected to rail by 2050, will get its first rail connection in the year 2015. The way to the implementation of Single European Sky will involve ScanMed airports, although information on airports involved in the "SESAR road map 2014-2020" is not yet available.

The core requirements on **ports** are mainly fulfilled by the 25 ScanMed core ports regarding maritime and hinterland transport infrastructure. However, the ports' environmental infrastructure is still developing. Consequently, already in 2014, a couple of "Motorways of the Sea (MoS)"-Projects have been set up to mitigate this identified shortcoming. The I&C Technologies are on a high level. Vessel Traffic Service (VTS) and SafeSeaNet (SSN) are fully implemented; e-Maritime services have to be further developed with a focus on harmonization of IT and data exchange, especially through “single window” solutions. Although this task is covered by a MoS project already, the individual ports need to check in detail how they could fulfil the requirement.

All **rail-road terminals** are connected to rail and road by at least one rail track or one road lane so that this fundamental criterion is met. The other indicators, such as provision of information flows, can hardly be assessed without the involvement of the infrastructure managers and their customers. The question to be discussed with terminal operators is whether they provide for such information systems or whether they are willing to share this kind of information in particular “in real-time” and with whom. That should be done with the involvement of the stakeholders in the year 2015.

Multimodal Transport Market Study (MTMS)

In the year 2010, the latest year for which disaggregated data could be retrieved, the international freight traffic on the corridor accounts for 129.0 million tons by sea, of which 59.9 million tons are between core ports, 50.3 million tons by road and 36.0 million tons by rail.

The MTMS pursues the goal to provide a “big picture” of the present and future situation of the transport market for the ScanMed Corridor based on an extensive review of studies, reports and forecasts, investigating market sections and nodes of the corridor stemming from the existing databases, and additional data provided by infrastructure managers, national ministries and other stakeholders. This reveals a comprehensive amount of data, subsequently gathered, edited and included into a large scale view on the traffic development of the ScanMed Corridor. Following this approach, the corridor sections with the highest transport volume in the year 2030 could be identified. With respect to rail, both passenger and freight, these are: Mjölby – Malmö, Göteborg – Malmö, Malmö – København – Taulov, Bremen/Hamburg – Hannover – Würzburg, München – Innsbruck and Bologna – Firenze – Roma – Napoli. The highest road traffic volumes appear on the sections Lübeck – Hamburg, Hamburg/Bremen – Hannover, Würzburg – Nürnberg – München and Firenze – Roma.

The comparison of the expected traffic volumes and network loads in the year 2030 facilitates the identification of possible capacity constraints (bottlenecks) that may impede future growth of passenger and freight transport. These can be found most notably:

- in Finland for rail: Kouvola – HaminaKotka, Luumäki – Vainikkala, Helsinki node, Helsinki – Turku; and for road: regions of Turku and Helsinki and Kotka – Hamina – Vaalimaa;
- in Sweden for rail: Stockholm and Göteborg node, Hässleholm – Lund, Trelleborg – Malmö (- København);
- in Denmark for rail: (Malmö-) København region;
- in Germany for rail[2]: Bremen/Hamburg - Hannover, Würzburg - Nürnberg, München area; and for road: regions of Hamburg, Hannover and München as well as the section Würzburg – Nürnberg;
- in Italy for rail - based on information provided by RFI: Verona - Ponte Gardena until the completion of the entire access lines to Brenner Base Tunnel; Firenze - Livorno/La Spezia related to the ports' traffic development; additionally there will be some constrains in the traffic of urban areas;
- in Malta for the connection between the port, airport and the capital city.

In Austria, no capacity problems are reported, after the infrastructure projects have been completed.

Objectives

Article 4 of the Regulation (EU) 1315/2013 describes the objectives of the trans-European transport network, which shall strengthen the social, economic and territorial cohesion of the European Union. The aim is to create a single European transport area, which is efficient and sustainable, to increase the benefits for its users and to support inclusive growth. The Member States agreed to the following list of corridor specific objectives, which have to be met by the ScanMed Corridor by 2030 the latest. In addition to these, the measures and projects finally agreed upon by the Member States shall be implemented by the year 2030 the latest, under the provisions made in Article 1 (4) of the Regulation (EU) 1315/2013.

[2] According to BMVI by e-mail of 17.10.2014 the final identification of bottlenecks are subject to the Federal Infrastructure Plan investigations, which are about to be completed in 2015.

Mode	Objective
Rail	Full electrification
	Axle load 22.5 t
	Line speed 100 km/h, minimum
	740 m freight trains
	ERMTS fully implemented
	Standard gauge 1435 mm for new lines
Road	Express road or motorway
	Intelligent transport systems (ITS) / tolling systems
	Parking areas every 100 km, minimum
	Infrastructure for alternative clean fuels
Airports	Terminal open to all operators
	Infrastructure for air traffic management, SESAR
	Infrastructure for alternative clean fuels
	Main airports connected to (high-speed) rail network
Maritime transport, Ports, MoS	Connection to rail, road, IWW (where possible)
	Infrastructure for alternative clean fuels
	Facilities for ship generated waste
	VTMIS, SafeSeaNet, e-Maritime services
Multimodal transport	All transport modes connected at freight terminals, passenger stations, airports, maritime ports
	Real time information on freight terminals, maritime ports, cargo airports
	Sufficient transhipment equipment on freight terminals
	Continuous passenger traffic through equipment and telematic applications in railway stations, coach stations, airports, maritime ports
Environmental targets	Specific target values more detailed than those mentioned in the TEN-T Regulation could be identified for specific sections of the corridor by the Member States concerned in accordance with European legislation.

Objectives of ScanMed Corridor

List of Projects

The long list of projects concluded from the analysis of documents, reports, studies, national development plans, the compliance analysis and the identification of “critical issues” has been checked and completed by the Member States and stakeholders. Information received until 28 November 2014 and with respect to the required data fields, have been included by the Contractor Consortium into the indicative list. The consortium checked the projects against the characterisation criteria which make them to become “critical issues” and whether they are among the “pre-identified sections and projects” according to Regulation (EU) 1316/2013, Annex 1, and updated the list accordingly.

The current project list of the ScanMed Corridor includes 394 ongoing or planned projects and measures with a total estimated cost of about 144.6 billion €. Only the pre-identified sections account for 115 projects with a total cost of 76.3 billion €. The following table provides an overview on the number of projects by section and mode.

Country	Rail	Rail + other	Road	Road + other	Sea-port	Sea-port + MoS	MoS	Air-port	RRT	Other	Total
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Number of projects by mode and country (“Diverse” = multi-country projects, “other” = Multimodal and ITS)

Tiivistelmä

Taustaa

Skandinavia–Välimeri-käytävä (ScanMed), joka on pisin ja laajin yhdeksästä TEN-T-ydinverkon käytävästä, yhdistää merkittävät kaupunkikeskukset Saksassa ja Italiassa Skandinaviaan (Oslo, Kööpenhamina, Tukholma, Helsinki) ja Välimerelle (Italian merisatamat, Sisilia ja Malta). Käytävä kattaa seitsemän EU:n jäsenmaata ja Norjan ja se edustaa elintärkeää Euroopan kaupallista akselia, joka ulottuu lähes koko mantereen läpi pohjoisesta etelään.

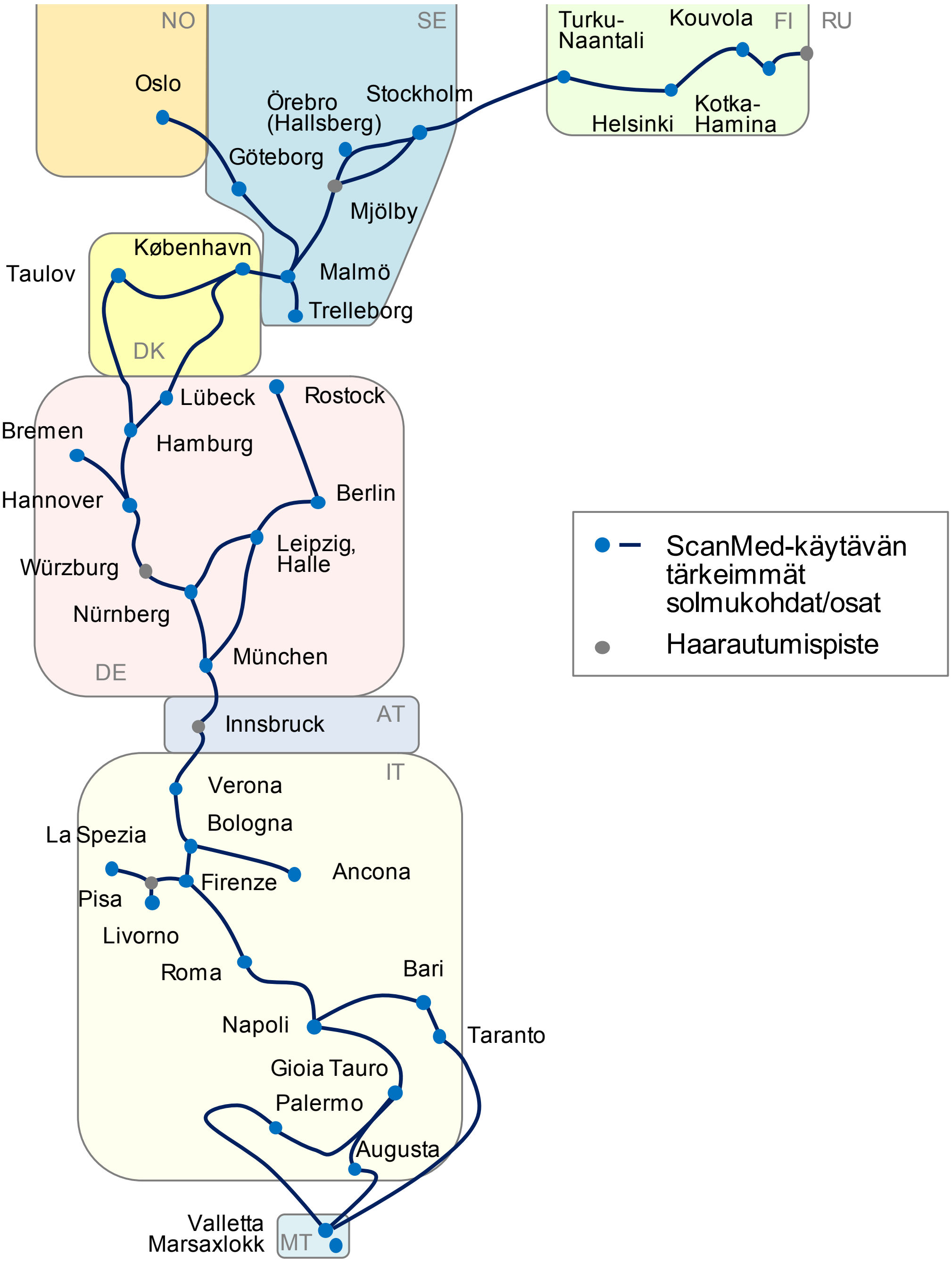
ScanMed-käytävän maakunnat muodostavat tärkeän sosioekonomisen alueen Euroopan Unionissa. Vuonna 2011 ScanMed-käytävän maakuntien yhteenlaskettu asukasmäärä muodosti noin 23 prosenttia EU 28 asukasmäärästä. Vaikka ScanMed-käytävän maakuntien yhteenlaskettu maa-ala vastasi vain noin 16 prosenttia Euroopan maa-alasta, niiden yhteenlaskettu osuus Euroopan bruttokansantuotteesta (BKT) oli yli 27 prosenttia ja ylitti siten Euroopan keskimääräisen BKT:n ollen henkeä kohti yli 30.000 euroa.

Alla oleva kartta esittää käytävän skemaattisen linjauksen ja sen tärkeimmät solmupisteet EU:n asetuksen nro 1315/2013 ja 1316/2013 mukaisesti.

“Merkittävimmät” liikennemuodot jotka määrittävät käytävän linjauksen ovat rauta- ja maantiet.[3] Muutamat käytävän osat, etenkin yhteydet Suomi–Ruotsi ja Italia–Malta, ylittävät merialueen. Käytävä muodostuu myös ”pistemäisistä” infrastruktuurin osista; ydinverkon lentoasemat, merisatamat ja rautatie/maantieterminaalit. Ydinverkon ”kaupunkisolmukohdilla” on erityisen tärkeä rooli eri kulkumuotojen yhteenliittämisessä sekä Euroopan laajuisten liikenneverkkojen yhdistämisessä paikallisiin ja alueellisiin liikenneverkkoihin. EU asetuksen 1315/2013, liite II, mukaan ScanMed-ydinkäytävän kaupunkisolmukohdat ovat seuraavat:

- FI: Helsinki ja Turku;
- SE: Tukholma, Göteborg and Malmö;
- DK: Kööpenhamina;
- DE: Hampuri, Bremen, Hannover, Berliini, Leipzig, Nürnberg ja München;
- IT: Bologna, Rooma, Napoli and Palermo; ja,
- MT: Valletta.

[3] Sisävesiliikennettä ei ole tässä työssä tutkittu erikseen, koska sen merkitys ScanMed-käytävälle on pieni.



Skandinavia–Välimeri-käytävän linjaus.

Kvalitatiiviset ominaisuudet

Käytävän rautatieverkon (> 9.300 km) ja tieverkon (> 6.300 km) pituuden sekä ydinverkon satamien, lentoasemien ja rautatie/maantieterminaalien lukumäärän (yhteensä noin 90) perusteella ScanMed-käytävä on pisin ja laajin yhdeksästä TEN-T-ydinverkon käytävästä. Alla olevassa taulukossa on esitetty yleiskuva käytävän kvalitatiivisista ominaisuuksista.

Kulkumuoto/solmukohta	Mitta	FI	NO	SE	DK	DE	AT	IT	MT	Yhteensä
Rautatie	verkon pituus [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Maantie		376	116	1.039	440	1.869	109	2.401	22	6.372
Lentoasemat	lukumäärä	2	1	3	1	7	-	4	1	19
Merisatamat		4	1	4	1	4	-	9	2	25
Rautatie/maantieterminaalit		5	1	7	2	16	0	13	-	44
Rautatie	Osuus käytävästä [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Maantie		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Lentoasemat		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Merisatamat		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
Rautatie/maantieterminaalit		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

Skandinavia–Välimeri-käytävän ominaisuuksia

Käytävän infrastruktuurin tekniset parametrit kerättiin kattavien tarkastelujen avulla erilaisista tutkimuksista, virallisista tilastoista ja verkkoselostuksista sekä ottamalla yhteyttä infrastruktuurin hallintoihin. Kaikki tarkastellut tutkimukset on dokumentoitu loppuraporttiin. Lopuksi TENtec -informaatiojärjestelmän edellyttämät tiedot voitiin kerätä suurelta osin ja ne integroitiin osaksi TENtec-tietokantaa. Sisäänrakennetun validointiprosessin hyväksynnän jälkeen tiedonkerääminen ja TENtec-tietokannan päivitys saatiin valmiiksi elokuun lopussa vuonna 2014.

Sidosryhmien osallistuminen

Sidosryhmien osallistuminen jo aikaisessa vaiheessa työohjelman kehittämiseen on välttämätöntä onnistuneen käytävän toteuttamisessa. Tätä tarkoitusta varten konsulttikonsortio tunnisti ne sidosryhmät, jotka täyttivät EU asetuksen 1315/2013 mukaiset kriteerit käytäväfoorumiin osallistuville tahoille eurooppalaisen koordinaattorin neuvoa-antavana ryhmänä. Komission ja jäsenvaltioiden hyväksynnän jälkeen asianomaisiin ryhmiin kuuluvat sidosryhmät kutsuttiin neljään käytäväfoorumin kokoukseen, jotka konsulttikonsortio valmisteli. Lopulta 56 kansallisen ja alueellisen sidosryhmän, 65 rautatie-, maantie-, merisatama- ja lentoasemaverkon infrastruktuurin hallinnon, ScanMed Rail Freight Corridorin ja kahden ennalta määritellyn rajat ylittävän projektin (Fehmarn Belt kiinteän yhteyden ja Brenner Base tunnelin) edustajaa osallistui käytäväselvityksen tekemiseen vuonna 2014. Lisäksi rautatie/maantieterminaalien infrastruktuurin hallinnon ja infrastruktuurin käyttäjien edustajien osallistumista esitettiin tulevina vuosina.

Analyysi asetettujen tavoitteiden toteutumisesta

Analyysissa asetettujen tavoitteiden toteutumisesta verrattiin nykyisiä (infrastruktuuri) parametreja ja EU asetuksen 1315/2013 mukaisia vuodelle 2030 asetettuja tavoitearvoja. Analyysi paljasti puutteita yksittäisillä TENtec-osuuksilla ja solmukohdissa.

Rautateille asetettujen tavoitteiden osalta tuloksissa erottuivat seuraavat asiat:

- Käytävän koko rataverkolla on käytössä standardi raideleveys 1435 mm Suomea lukuun ottamatta.
- Yhteentoimivuutta rajoittavat erilaiset sähköistysjärjestelmät sekä muutamat yhä sähköistämättömät osuudet Tanskassa ja Saksassa, mitkä edellyttävät veturin vaihtamista näillä osuuksilla. Suurin osa sähköistämättömistä osuuksista Saksassa on määrä sähköistää sovittujen projektien puitteissa.
- Erilaiset standardit liittyen
  - junapituuksiin yleisesti ja standardeja alempiin parametreihin etenkin muutamilla osuuksilla Ruotsin rautatieverkolla, muutamilla osuuksilla Saksassa, Brenner-linjalla Firenze/Anconaan saakka ja monilla osuuksilla Italiassa Firenzen eteläpuolella;
  - akselipainoihin jotka ovat alle standardiparametrien 25 prosentilla Italian rautateistä;
  - kuormaprofiileihin puoliperävaunujen (”P400”) kuljetuksessa, mitä ei ole saavutettu nykyisillä linjoilla Italiassa Firenze/Bolognan eteläpuolella.
- Itävaltaa lukuun ottamatta ETCS-järjestelmän toteutusaste on alhainen. Keskustelut tästä ovat käynnissä aiheuttaen kuitenkin toteutusaikatauluista ”tilkkutäkin”, minkä lisäksi erilaiset aikataulumäärittelyt aiheuttavat yksittäisiä käytännön ongelmia.

Suurimpien kaupunkien ympärillä olevalla **tieverkolla** esiintyy merkittäviä kapasiteettiongelmia ruuhka-aikoina, mitkä on yleensä otettu huomioon kunkin maan kansallisissa ja alueellisissa suunnitelmissa. Tärkeät toimenpiteet jotka eivät suoraan liity tieinfrastruktuuriin, vaan sääntöihin ja teknologian tai ajoneuvokapasiteetin parantamiseen, on myös laitettu vireille. Joskus on epäselvyyksiä siitä olisiko turvalliseen pysäköintiin tai vaihtoehtoisten polttoaineiden toimittamiseen liittyvät toimenpiteet syytä osoittaa julkiselle vai yksityiselle sektorille. Sen takia suositellaan yhteistyötä kaikkien asiaan osallistuvien julkisten ja yksityisten partnereiden välillä.

Kaikille ydinverkon **lentoasemille** on periaatteessa myönnetty vapaa pääsy. Yhteydet TEN-T tieverkolle on varmistettu kaikilla lentoasemilla, kun taas seitsemälle lentoasemalle ei ole rautatieyhteyttä. Helsinki on ainut päälentoasema tällä hetkellä ilman rautatieyhteyttä niistä lentoasemista, jotka ovat varautuneet rautatieyhteyteen vuoteen 2050 mennessä. Helsingin rautatieyhteys on rakenteilla ja se valmistuu vuonna 2015. Single European Sky -toteuttaminen sisältää ScanMed-käytävän lentoasemia, mutta tällä hetkellä ei ole vielä tiedossa mitkä niistä lentoasemista jotka ovat mukana myös ”SESAR road map 2014–2020”.

Ydinverkon satamien meriliikenteen ja takamaa-alueen liikenneinfrastruktuurille asetetut vaatimukset täyttyvät pääosin 25 ScanMed-käytävän satamassa. Sen sijaan satamien ympäristövelvoitteisiin liittyvä infrastruktuuri on vasta kehittymässä. Tästä syystä jo vuonna 2014 on käynnistetty muutama "Motorways of the Sea (MoS)"-projekti tilanteen korjaamiseksi. Satamien I&C -järjestelmät ovat korkeatasoisia. Vessel Traffic Service (VTS) and SafeSeaNet (SSN) on toteutettu; e-Maritime -palveluja pitää edelleen kehittää ja fokuksena tulee olla IT:n ja tiedonvaihdon harmonisointi, etenkin ”yhden luukun periaatteen” palvelujen kautta. Vaikka tämä tehtävä on jo huomioitu MoS -projektissa, yksittäisten satamien pitää tarkistaa yksityiskohtaisesti kuinka ne voivat täyttää vaatimukset.

Kaikki **rautatie/maantieterminaalit** on yhdistetty rautatie- ja maantieverkkoon ainakin yhdellä rata- tai maantieyhteydellä, mikä täyttää pakolliset vaatimukset. Muut indikaattorit, kuten tiedonkulkuun liittyvä tarjonta, tuskin voidaan arvioida ilman infrastruktuurin hallinnon ja heidän asiakkaidensa mukana oloa. Terminaalioperaattoreiden kanssa on tarpeen keskustella siitä tarjoavatko he kyseistä informaatiosysteemiä vai ovatko he halukkaita jakamaan tällaista reaaliaikaista informaatiota ja jos ovat niin kenelle. Tämä tulisi selvittää yhteistyössä sidosryhmien kanssa vuonna 2015.

Multimodaalisen liikenteen markkinaselvitys (MTMS)

Vuonna 2010, viimeisin vuosi jolloin eriteltyjä tietoja on mahdollista hakea, kansainvälisen tavaraliikenteen kuljetusmäärät käytävällä olivat noin 129.0 miljoona tonnia meriliikenteessä, josta 59.9 miljoonaa tonnia ydinverkon satamien välillä, 50.3 miljoona tonnia maantieliikenteessä ja noin 36.0 miljoonaa tonnia rautatieliikenteessä.

MTMS:n tavoitteena on tuottaa kattava kokonaiskuva nykytilanteesta ja tulevaisuuden kuljetusmarkkinoista ScanMed-käytävällä. Tietoa on haettu erilaisista tutkimuksista, raporteista ja ennusteista, tutkimalla markkinasektoreita ja solmukohtien tietokantoja sekä keräämällä tietoa infrastruktuurin hallinnoijilta, kansallisilta ministeriöiltä ja muilta sidosryhmiltä. Tästä on muodostunut kattava määrä käsiteltyä tietoa, jonka pohjalta on muodostettu näkemys liikenteen kehittymisestä ScanMed-käytävällä. Tulosten perusteella pystyttiin tunnistamaan ne käytävän osat, joilla on suurimmat liikennemäärät vuonna 2030. Rautateillä sekä henkilö- että tavaraliikenteessä suurimmat liikennemäärät ovat väleillä Mjölby–Malmö, Göteborg–Malmö, Malmö–Kööpenhamina–Taulov, Bremen/Hampuri–Hannover–Würzburg, München–Innsbruck ja Bologna–Firenze–Roma–Napoli. Suurimmat liikennemäärät maantieliikenteessä ovat väleillä Lübeck–Hampuri, Hampuri/Bremen–Hannover, Würzburg–Nürnberg–München ja Firenze–Roma.

Ennustettujen liikennemäärien ja liikenneverkon kapasiteetin vertailu vuonna 2030 helpottaa tunnistamaan mahdolliset kapasiteettirajoitteet (pullonkaulat), jotka voivat estää tulevan kasvun henkilö- ja tavaraliikenteessä. Näitä löytyy etenkin:

- Suomen rataverkolta seuraavasti; Kouvola–HaminaKotka, Luumäki–Vainikkala, Helsingin kaupunkisolmukohta, Helsinki–Turku; ja tieverkolta seuraavasti: Turun ja Helsingin seudut ja väliltä Koskenkylä–Kotka–Hamina–Vaalimaa;
- Ruotsin rataverkolta seuraavasti: Tukholman ja Göteborgin kaupunkisolmukohdat, Hässleholm–Lund, Trelleborg–Malmö (–Kööpenhamina);
- Tanskan rataverkolta seuraavasti: (Malmö-) Kööpenhaminan seutu;
- Saksan rataverkolta seuraavasti[4]: Bremen/Hampuri–Hannover, Würzburg–Nürnberg, Münchenin seutu; ja tieverkolta seuraavasti: Hampurin, Hannoverin and Münchenin seudut sekä väliltä Würzburg–Nürnberg;
- Italian rataverkolta seuraavasti - perustuen RFI:lta saatuun informaatioon: Verona–Ponte Gardena kunnes kaikki yhteydet Brenner Base tunneliin on toteutettu; Firenze–Livorno/La Spezia liittyen satamaliikenteen kehittämiseen; lisäksi kaupunkiseuduilla tulee olemaan joitakin rajoituksia liikenteelle.
- Maltalla yhteys sataman, lentoaseman ja pääkaupungin välillä.

Itävallassa ei ole raportoitavia kapasiteettiongelmia, kun infrastruktuuriprojektit on toteutettu.

Tavoitteet

EU asetuksen 1315/2013 artikla 4 kuvaa Euroopan laajuisten liikenneverkkojen tavoitteita, jotka vahvistavat sosiaalista, taloudellista ja alueellista koheesiota Euroopan Unionissa. Tavoitteena on muodostaa tehokas ja kestävä yhtenäinen liikennealue lisäämään sen käyttäjien hyötyjä ja tukemaan kasvua. Jäsenmaat sopivat seuraavan listan käytäväkohtaisista tavoitteista, joiden tulee täyttyä ScanMed-käytävällä vuoteen 2030 mennessä. Näiden lisäksi jäsenmaiden lopullisesti hyväksymät toimenpiteet ja projektit tulee toteuttaa vuoteen 2030 mennessä ottaen huomioon EU asetuksen 1315/2013 artikla 1 (4).

[4] BMVI:n 17.10.2014 toimittaman sähköpostiviestin mukaan lopullinen pullonkaulojen tunnistaminen on aiheena Federal Infrastructure Plan tutkimuksissa, jotka valmistuvat vuonna 2015.

Liikennemuoto	Tavoite
Rautatie	Sähköistys
	Akselipaino 22.5 t
	Linjanopeus 100 km/h, minimi
	740 m junapituus tavaraliikenteessä
	ERMTS kokonaan toteutettu
	Standardi raideleveys 1435 mm uusille radoille
Maantie	Korkeatasoinen valtatie tai moottoritie
	Älykäs liikennejärjestelmä (ITS) / tullijärjestelmä
	Pysäköintialueet 100 km välein, minimi
	Infrastruktuuri vaihtoehtoisille polttoaineille
Lentoasemat	Terminaali avoin kaikille operaattoreille
	Infrastruktuuri lentoliikenteen hallinnalle, SESAR
	Infrastruktuuri vaihtoehtoisille puhtaille polttoaineille
	Päälentoasemat yhdistetty (high-speed) rataverkkoon
Meriliikennesatamat, MoS	Yhteydet rata-, tie- ja sisävesiverkkoon (missä mahdollista)
	Infrastruktuuri vaihtoehtoisille puhtaille polttoaineille
	Fasiliteetti alusten jätehuollolle
	VTMIS, SafeSeaNet, e-Maritime -palvelut
Multimodaalinen liikenne	Kaikki liikennemuodot yhdistetty tavaraliikenneterminaaleihin, matkustaja-asemille, lentoasemille, merisatamiin
	Reaaliaikainen informaatio tavaraliikenneterminaaleissa, merisatamissa, lentorahtiasemilla
	Riittävä lastauskalusto tavaraliikenneterminaaleissa
	Reaaliaikainen matkustajaliikenneinformaatio rautatieasemilla, bussiterminaaleissa, lentoasemilla, merisatamissa
Ympäristötavoitteet	Jäsenvaltiot voivat määrittää Euroopan lainsäädännön mukaisesti tietyille käytävän osille tarkempia tavoitteita kuin mitä on mainittu TEN-T-asetuksissa

ScanMed-käytävän tavoitteet

Projektilista

Pitkä projektilista, joka saatiin dokumenttien, raporttien, tutkimusten, kansallisten kehittämissuunnitelmien ja asetettujen tavoitteiden toteutumisanalyysin pohjalta sekä tunnistamalla ”kriittiset tekijät”, tarkistettiin ja viimeisteltiin jäsenmaiden ja sidosryhmien toimesta. 28.11.2014 mennessä saatu pyydetyssä muodossa toimitettu informaatio on huomioitu konsulttikonsortion indikatiivilistassa. Konsultti tarkisti ovatko projektit ”kriittisiä” ja ovatko ne ”ennalta määriteltyjä osia tai projekteja” EU asetuksen 1316/2013, liitteen 1, mukaisesti, ja päivitti sen perusteella projektilistan.

Nykyinen ScanMed-käytävän projektilista sisältää noin 394 käynnissä olevaa tai suunniteltua projektia ja toimenpidettä, joiden yhteenlaskettu kustannus on arviolta 144.6 miljardia euroa. Yksistään ennalta tunnistetut osat noin 115 projektilla tarkoittavat yhteensä noin 76.3 miljardin euron investointeja. Seuraava taulukko antaa kokonaiskuvan projektien määrästä käytäväosittain ja kulkumuodoittain.

Maa	Rautatie	Rautatie + muu	Maantie	Maantie + muu	Merisatama	Merisatama + MoS	MoS	Lentoasemat	Rautatie/maantieterminaali	Muut	Yhteensä
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Yhteensä	147	28	80	5	49	11	17	40	14	3	394

Projektien määtä kulkumuodoittain ja maittain (“Diverse” = usean maan projektit, “muut” = Multimodaali ja ITS)

Sammanfattning och slutsatser

Korridorens sträckning

Korridoren Skandinavien – Medelhavet (ScanMed) är den längsta av de nio TEN-T stomnätskorridorerna och sammanlänkar större städer i Tyskland och Italien med Skandinavien (Oslo, Köpenhamn, Stockholm, Helsingfors) och Medelhavsområdet (Italienska kusthamnar, Sicilien och Malta). Korridoren omfattar sju medlemsländer i EU samt Norge och den utgör ett mycket viktigt transportstråk för den Europeiska ekonomin då den korsar nästan hela kontinenten från norr till söder.

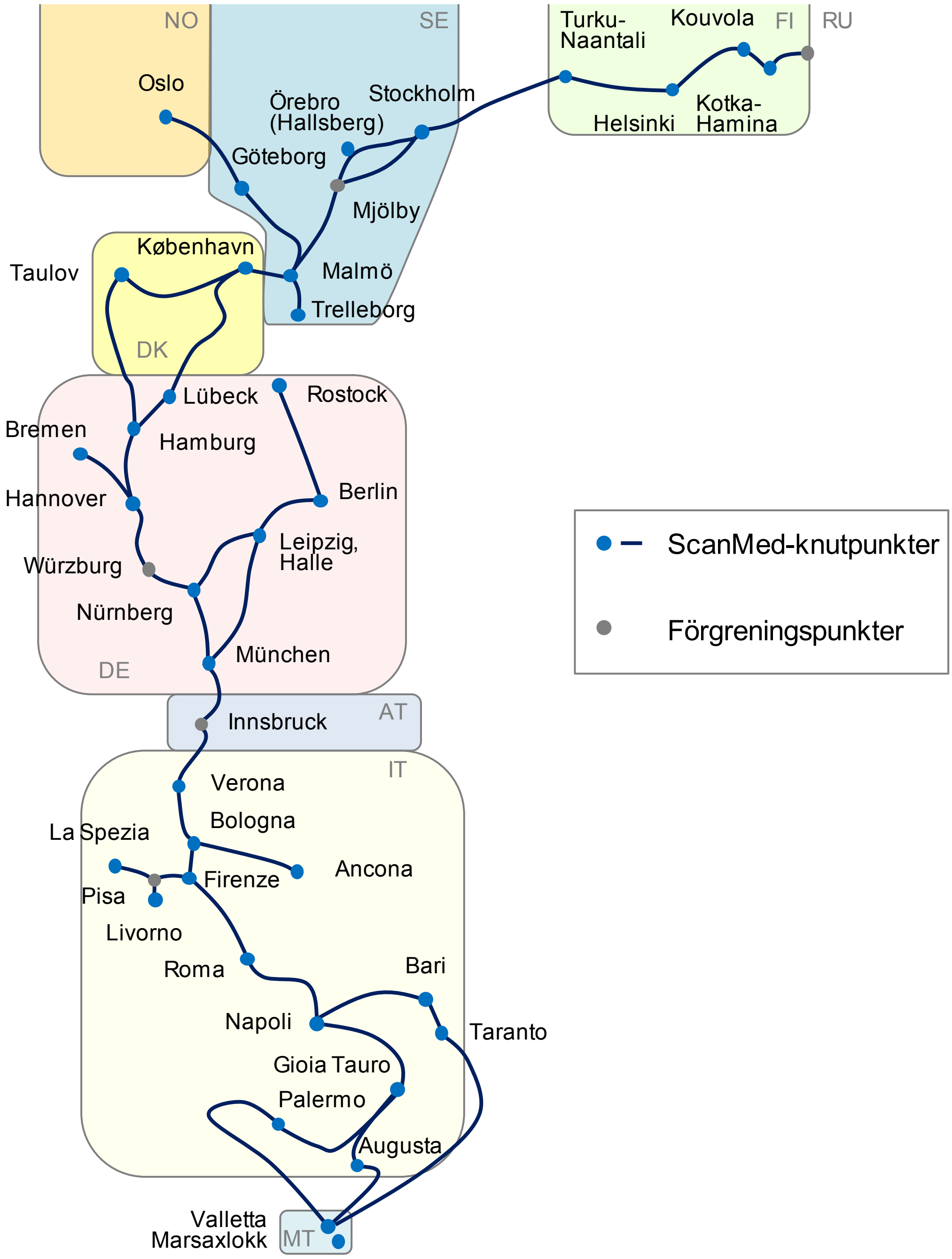
ScanMed-korridorens regioner utgör ett viktigt socioekonomiskt område i den Europeiska unionen. Befolkningen i korridorens regioner utgjorde år 2011 nästan 23 % av invånarantalet i EU28. Regionerna utgör cirka 16% av EUs areal samtidigt som man genererar mer än 27% av dess samlade BNP. I korridorens regioner är BNP över 30 000 € per capita vilket är högre än genomsnittet i EU.

Kartan nedan visar schematiskt korridorens sträckning och dess knutpunkter enligt förordningarna (EU) 1315/2013 och 1316/2013.

"Linjära" transportsätt som kan hänföras till korridoren är främst järnväg och väg.[1] Några sektioner av korridoren, särskilt kopplingarna mellan Finland – Sverige och Italien – Malta, korsar havet. Den andra dimensionen av korridoren utgörs av infrastruktur på en viss plats: flygplatser, hamnar och kombiterminaler i stomnätet. För såväl multimodala kopplingar som för det transeuropeiska transportnätets koppling med lokal och regional infrastruktur är "urbana knutpunkter" av särskild betydelse. Enligt förordningen (EU) 1315/2013, Bilaga II, är följande städer urbana knutpunkter i ScanMed korridoren:

[1] Inre vattenvägar har inte studerats separat på grund av deras begränsade betydelse för Skandinavien-Medelhavskorridoren.

- FI: Helsinki and Turku;
- SE: Stockholm, Göteborg and Malmö;
- DK: København;
- DE: Hamburg, Bremen, Hannover, Berlin, Leipzig, Nürnberg and München;
- IT: Bologna, Roma, Napoli and Palermo; and,
- MT: Valletta.



Skandinavien-Medelhavskorridorens dragning samt knutpunkter och förgreningspunkter.

Kvantitativa egenskaper

När det gäller nätverkslängd för järnväg (> 9 300 km) och väg (> 6 300 km) samt antalet hamnar, flygplatser och kombiterminaler (totalt ca 90 stycken), så är ScanMed korridoren den mest omfattande bland de nio stomnätskorridorerna. En översikt av de kvantitativa egenskaperna för korridoren presenteras i tabellen nedan.

Trafikslag/ Nod	Attribut	FI	NO	SE	DK	DE	AT	IT	MT	Totalt
Järnväg	Nätets längd [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Väg		376	116	1.039	440	1.869	109	2.401	22	6.372
Flygplatser	Antal	2	1	3	1	7	-	4	1	19
Hamnar		4	1	4	1	4	-	9	2	25
Järnvägs-/vägterminaler		5	1	7	2	16	0	13	-	44
Järnväg	Andel av korridoren [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Väg		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Flygplatser		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Hamnar		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
Järnvägs-/vägterminaler		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

Egenskaper för Skandinavien-Medelhavskorridoren.

Tekniska parametrar för korridorens infrastruktur samlades in genom en omfattande översyn av studier, officiell statistik, järnvägsnätsbeskrivningar samt genom kontakter med ansvariga för infrastrukturen. Alla genomförda studier är dokumenterade i slutrapporten. Informationen som krävs för TENtecs informationssystem kunde samlas in i stor utsträckning och integreras i TENtecs databas. Efter att ha passerat den inbyggda valideringsprocessen i systemet, var datainsamling och uppdateringen av TENtec klar i slutet av augusti 2014.

Intressenternas medverkan

Att involvera relevanta intressenter i ett tidigt skede av arbetet med arbetsplanen är avgörande för ett framgångsrikt införande av korridoren. För detta ändamål identifierade konsulterna intressenter som uppfyllde kriterierna i förordningen (EU) 1315/2013 för att delta i det inrättade korridorforumet som ett rådgivande organ till den europeiska samordnaren. Efter godkännande av kommissionen och medlemsstaterna, bjöds respektive grupp av intressenter in till de fyra möten i korridorens forum som förbereddes av konsulterna. Under året har 56 nationella och regionala intressenter och 66 infrastrukturförvaltare av järnväg, väg, hamnar och flygplatser samt företrädare för ”ScanMed Rail Freight Corridor” och två på förhand identifierade gränsöverskridande projekt (Fehmarn Bält förbindelsen och Brenner Base tunneln) bidragit till korridorstudien. För de kommande åren har även medverkan från infrastrukturförvaltare för järnvägs-/vägterminaler samt användare av infrastrukturen föreslagits.

Analys av måluppfyllelse

Analysen av måluppfyllelse jämförde nuvarande (infrastruktur-)parametrar och de målvärden som fastställts för år 2030 i förordning (EU) 1315/2013. Analysen pekar på brister på enskilda TENtec sektioner och noder.

När det gäller de specifika målen för **järnvägsnätet** visade analysen:

- Standardspårvidd på 1435 mm tillgodoses på alla korridorens linjer med undantag för Finland.
- Begränsningar i interoperabilitet på grund av olika typer av elektrifiering och att det fortfarande finns några icke elektrifierade sektioner i Danmark och Tyskland, kräver byte av lok och dieseldrift. De flesta icke elektrifierade sträckorna i Tyskland kommer att elektrifieras inom redan beslutade projekt.
- Olika standarder med avseende på
  - tåglängd generellt och under standardvärdet på delar av det svenska nätet, på några sektioner i Tyskland, Brennerlinjen fram till Florens/Ancona och flera sektioner i Italien söder om Florens;
  - axeltryck under standardvärdet på 25% av nätet i Italien;
  - lastprofil för transport av semi-trailers ("P400") som inte uppfylls på linjerna i Italien söder om Florens/Bologna.
- En låg grad av ETCS-implementering, med undantag av Österrike, olika tidsplaner diskuteras och resultatet är ett ”lapptäcke” av ETCS-implementeringar och praktiska problem på grund av att olika specifikationer använts under olika tidsperioder.

Det finns betydande trängselproblem på **vägnätet** runt de flesta stora städer under rusningstid vilket generellt beaktas i nationella och regionala planer för varje land. Viktiga åtgärder som inte är relaterade direkt till väginfrastrukturen utan till andra faktorer såsom lagstiftning, tekniska förbättringar eller förbättrat fordonsutnyttjande, har också initierats. Huruvida faktorer som till exempel säkra parkeringsplatser eller tillhandahållande av alternativa bränslen, hanteras bäst av den offentliga eller privata sektorn är delvis oklart. Därför rekommenderas ett samarbete mellan alla inblandade, såväl offentliga som privata aktörer.

Alla flygplatser i stomnätet erbjuder i princip tillträde för alla operatörer. Det finns anslutningar till TEN-T-vägnätet vid alla flygplatser men sju flygplatser har ingen järnvägsanslutning. Den enda flygplats som saknar järnvägslutning bland de huvudflygplatser som omfattas av kravet på anslutning år 2050 är Helsingfors. En sådan kommer dock att färdigställas år 2015. Implementeringen av Single European Sky kommer att inkludera flygplatserna i ScanMed-korridoren, uppgifter är dock ännu inte tillgängliga om vilka flygplatser som är med i ”SESAR road map 2014-2020”.

Kraven i stomnätet för hamnar är huvudsakligen uppfyllda för de 25 ScanMed-hamnarna när det gäller sjö- och landanslutningar. Dock är infrastruktur i hamnarna för att stödja fartygens miljöprestanda fortfarande under utveckling. Redan 2014 har ett par sjömotorvägsprojekt (MoS-projekt) startat för att åtgärda dessa brister. Systemen för instrumentering och styrning (I&C) har en hög nivå. Övervaknings- och informationssystem för sjötrafik, Vessel Traffic Service (VTS) och SafeSeaNet är helt implementerat; e-tjänster för sjöfart behöver utvecklas mer med fokus på harmoniseering av IT och datakommunikation, speciellt genom lösningar med en enda elektronisk kontaktpunkt. Även om dessa åtgärder täcks av MoS-projekt redan i nuläget, behöver de enskilda hamnarna säkerställa att de kommer att uppfylla kraven.

Alla **järnvägs-/vägterminaler** är anslutna till järnväg och väg med minst ett järnvägsspår eller en väg vilket uppfyller det grundläggande kriteriet. Övriga indikatorer, såsom tillhandahållande realtidsinformation, kan knappast bedömas utan inblandning av infrastrukturförvaltare och deras kunder. En fråga som behöver diskuteras med terminaloperatörer är huruvida de tillhandahåller sådana informationssystem eller huruvida de är villiga att dela denna typ av information i synnerhet "i realtid" och med vem. Detta bör ske med hjälp av de deltagande intressenterna för järnvägs-/vägterminaler under år 2015.

Multimodal Transportmarknadsstudie (MTMS)

Under år 2010, som är det senaste året för vilket nedbrutna data kunde fås, står den internationella godstrafiken till sjöss i korridoren för 129,0 miljoner ton, varav 59.9 miljoner ton mellan stomhamnar, 50,3 miljoner ton på väg och 36,0 miljoner ton på järnväg.

Syftet med MTMS är att ge den "stora bilden" av den nuvarande och framtida situationen för transportmarknaden för ScanMed korridoren baserat på en omfattande genomgång av studier, rapporter och prognoser, undersökningar av marknadssektorer och noder i korridoren i befintliga databaser och ytterligare uppgifter som infrastrukturförvaltare, nationella ministerier och andra intressenter tillhandahåller. Genomgången resluterar i en omfattande mängd data som samlats in, redigerats och sammanställts till en övergripande bild av trafikutvecklingen i ScanMed korridoren. Med detta tillvägagångssätt, kunde korridorsektionerna med högst transportvolym år 2030 identifieras. Gällande järnväg, både med avseende på passagerare och gods, är det följande sträckor: Mjölby - Malmö, Göteborg - Malmö, Malmö - København - Taulov, Bremen/Hamburg - Hannover - Würzburg, München - Innsbruck och Bologna - Florens - Roma - Napoli. De högsta vägtrafikvolymerna uppkommer på sektionerna Lübeck - Hamburg, Hamburg/Bremen - Hannover, Würzburg - Nürnberg - München och Florens - Roma.

Jämförelser av förväntade trafikvolymer och tillgänglig kapacitet år 2030 identifierade möjliga kapacitetsbegränsningar (flaskhalsar) som kan hindra framtida utveckling av person- och godstrafiken. Dessa finns framför allt:

- i Finland för järnväg: Kouvola – Hamina/Kotka, Luumäki – Vainikkala, noden Helsingfors, Helsingfors – Åbo; och för väg: regionerna kring Åbo och Helsingfors och Koskenkylä – Kotka – Hamina – Vaalimaa;
- i Sverige för järnväg: (noderna Stockholm och Göteborg, Hässleholm – Lund, Trelleborg – Malmö (- Köpenhamn);
- i Danmark för järnväg: (Malmö-) Köpenhamnsregionen;
- i Tyskland för järnväg[5]: Bremen/Hamburg - Hannover, Würzburg - Nürnberg, Münchenområdet; och för väg: regionerna kring Hamburg, Hannover och München samt sektionen Würzburg – Nürnberg;
- i Italien för järnväg – baserat på information från RFI: Verona - Ponte Gardena fram till färdigställandet av hela spåret fram till Brenner Base-tunneln; Firenze - Livorno/La Spezia relaterat till hamnars trafikutveckling; dessutom kommer det finnas vissa begränsningar för trafiken i storstadsområdena.
- i Malta för kopplingen mellan hamnen, flygplatsen och huvudstaden.

I Österrike är inga kapacitetsproblem rapporterade, efter att infrastrukturprojekten har avslutats.

Mål

Artikel 4 i förordning (EU) 1315/2013 beskriver målen för det transeuropeiska transportnätet, vilket ska stärka den sociala, ekonomiska och territoriella sammanhållningen i Europeiska unionen. Målet är att skapa ett gemensamt europeiskt transportområde som är effektivt och hållbart, ökar fördelarna för sina användare och stöder tillväxt för alla. Medlemsstaterna enades om följande lista över korridorspecifika mål, som måste uppfyllas av ScanMed korridoren senast 2030. Utöver dessa skall de åtgärder och projekt som medlemsstaterna enats om genomföras senast till år 2030, med hänsyn till bestämmelserna som gjorts i artikel 1 (4) i förordning (EU) 1315/2013.

[5] Enligt BMVI via e-post 2014/10/17 den slutgiltiga identifieringen av flaskhalsar omfattas av undersökningar i den federala vägplanen, som är på väg att slutföras under 2015.

Transportslag	Mål
Järnväg	Full electrification
	Axle load 22.5 t
	Line speed 100 km/h, minimum
	740 m freight trains
	ERMTS fully implemented
	Standard gauge 1435 mm for new lines
Vägar	Express road or motorway
	Intelligent transport systems (ITS) / tolling systems
	Parking areas every 100 km, minimum
	Infrastructure for alternative clean fuels
Flygplatser	Terminal open to all operators
	Infrastructure for air traffic management, SESAR
	Infrastructure for alternative clean fuels
	Main airports connected to (high-speed) rail network
Sjö-transporter, Hamnar, MoS	Connection to rail, road, IWW (where possible)
	Infrastructure for alternative clean fuels
	Facilities for ship generated waste
	VTMIS, SafeSeaNet, e-Maritime services
Multimodala transporter	All transport modes connected at freight terminals, passenger stations, airports, maritime ports
	Real time information on freight terminals, maritime ports, cargo airports
	Sufficient transhipment equipment on freight terminals
	Continuous passenger traffic through equipment and telematic applications in railway stations, coach stations, airports, maritime ports
Miljömål	Specific target values more detailed than those mentioned in the TEN-T Regulation could be identified for specific sections of the corridor by the Member States concerned in accordance with European legislation.

Mål för ScanMed korridoren

Lista över projekt

Den långa listan med projekt som utarbetats utifrån analys av dokument, rapporter, studier, nationella utvecklingsplaner, måluppfyllelseanalysen och identifieringen av "kritiska faktorer" har kontrollerats och färdigställts av medlemsstaterna och intressenterna. Uppgifter som mottagits fram till den 28 november 2014 har införts av konsulten i en indikativ förteckning. Konsulterna kontrollerade projekten mot uppsatta kriterier som gör att de blir "kritiska" samt om de är bland ”i förväg identifierade sträckor och projekt" enligt förordningen (EU) 1316/2013, Bilaga 1, och uppdaterade listan därefter.

Den aktuella projektlistan för korridoren omfattar cirka 394 pågående eller planerade projekt och åtgärder med en total bedömd kostnad på omkring 144,6 miljarder €. Projekt på de ”i förväg identifierade sträckorna” utgör 115 stycken med en total kostnad på 76,3 miljarder €. Nedanstående tabell visar en översikt över projekt uppdelat på transportsätt.

Land	Järn-väg	Järn-väg + annat	Väg	Väg + annat	Kust-hamn	Kust-hamn + MoS	MoS	Flyg-plats	RRT	Annat	Totalt
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Antal projekt uppdelat per trafikslag och land ("Diverse" = Projekt inom flera länder)

Executive summary

Beskrivelse

Skandinavia – Middelhavskorridoren (ScanMed) er den største av ni TEN-T Kjerne Nettverks Korridorene. Den binder de urbane sentrene i Tyskland og Italia sammen med de skandinaviske landene (Oslo, København, Stockholm og Helsinki), og med Middelhavsområdet. Det vil si de italienske havnene, Sicilia og Malta. Den dekker syv EU-medlemsstater og Norge, og representerer en kritisk akse for den europeiske økonomien der den strekker seg over nesten hele kontinentet fra nord til sør.

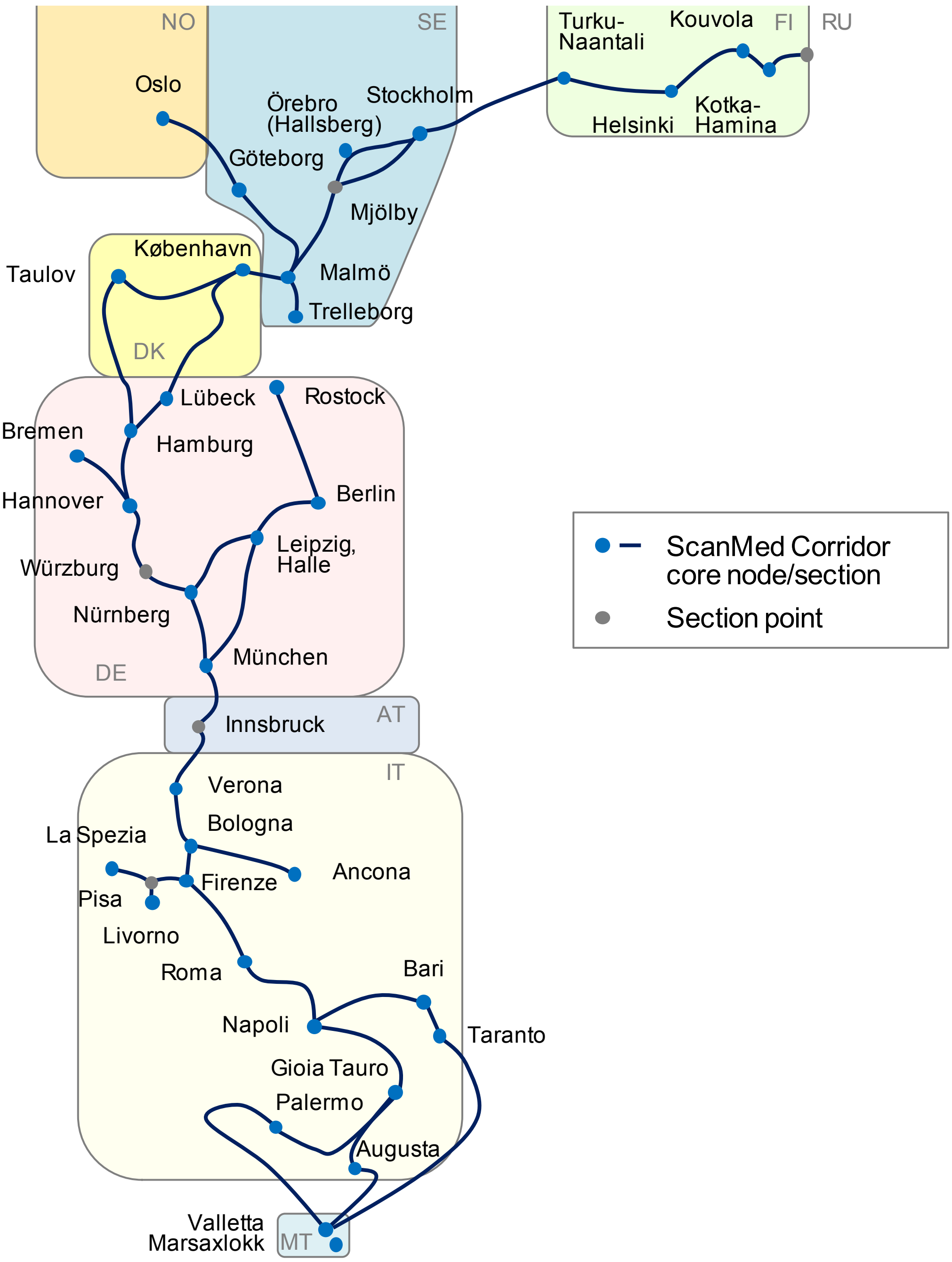
ScanMed korridorens regioner utgjør en viktig sosioøkonomisk del den Europeisake unionen (EU). I 2011 utgjorde ScanMed korridorens regioner nesten 23% av befolkningen. Regionene utgjorde ca 16% av landarealet og sto for 27% av GDP. GDP per capita lå 30 000 € over gjennomsnittet i EU.

Kartutsnittet under viser en skjematisk plan for traséene og kjerne knutepunktene i henhold til EU-forordningene 1315/2013 og 1316/2013.

Viktigste transportmetoder i korridoren er hovedsakelig jernbane og vei[6]. Noen få deler av korridoren, spesielt koblingen Finland – Sverige og Italia – Malta, krysser hav. Den andre dimensjonen i korridoren er satt sammen av «punktvis» infrastruktur som flyplasser, havner og jernbaneterminaler i kjerne-nettverket. Urbane noder er av spesiell viktighet både for modale sammenkoblinger og koblinger mellom det trans-europeiske transportnettet og lokal og regional trafikk. Urbane noder i kjernenettet til ScanMed-korridoren er i henhold til EU-direktiv 1315/2013, Tillegg II, definert som:

- FI: Helsinki og Turku;
- SE: Stockholm, Göteborg og Malmö;
- DK: København;
- DE: Hamburg, Bremen, Hannover, Berlin, Leipzig, Nürnberg og München;
- IT: Bologna, Roma, Napoli og Palermo; og,
- MT: Valletta.

[6] Vannveier innenlands har ikke vært studert som separate transportmoder, grunnet deres begrensende betydning for ScanMed-korridoren.



Alignment of the Scandinavian-Mediterranean Corridor

Kvantitative karakteristikker

ScanMed-korridoren er den største blant de ni TEN-T kjernenettskorridorene, og inkluderer over 9300 km jernbane, over 6300 km bilvei og det største antallet nøkkel-havner, flyplasser og jernbaneterminaler for totalt rundt 90 byer. Tabellen under gir en oversikt over de kvantitative karakteristikkene ved korridoren.]

Mode/ Node	Dimension	FI	NO	SE	DK	DE	AT	IT	MT	Total
Jernbane	Lengde nett [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Vei		376	116	1.039	440	1.869	109	2.401	22	6.372
Flyplasser	Antall	2	1	3	1	7	-	4	1	19
Havner		4	1	4	1	4	-	9	2	25
JB Terminaler		5	1	7	2	16	0	13	-	44
Jernbane	Andel korridor [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Vei		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Flyplasser		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Havner		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
JB Terminaler		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

Nøkkelparametre for Skandinavia – Middelhavet korridoren

Tekniske parametere for korridorens infrastruktur ble samlet inn gjennom parallelle studier og diverse undersøkelser, offisiell statistikk, nettverksuttalelser og ved kontakt med infrastruktur-ledere. Alle de aktuelle studiene er dokumentert i Sluttrapporten. Resultatet var at det aller meste av relevant informasjon kunne legges inn i TENtec Informasjonssystemet og bli integrert i TENtec databasen. Oppgaven med datainnsamling og TENtec-oppdatering ble avsluttet ultimo august 2014 etter en intern kontroll i prosjektet.

Involvering av interessenter

Tidlig involvering fra interessenter for utvikling av en gjennomføringsplan er essensiell for en suksessfull implementering av korridoren. For dette formålet identifiserte kontrakt konsortiet interessenter som oppfylte kriteriene definert i Forordning (EU) 1315/2013 og inviterte dem til å delta i Korridor Forumet som rådgivende organ for den Europeiske Koordinatoren. De respektive interessentgruppene ble invitert til de fire møtene i Korridor Forumet etter at de ble godtatt av Kommisjonen og medlemsstatene. Disse møtene ble forberedt av konsortiet. Oppsummert, 56 nasjonale og regionale interessenter og 65 infrastrukturledere på jernbane, vei, havner og flyplasser så vel som representanter fra ScanMed Banegods Korridoren og to forhåndsdefinerte grenseprosjekter (Fehmarn Belt Fixed Link og Brenner Base tunnel), bidro til Korridorstudien i 2014. Ytterligere involvering av ledere fra jernbaneterminal-infrastruktur så vel som brukerne av infrastrukturen er foreslått som temaområde for kommende år.

Samsvarsanalyse

Samsvarsanalysen sammenliknet de gjeldende (infrastruktur) parametrene og målverdiene satt for år 2030 i Forordning (EU) 1315/2013. Analysen avdekket respektive svakheter på enkelte TENtec strekninger og noder.

Med hensyn til de spesifikke **jernbane** elementene, ble følgende resultater avdekket:

- Standard sporbredde 1435 mm tilbys på alle korridorlinjer med unntak av Finland.
- Interoperabilitet hindres grunnet ulik standard på elektrifisering, og noen ikke-elektrifiserte strekninger i Danmark og Tyskland. Dette krever lokomotivbytte og diesel-fremføring. De fleste ikke-elektrifiserte banene i Tyskland er i ferd med å elektrifiseres innen rammeverket for godkjente prosjekter.
- Ulik standard med hensyn på
  - toglengde generelt og under standard parametre, spesielt på deler av det svenske nettet, på en del linjer i Tyskland, på Brenner banen til og med Firenze/Ancona og på mange linjer i Italia sør for Firenze;
  - aksellaster under standard parameter på 25% av strekningene i Italia;
  - lasteprofil for transport av semi-trailere («P400») som ikke er mulig å oppnå på de gjeldende strekningene i Italia sør for Firenze/Bologna.
- Lav rate for ETCS-implementering, med unntak av Østerrike, tidshorisonter som debatteres og resulterer i et lappeteppe av ETCS-implementering. I tillegg detaljerte, praktiske problemer forårsaket av ulike spesifikasjoner i bruk for de respektive implementeringsfasene.

Det er signifikante fremkommelighetsproblemer (kø) på **veinettet** rundt de fleste store byene i rush-tid. Dette er generelt sett behandlet i nasjonale og regionale planer for hvert land. Det er også iverksatt viktige tiltak som ikke er direkte relevante for infrastruktur på vei, men som gjelder reguleringer, teknologiske forbedringer eller bedret, enhetlig kapasitetsstandard for kjøretøy. Det er i visse tilfeller uklart om temaer som sikker parkering eller bestemmelser for alternative drivstofformer er best håndtert av det offentlige eller i privat sektor. Det anbefales derfor at alle parter samarbeider, både offentlige og private.

Det er generell åpen tilgang til alle flyselskaper på alle sentrale **lufthavner**. Sammenkobling med TEN-T veinettet er sikret for alle lufthavner, mens syv av dem mangler kobling til jernbane. Helsinki er som den eneste lufthavnen uten jernbanetilknytning, planlagt koblet til jernbane innen 2050. Første tilkobling vil skje i 2015. Prosessen mot implementering av «Single European Sky» (Felles europeisk luftrom) vil involvere ScanMed lufthavner, selv om informasjon om lufthavner inkludert i «SESAR road map 2014-2015» ikke er tilgjengelig enda.

Hovedkrav for **skipshavner**, er i all hovedsak oppfylt for de 25 ScanMed hovedhavnene i forhold til infrastruktur på sjøsiden og landsiden. Miljø-infrastruktur er likevel ikke ferdig utviklet. Som en konsekvens av dette vil det, alt i 2014, bli etablert et par «Sjøens Motorveier» (Motorways of the Sea, MoS) –prosjekter for å avhjelpe denne mangelen. I&C teknologi holder høy standard. Vessel Traffic Service, VTS og SafeSeaNet, SSN er fullt implementert; e-Maritime tjenester å utvikles videre med et fokus på harmonisering av IT og datautveksling, spesielt via «single-vindu» (single window)- løsninger. Selv om denne oppgaven allerede er dekket ved et MoS-prosjekt, må de enkelte havnene detaljkontrollere hvordan de skal oppfylle kravene.

Alle **jernbanegodterminaler** er tilknyttet jernbane og vei med minst én enkeltsporet jernbanelinje og en tofeltsvei, som er minimumskravet. De andre indikatorene, som informasjonsflyt, kan neppe bli vurdert uten involvering fra infrastrukturlederne og deres kunder. Spørsmål som må diskuteres med terminaloperatørene er om de er villige til å dele data om informasjonssystemer eller om de er villige til å dele denne type sanntidsinformasjon, og med hvem. Denne diskusjonen må gjennomføres i 2015 med involvering fra interessentene.

Multimodale markedsstudier innen transport (MTMS)

2010 er det siste året det foreligger disaggregerte data for. Da stod den internasjonale godstrafikken i korridoren for 129,0 millioner tonn sjøveien, herav 59,9 millioner tonn mellom sentrale havner, 50,3 millioner tonn på vei og 36.0 millioner tonn på jernbane.

MTMS har som mål å vise «det store bildet» for nåværende og fremtidige situasjon for transportmarkedet i ScanMed-korridoren basert på detaljerte gjennomganger av studier, rapporter og prognoser. Marked og noder i korridoren skal undersøkes med grunnlag i data i eksisterende database, og i tillegg utfyllende data gitt av infrastrukturledere, nasjonale departementer og andre interessenter. Slik fremskaffes en relevant mengde data, samlet inn over et kort tidsrom, redigert og inkludert inn i en stor-skala betraktning av trafikkutviklingen i ScanMed-korridoren. Med dette bakteppet kan vi identifisere strekningene med antatt høyest transport volum i år 2030. For jernbane, både person- og godstransport, er disse strekningene: Mjölby – Malmö, Göteborg – Malmö, Malmö – København – Taulov, Bremen/Hamburg – Hannover – Würzburg, München – Innsbruck og Bologna – Firenze – Roma – Napoli. Strekningene med de høyeste volum på vei er Lübeck – Hamburg, Hamburg/Bremen – Hannover, Würzburg – Nürnberg – München og Firenze – Roma.

Sammenlikningen av de forventede trafikkvolumene og nettverksbelastninger for 2030 gjør det mulig å identifisere potensielle kapasitets-problemer, eller flaskehalser, som vil forhindre fremtidig passasjer- og godstransportvekst. Disse er mest sannsynlig:

- I Finland for jernbane: Kouvola – HaminaKotka, Luumäki – Vainikkala, Helsinki node, Helsinki – Turku; og for vei: regionene Turku og Helsinki og Koskenkylä – Kotka – Hamina – Vaalimaa;
- I Sverige for jernbane: (Stockholm og Göteborg node, Hässleholm – Lund, Trelleborg – Malmö (- København);

- I Danmark for jernbane: (Malmö-) København-regionen;
- I Tyskland for jernbane[7]: Bremen/Hamburg - Hannover, Würzburg - Nürnberg, München området; og for vei: Regionene Hamburg, Hannover og München så vel som strekningen Würzburg – Nürnberg;
- I Italia for jernbane – basert på informasjon fra RFI: Verona - Ponte Gardena til og med ferdigstillingen av tilførselslinjene til Brenner Base Tunnel; Firenze - Livorno/La Spezia relatert til havnens trafikkutvikling; tilleggsvis vil det bli noen hindringer i trafikkflyt i byområdene.
- I Malta for koblingen mellom havn, lutfhavn og hovedstad.

Målsettinger

Artikkel 4 i EU-Forordning 1315/2013 beskriver målsetningene for det Transeuropeiske transportnettet. Det skal styrke de sosiale, økonomiske og terrotoriale bindingene for den Europeiske Unionen. Målet er å skape et enhetlig Europeisk transportområde som er effektivt og bærekraftig, for å øke gevinsten for brukerne og støtte opp under kontinuerlig vekst i unionen. Medlemslandene har oppnådd enighet om den følgende oversikten over korridorspesifikke målsetninger (under), og den skal senest være oppfylt i ScanMed-korridoren ved utgangen av 2030. Dette er gitt i bestemmelsene i Artikkel 1 (4) av tidligere nevnte EU-Forordning 1315/2013.

[7] I henhold til e-post 17.10.2014 fra BMVI skjer den endelige identifiseringen av flaskehalser i den Føderale Infrastrukturplans undersøkelser (Federal Infrastructure Plan) som skal gjennomføres i løpet av 2015.

Mode	Målsettinger
Jernbane	Full elektrifisering
	Akselast 22.5 T
	Strekningshastighet 100 km/h, minimum
	740 M lengde godstog
	ERMTS fullt implementert
	Standard sporbredde 1435 mm for nye strekninger
Vei	Motorvei klasse A eller motorvei
	Intelligente transportsystemer (ITS) / betalingssystemer ved passeringer
	Parkeringsområder hver 100 km, minimum
	Infrastruktur for alternativt, rent drivstoff
Lufthavner	Terminal åpen for alle operatører
	Infrastruktur for flyveledelse, SESAR
	Infrastruktur for alternativt, rent drivstoff
	Sentrale lufthavner koblet til HS (high-speed) jernbanenett.
Maritim transport, Havner, MoS	Kobling til jernbane, vei, IWW (der mulig)
	Infrastruktur for alternativt, rent drivstoff
	Fasiliteter for skipsgenerert avfall
	VTMIS, SafeSeaNet, e-Maritime tjenester
Multimodal transport	Alle transport modi tilbudt på gods terminaler, jernbane stasjoner, lufthavner og marine havner
	Sanntidsinformasjon på godsterminaler, marine havner og cargo lufthavner
	Tilstrekkelig løfte- og forflytningsutstyr på godsterminaler
	Ubrutte passasjerstrømmer ved bruk av dedikert utstyr og telematikk-applikasjoner på jernbanestasjoner, bussterminaler, lufthavner og marine havner
Miljømessige mål	Høyere mål for korridoren enn det som er beskrevet i TEN-T Reguleringen kan bli bestemt av medlemsland for enkelte strekninger i de berørte medlemslandene; så lenge det er i overensstemmelse med Europeisk lovgivning

Målsettinger for ScanMed korridoren

Prosjektliste

Prosjektlisten generert fra analyser av dokumenter som rapporter, studier, nasjonale utviklingsplaner, samsvarsanalysen og identifisering av «kritiske områder» er sjekket og komplettert av medlemslandene og interessentene. Informasjon relevant for de respektive dataområdene er samlet inn frem til og med 28. november 2014. Data er vurdert og listen komplettert av konsulent-konsortiet. Konsortiet kontrollerte prosjektene mot karakteristikk-kriteriene for vurdering mot «kritisk område» og om de var blant «predefinerte strekninger og prosjekter» i henhold til Regulation (EU) 1316/2013, Annex 1, og oppdaterte så listen.

Den gjeldende prosjektlisten inkluderer omtrent 394 pågående og planlagte prosjekter med en totalt estimert prislapp på ca 144,6 mrd €. 115 pågående prosjekt har en kostnadsramme på 76,3 mrd €. Tabellen under gir et overblikk over antall prosjekter fordelt på type og transportform.

Land	Jernbane (JB)	JB + annet	Vei	Vei + annet	Havn	Havn + MoS	MoS	Luft-havn	RRT	Annet	Total
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Antall prosjekter etter modalitet og land (“Diverse” = multi-nasjonale prosjekter)

Sammendrag og konklusioner

Korridorens strækning

Korridoren mellem Skandinavien og Middelhavet (ScanMed) er den største af de ni korridorer i det Transeuropæiske Transportnetværk (TEN-T) kernenetværk og forbinder de større byer i Tyskland og Italien med Skandinavien (Oslo, København, Stockholm, Helsinki) og Middelhavet (italienske havne, Sicilien og Malta). Korridoren dækker syv EU medlemslande og Norge, og udgør en afgørende akse for den europæiske økonomi, idet den krydser størstedelen af kontinentet fra nord til syd.

Regionerne i ScanMed korridoren udgør et vigtigt socioøkonomisk område inden for den Europæiske Union. I 2011 udgjorde regionerne i ScanMed korridoren næsten 23 % af den samlede befolkningen i de 28 medlemslande i EU. Regionerne, der dækker cirka 16 % af det europæiske territorium, stod i 2011 mere end 27 % af den samlede økonomiske produktion (BNP) i Europa. Dermed oversteg regionerne i ScanMed korridoren det europæiske gennemsnit for BNP pr. indbygger med mere end 30.000 € pr. indbygger.

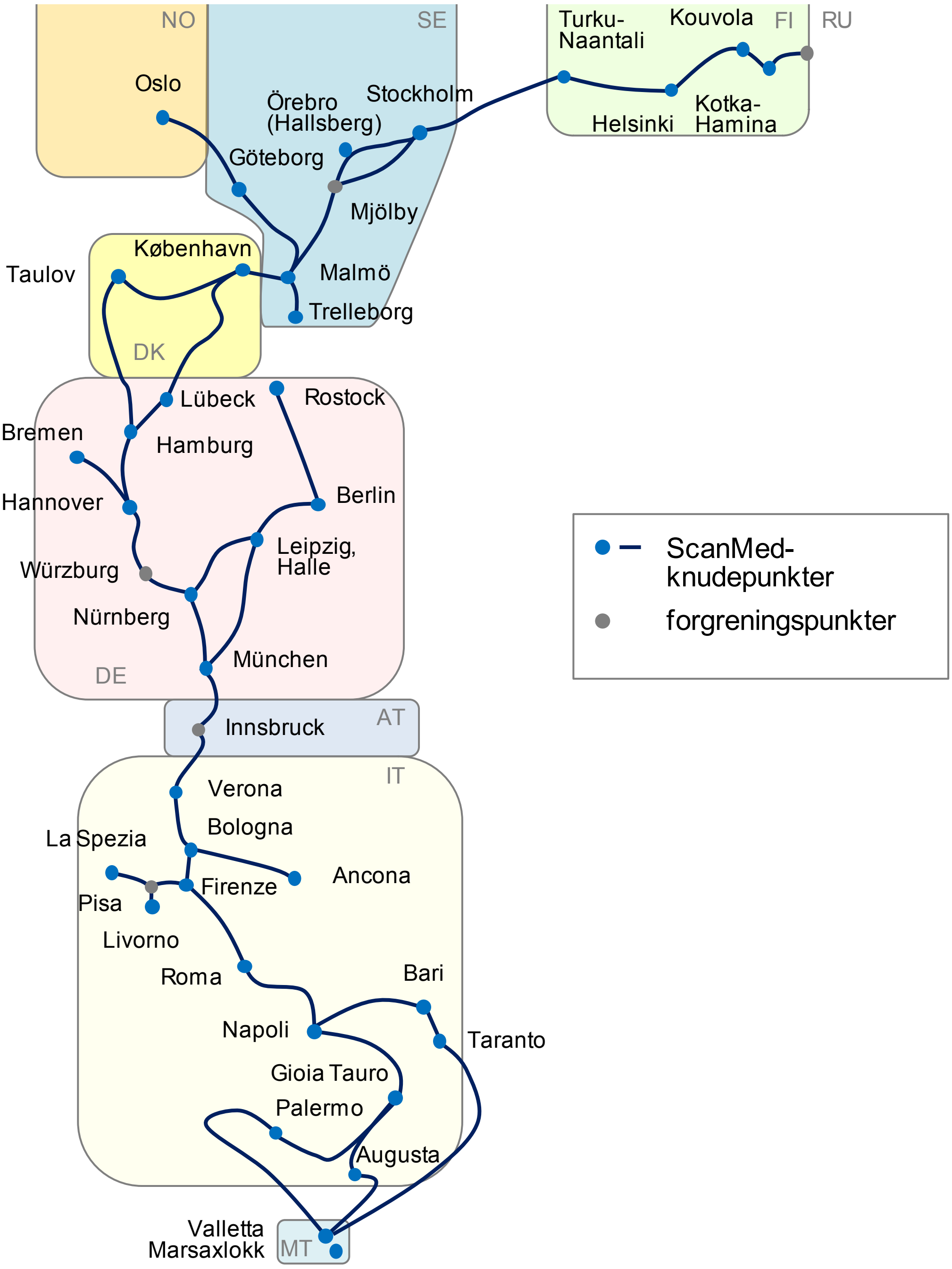
Det nedenstående kartogram viser skematisk ScanMed korridorens strækning og dens kernenoder, sektioner og knudepunkter i henhold til forordning (EU) 1315/15 og 1316/2013.

I figuren ovenfor gives et overblik over knudepunkter i ScanMed korridoren[8]. I diagrammet er kernenoder og kernesektioner markeret med lyseblå og andre knudepunkter er markeret med grå.

"Lineære" transportveje inden for korridoren består hovedsageligt af jernbane og vej. Et antal sektioner i korridoren, særligt forbindelserne mellem Finland – Sverige og Italien – Malta, krydser havet. Den anden dimension af ScanMed korridoren består af punktlig infrastruktur, altså lufthavne, havne og jernbane terminaler i korridorens kernenetværk. "Urbane knudepunkter" er af særlig stor betydning for både multimodale forbindelser og det transeuropæiske transportnetværks forbindelse til lokal og regional infrastruktur. Ifølge forordning (EU) 1315/2013, Bilag II, er følgende byer urbane knudepunkter i ScanMed korridorens kernenetværk:

- FI: Helsinki og Turku;
- SE: Stockholm, Göteborg og Malmö;
- DK: København;
- DE: Hamburg, Bremen, Hannover, Berling, Leipzig, Nürnberg og München;
- IT: Bologna, Roma, Napoli og Palermo;
- MT: Valletta.

[8] Indenlandske vandveje er ikke studeret separat, idet de har begrænset betydning for ScanMed korridoren.



Kort over Skandinavien-Middelhavskorridoren samt dens knudepunkter og forgreningspunkter.

Kvantitativ karakteristik

Målt ved netværkslængde for jernbane (> 9.300 km) og vej (> 6.300 km), samt antallet af havne, lufthavne og jernbaneterminaler (i alt omkring 90 styk), er ScanMed korridoren den største af de ni TEN-T kernenetværk korridorer. Den nedenstående tabel indeholder et overblik over korridorens kvantitative karakteristika.

Transportform/ Node	Enhed	FI	NO	SE	DK	DE	AT	IT	MT	Total
Jernbane	Netværks-længde [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Vej		376	116	1.039	440	1.869	109	2.401	22	6.372
Lufthavne	Antal	2	1	3	1	7	-	4	1	19
Havne		4	1	4	1	4	-	9	2	25
Jernbane- og vejterminaler		5	1	7	2	16	0	13	-	44
Jernbane	Andel af korridor [%]	5,5 %	1,8 %	15,7 %	5,1 %	37,8 %	1,4 %	32,7 %	n.a.	100,0 %
Vej		5,9 %	1,8 %	16,3 %	6,9 %	29,3 %	1,7 %	37,7 %	0,3 %	100,0 %
Lufthavne		10,5 %	5,3 %	15,8 %	5,3 %	36,8 %	n.a.	21,1 %	5,3 %	100,0 %
Havne		16,0 %	4,0 %	16,0 %	4,0 %	16,0 %	n.a.	36,0 %	8,0 %	100,0 %
Jernbane- og vejterminaler		11,4 %	2,3 %	15,9 %	4,5 %	36,4 %	0,0 %	29,5 %	n.a.	100,0 %

Kvantitativ karakteristik af Skandinavien-Middelhavskorridoren.

Tekniske parametre for korridorens infrastruktur er indsamlet gennem en omfattende gennemgang af studier, officiel statistik, netværksvejledninger og gennem kontakt til infrastrukturforvaltere. Alle behandlede studier er dokumenteret i den endelige rapport. Endeligt lykkedes det i stor udstrækning at indsamle de informationer, som kræves af TENtecs informationssystem og at integrere disse i TENtecs database. Efter at have gennemgået informationssystemets indbyggede valideringsproces, blev dataindsamlingen og opdateringen af TENtec færdiggjort ved udgangen af august 2014.

Involvering af interessenter

Involveringen af relevante interessenter i et tidligt stadie af udviklingen af arbejdsplanen er afgørende for en succesfuld implementering af ScanMed korridoren. Med afsæt i dette identificerede det udførende konsortium en gruppe af interessenter, som opfyldte kriterierne i forordning (EU) 1315/2013 for at deltage i et korridorforum som et rådgivende organ til den europæiske koordinator. Efter godkendelse fra kommissionen og medlemslandene, inviteredes de respektive grupper af interessenter til at deltage i de fire møder i korridorforummet, som blev afholdt af konsortiet. I løbet af 2014 har 56 nationale og internationale interessenter og 65 infrastrukturforvaltere af jernbane, vej, havne og lufthavne, samt repræsentanter fra "ScanMed Rail Freight

Corridor" og to på forhånd identificerede tværnationale projekter (Fehmarn Bælt Forbindelsen og Brenner Base Tunnelen) bidraget til studiet af ScanMed korridoren. Der er desuden fremlagt et forslag om, at man i de kommende år inddrager infrastrukturforvaltere af jernbane- og vejterminaler, samt brugere af infrastrukturen.

Analyse af målopfyldelse

Analysen af målopfyldelse sammenlignede de aktuelle parametre for infrastrukturen med målsætningen for 2030, fremsat i forordning (EU) 1315/2013. Analysen afdækkede mangler for hver af TENtecs sektioner og noder.

Med henblik på de specifikke målsætninger for **jernbanenettet**, fandt analysen at:

- Standard sporbredde på 1435 mm tilgodeses på alle korridorens linjer med undtagelse af strækninger i Finland.
- Der findes begrænsninger for interoperabilitet som følge af forskellige typer af elektrificering og det, at der stadig findes ikke-elektrificerede sektioner i Danmark og Tyskland, som kræver skift af lokomotiv og dieseldrift.
- Der findes forskellige standarder i forhold til
- Toglængde generelt og lavere end standardværdien på dele af det svenske net, på nogle sektioner i Tyskland, på Brennerlinjen indtil Firanze/Ancona, og på mange sektioner i Italien syd for Firenze;
- Akseltryk under standardværdien på 25 % af sektionerne i Italien;
- Lastprofilen for transport af semi-trailer ("P400"), som ikke er opfyldt på nuværende linjer i Italien syd for Firenze/Bologna.
- En lav grad af ETCS implementering, med undtagelse af Østrig. Flere forskellige tidsplaner diskuteres, hvilket resulterer i en sammensætning af forskellige planer og en mindre effektiv ETCS implementering. Desuden opstår praktiske problemer som følge af anvendelsen af forskellige specifikationer under forskellige tidsperioder.

Der er betydelige trængselsproblemer på **vejnettet** omkring de fleste store byer i myldretiden, hvilket generelt behandles i nationale og regionale planer for de enkelte lande. En fortsat udvikling af vigtige foranstaltninger, som ikke er direkte relateret til vejinfrastrukturen men til andre områder, så som lovgivning, teknologiske forbedringer eller forbedret køretøjs kapacitet, er også igangsat. Hvorvidt områder som sikker parkering eller understøttelsen af alternative brændsler håndteres bedst af den offentlige eller private sektor, er til tider uklart. Derfor anbefales et samarbejde mellem alle involverede aktører, såvel offentlige som private.

Alle **lufthavne** i kernenetværket giver i principielt adgang til alle operatører. Alle lufthavne er forbundet til TEN-T vejnetværket, men syv lufthavne har ingen forbindelse til jernbanenettet. Den eneste lufthavn blandt de hovedlufthavne som er omfattet af kravet om tilslutning i 2050 som mangler en jernbaneforbindelse, er

Helsinki. En sådan forbindelse forventes dog færdiggjort i 2015. Det er afgjort, at implementering af "Single European Sky" kommer til at involvere lufthavne i ScanMed. Konkrete informationerne om hvilke lufthavne der vil indgå i "SESAR road map 2014-2020" er dog endnu ikke tilgængelige.

De centrale krav til **havne** er overordnet set opfyldt af de 25 kernehavne i ScanMed korridoren når det gælder infrastruktur til sø- og landtilslutninger. Dog er havnenes infrastruktur til begrænsning af fartøjers miljøpåvirkning stadig under udvikling. Allerede i 2014 er en række sømotorvejsprojekter (MoS-projekter) blevet igangsat for at behandle disse mangler. Systemerne for instrumentering og styring (I&C) har et højt niveau. Overvågnings- og informationssystemerne, Vessel Traffic Service (VTS) og SafeSeaNet (SSN) er fuldt implementerede; der er et behov for en videre udvikling og harmonisering af IT og dataudveksling for internettjenester for søfarten, særligt igennem løsninger med ét enkelt kontaktpunkt. På trods af, at denne opgave allerede behandles i et MoS projekt, er det nødvendigt, at hver enkel havn undersøger, hvorledes de kan opfylde kravet.

Alle jernbane- og vejterminaler er forbundet til jernbane og vej igennem mindst ét spor eller én vejbane, hvilket opfylder det grundlæggende kriterium. Øvrige indikatorer, så som levering af realtidsinformation, kan i ringe grad vurderes uden inddragelsen af infrastrukturforvaltere og deres kunder. Spørgsmålet som bør diskuteres med terminaloperatørerne er, hvorvidt de tilbyder sådanne informationssystemer eller om de er villige til at dele denne type information, særligt i real tid, og med hvem. Dette bør ske med inddragelsen af interessenterne for jernbane- og vejterminalerne i 2015.

Undersøgelse af det multimodale transportmarked (MTMS)

I 2010, som er det seneste år med tilgængelig disaggregeret data, udgjorde den internationale godstransport i korridoren 129,0 millioner ton til søs, hvoraf 59,9 millioner ton var mellem kernehavne, 50.3 millioner ton på vej og 36,0 millioner ton på jernbane.

Hensigten med MTMS er at give et overblik over den aktuelle og den fremtidige situation på transportmarkedet i ScanMed korridoren baseret på en omfattende gennemgang af studier, rapporter og prognoser, undersøgelser af markedssektorer og noder i korridoren med afsæt i eksisterende databaser og yderligere data leveret af infrastrukturforvaltere, nationale ministerier og andre interessenter. Gennemgangen resulterer i en omfattende mængde data som samles ind, behandles og kombineres således, at den resulterer i et samlet billede af trafikudviklingen i ScanMed korridoren.

Ved hjælp af denne tilgang har det været muligt at identificere de sektioner i korridoren, hvor transportvolumen forventes at væres højest i 2030. Med henblik på jernbane, både passager- og godstransport, er disse: Mjölby – Malmö, Göteborg – Malmö, Malmö – København – Taulov, Bremen/Hamburg – Hannover – Würzburg, München – Innsbruck og Bologna – Firenze – Roma – Napoli. Den højeste vejtrafik forventes på sektionerne Lübeck – Hamburg, Hamburg/Bremen – Hannover, Würzburg – Nürnberg – München og Firenze – Roma.

Sammenligningen af forventede trafikvolumener og netværksbelastninger i 2030 gør det muligt at identificere mulige kapacitetsbegrænsninger (flaskehalse), som kan hæmme den fremtidige vækst i passager- og godstransport. Disse findes hovedsageligt:

- I Finland for jernbane: Kouvola – Hamina/Kotka, Luumäki – Vainikkala, Helsinki node, Helsinki – Turku; og for vej: regionerne omkring Turku og Helsinki og Kotka – Hamina – Vaalimaa;
- I Sverige for jernbane: Stockolm og Göteborg node, Hässleholm – Lund, Trelleborg – Malmö (- København);
- I Danmark for jernbane: (Malmö –) Københavnsregionen;
- I Tyskland for jernbane[9]: Bremen/Hamburg – Hannover, Würzburg – Nürnberg, området omkring München; og for vej: regionerne omkring Hamburg, Hannover og München såvel som sektionen Würxburg – Nürnberg;
- I Italien for jernbane – baseret på informationer fra RFI: Verona – Ponte Gardena indtil færdiggørelsen af hele sporet frem til Brenner Base Tunnelen; Firenze – Livorno/La Spezia relateret til havnens trafikudvikling; desuden vil der opstå visse begrænsninger for trafikken omkring de større byområder;
- I Malta for forbindelsen mellem havnen, lufthavnen og hovedstaden.

I Østrig er der ingen rapporter om kapacitetsproblemer efter gennemførelse af infrastrukturprojekter.

Målsætninger

Artikel 4 i forordning (EU) 1315/2013 beskriver målsætningerne for det transeuropæiske transportnetværk, som har til formål at styrke den sociale, økonomiske og territoriale samhørighed i den Europæiske Union. Målet er at skabe et fælles europæisk transportområde, som er efficient og bæredygtigt, for at øge nytten for dets brugere og støtte inkluderende vækst. Medlemsstaterne har vedtaget følgende liste over korridorspecifikke mål, som senest skal være opfyldt af ScanMed korridoren ved udgangen af 2030. Ud over disse, skal de endelige foranstaltninger og

[9] Ifølge BMVI via e-mail d. 17.10.2014 er den endelige identificering af flaskehalse genstand for undersøgelse af "The Federal Infrastructure Plan", som gennemføres i 2015.

projekter som medlemsstaterne enes om, senest være implementeret med udgangen af 2030, i henhold til bestemmelserne i artikel 1 (4) i forordning (EU) 1315/2013.

Transportform	Mål
Jernbane	Full electrification
	Axle load 22.5 t
	Line speed 100 km/h, minimum
	740 m freight trains
	ERMTS fully implemented
	Standard gauge 1435 mm for new lines
Vej	Express road or motorway
	Intelligent transport systems (ITS) / tolling systems
	Parking areas every 100 km, minimum
	Infrastructure for alternative clean fuels
Lufthavne	Terminal open to all operators
	Infrastructure for air traffic management, SESAR
	Infrastructure for alternative clean fuels
	Main airports connected to (high-speed) rail network
Søtransport, Havne, MoS	Connection to rail, road, IWW (where possible)
	Infrastructure for alternative clean fuels
	Facilities for ship generated waste
	VTMIS, SafeSeaNet, e-Maritime services
Multimodal transport	All transport modes connected at freight terminals, passenger stations, airports, maritime ports
	Real time information on freight terminals, maritime ports, cargo airports
	Sufficient transshipment equipment on freight terminals
	Continuous passenger traffic through equipment and telematics applications in railway stations, coach stations, airports, maritime ports
Miljømål	Specific target values more detailed than those mentioned in the TEN-T Regulation could be identified for specific sections of the corridor by the Member States concerned in accordance with European legislation.

Mål for Skandinavien-Middelhavskorridoren

Liste over projekter

Den lange liste med projekter, som er udarbejdet ved hjælp af analysen af dokumenter, rapporter, studier, nationale udviklingsplaner, målopfyldelsesanalysen og identifikationen af "kritiske faktorer" er blevet kontrolleret og godkendt af medlemsstaterne og interessenterne. Data modtaget til og med den 28. november 2014 er blevet inkluderet af det udførende konsortium i den vejledende liste. Konsortiet har kontrolleret projekterne imod de opsatte kriterier for at være "kritiske faktorer" samt, hvorvidt de er iblandt de "på forhånd identificerede sektioner og projekter" ifølge forordning (EU) 1316/2013, bilag 1, og opdateret listen i henhold til dette.

Den nuværende projektliste for ScanMed korridoren indeholder cirka 394 igangværende eller planlagt projekter og foranstaltninger med en samlet omkostning på omkring 144,6 milliarder €. De på forhånd identificerede sektioner alene udgør en samlet omkostning på 76,3 milliarder €. Den nedenstående tabel viser en oversigt over antallet af projekter fordel på sektion og transportform.

Land	Jern-bane	Jern-ban + andet	Vej	Vej + andet	Kyst-havn	Kyst-havn + MoS	MoS	Luft-havn	RRT	Andre	Totalt
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Projekter fordelt på transportform og land. ("Diverse"=tværnationale projekter, "Andre"=Multimodal og ITS)

Kurzfassung

Verlauf

Der Skandinavisch-Mediterrane (ScanMed) Korridor, der längste der neun TEN-V-Kernnetzkorridore, verbindet die größten städtischen Zentren in Deutschland und Italien mit Skandinavien (Oslo, Kopenhagen, Stockholm, Helsinki) und dem Mittelmeerraum (italienische Seehäfen, Sizilien und Malta). Indem er den gesamten Kontinent vom Norden nach Süden quert und dabei durch sieben EU-Mitgliedsstaaten sowie Norwegen verläuft, bildet er eine Hauptachse für die europäische Wirtschaft.

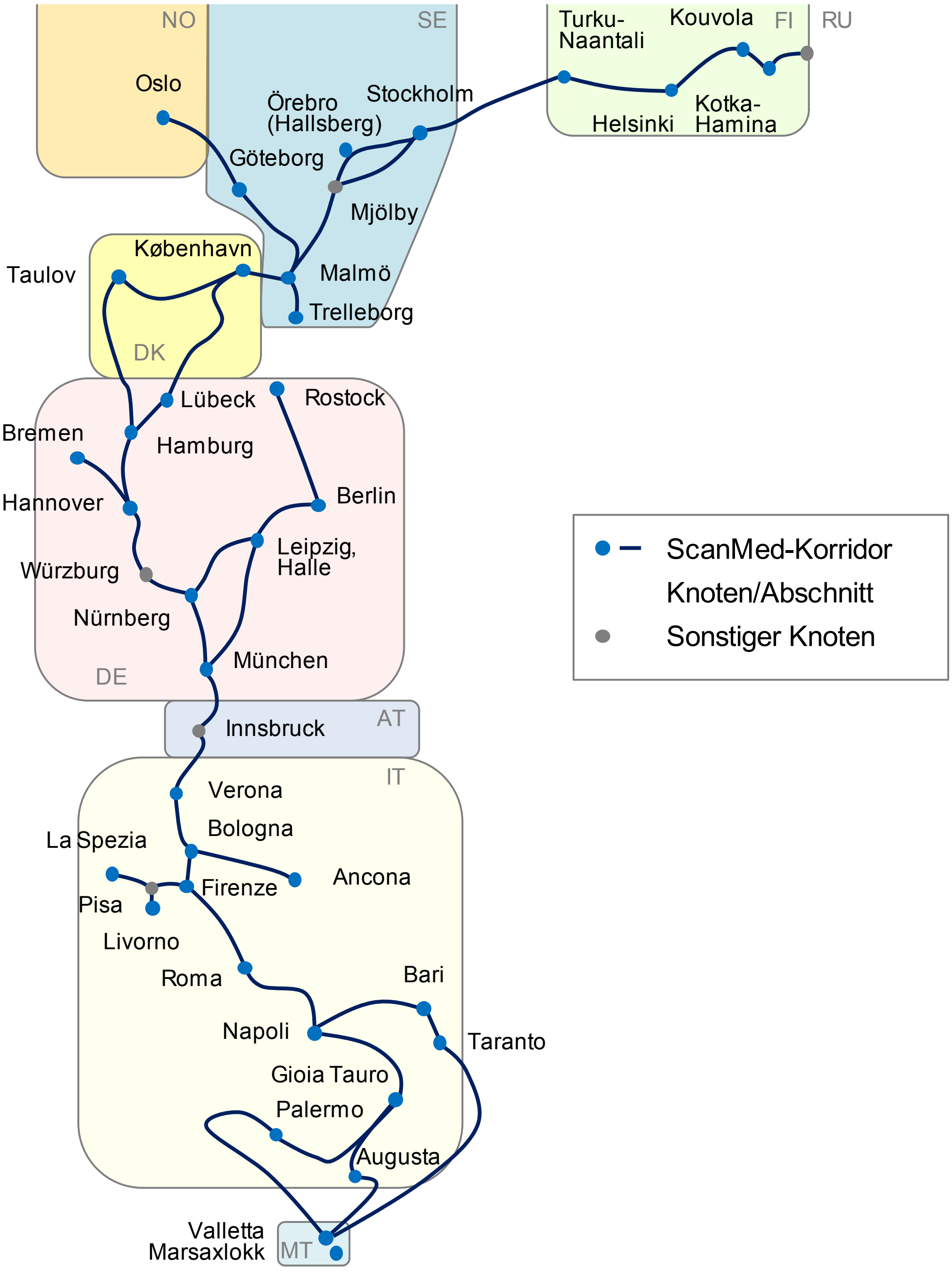
Die Regionen entlang des ScanMed-Korridors bilden einen volkswirtschaftlich wichtigen Raum innerhalb der Europäischen Union. 2011 betrug der Bevölkerungsanteil dieser Regionen nahezu 23% der EU-28. Während deren Fläche rund 16% des EU-Territoriums darstellt, belief sich ihre Wirtschaftsleistung auf über 27% der gesamten EU und überstieg mit mehr als 30.000 € das durchschnittliche pro Kopf-BIP der EU.

Die unten stehende Kartenskizze zeigt den schematischen Verlauf des Korridors gemäß den Verordnungen (EU) 1315/2013 und 1316/2013.

Dem Korridor zugeordnete “linienförmige” Verkehrsträger sind vor allem Schiene und Straße[10]. Einige Korridorabschnitte, insbesondere die Verbindungen Finnland – Schweden und Italien – Malta, queren das Meer. Die andere Komponente des Korridors besteht aus “punktförmiger” Infrastruktur: Flughäfen, Seehäfen und Schienen-Straßen-Terminals (SST). Für die intermodale Verknüpfung sowie die Verbindung des transeuropäischen Verkehrsnetzes mit der Infrastruktur für lokalen und regionalen Verkehr sind die “städtischen Knoten” von besonderer Bedeutung. Gemäß der Verordnung (EU) 1315/2013, Anhang II, liegen die folgenden städtischen Knoten auf dem ScanMed-Korridor:

- FI: Helsinki und Turku;
- SE: Stockholm, Göteborg und Malmö;
- DK: Kopenhagen;
- DE: Hamburg, Bremen, Hannover, Berlin, Leipzig, Nürnberg und München;
- IT: Bologna, Rom, Neapel und Palermo;
- MT: Valletta.

[10] Aufgrund ihrer geringen Bedeutung für den ScanMed-Korridor wurden Binnenwasserstraßen nicht als eigener Verkehrsträger untersucht.



Verlauf des Skandinavisch-Mediterranen Korridors

Kennzahlen

Im Hinblick auf die Netzlänge von Schiene (> 9.300 km) und Straße (> 6.300 km) sowie auf die Anzahl von Seehäfen, Flughäfen und Schienen-Straßen-Terminals des Kernnetzes (Gesamtanzahl ca. 90) ist der ScanMed-Korridor der längste unter den neun TEN-V-Kernnetzkorridoren. Die nachfolgende Tabelle gibt einen Überblick über die wichtigsten Kenngrößen des Korridors.

Verkehrsträger/ Knoten	Dimension	FI	NO	SE	DK	DE	AT	IT	MT	Gesamt
Schiene	Netzlänge [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Straße		376	116	1.039	440	1.869	109	2.401	22	6.372
Flughäfen	Anzahl	2	1	3	1	7	-	4	1	19
Seehäfen		4	1	4	1	4	-	9	2	25
SST		5	1	7	2	16	0	13	-	44
Schiene	Anteil am Korridor [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Straße		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Flughäfen		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Seehäfen		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
SST		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

Kenngrößen des Skandinavisch-Mediterranen Korridors

Technische Parameter der Korridorinfrastruktur wurden aus umfangreichen Literaturrecherchen, offiziellen Statistiken, Network Statements sowie mittels Befragung von Infrastrukturbetreibern erhoben. Alle überprüften Studien sind im Schlussbericht dokumentiert. Letztendlich konnte ein Großteil der für das TENtec-Informationssystem benötigten Informationen erhoben und in die TENtec-Datenbank eingepflegt werden. Nachdem der im System vorgesehene Validierungsprozess durchlaufen war, konnten die Datensammlung und die Aktualisierung des TENtec-Systems Ende August 2014 abgeschlossen werden.

Einbeziehung der Stakeholder

Die Einbeziehung von Stakeholdern bereits in einer frühen Entwicklungsphase des Arbeitsplans ist sehr wichtig für die erfolgreiche Implementierung des Korridors. Zu diesem Zweck hat das Auftragnehmerkonsortium jene Stakeholder identifiziert, die die Kriterien der Verordnung (EU) 1315/2013 für die Teilnahme im Korridorforum als beratendes Gremium für den Europäischen Koordinator erfüllen. Nach der Genehmigung durch die Kommission und die Mitgliedsstaaten wurden entsprechende Gruppen von Stakeholdern zu den vier Sitzungen des Korridorforums eingeladen, die vom Auftragnehmerkonsortium vorbereitet wurden. Letztlich wurden 56 nationale und regionale Regierungsstellen sowie 65 Infrastrukturbetreiber von Schiene, Straße, Seehäfen und Flughäfen, Vertreter des ScanMed-Schienengüterverkehrskorridors sowie von zwei im Vorfeld ausgewählten grenzüberschreitenden Projekten (feste Verbindung Fehmarnbelt und Brenner-Basistunnel) im Jahr 2014 in die Korridorstudie involviert. Die zusätzliche Einbindung von Schienen-Straßen-Terminalbetreibern ist ein Ziel der kommenden Jahre.

Soll-Ist-Vergleich

Im Soll-Ist-Vergleich wurde der derzeitige Status der Infrastrukturparameter mit den Zielwerten für das Jahr 2030 gemäß der Verordnung (EU) 1315/2013 verglichen. Diese Analyse hat die entsprechenden Mängel einzelner TENtec-Abschnitte und -Knoten dargelegt.

Im Hinblick auf die einzelnen Zielvorgaben für die **Schiene** zeigten sich folgende Ergebnisse:

- Alle Korridorabschnitte außer jene in Finnland weisen die Standard-Spurweite 1.435 mm auf.
- Interoperabilitätseinschränkungen aufgrund verschiedener Stromversorgungs-systeme sowie wenige nicht elektrifizierte Abschnitte in Dänemark und Deutschland erfordern Lokomotivwechsel und Dieseltraktion. Die meisten nicht elektrifizierten Strecken in Deutschland sollen im Rahmen bereits beschlossener Projekte elektrifiziert werden.
- Verschiedene Standards hinsichtlich
  - unzureichender Zuglängen im allgemeinen und nicht-erfüllter Sollwerte insbesondere in Teilen des schwedischen Netzes, in einzelnen Abschnitten in Deutschland, auf der Brennerstrecke bis Florenz/Ancona und im italienischen Bestandsnetz südlich von Florenz;
  - Achslasten unter dem Standardparameter auf 25% der Strecken in Italien;
  - des für den Transport von Sattelaufliegern erforderlichen Lademaßes (“P400”), welches auf den Bestandsstrecken südlich von Florenz nicht erreicht wird.
- Außer in Österreich ist nur in wenigen Abschnitten ETCS installiert. Die Zeithorizonte der Einrichtung werden noch diskutiert, was zu einem Flickwerk an ETCS führen wird, auch infolge sich mit der Zeit ändernder Spezifikationen.

Während der Spitzenzeiten gibt es bedeutende Stauprobleme im **Straßennetz** in der Umgebung der meisten großen Städte, die aber in allen Ländern in deren nationalen und regionalen Ausbauplänen berücksichtigt sind. Wichtige Maßnahmen, die nicht unmittelbar mit der Straßeninfrastruktur verbunden sind, sondern mit anderen Themen wie Vorschriften, technologischen Verbesserungen oder verbesserter Kapazitätsauslastung, sind ebenfalls vorgesehen. Ob Angelegenheiten wie die Vorhaltung sicherer Parkplätze oder die Versorgung mit alternativen Kraftstoffen besser vom öffentlichen oder privaten Sektor wahrgenommen werden soll, ist manchmal unklar. Daher wird die Zusammenarbeit aller involvierten öffentlichen und privaten Partner empfohlen.

Grundsätzlich ist in allen **Flughäfen** der freie Zugang gewährleistet. Alle Flughäfen sind in das TEN-Straßennetz eingebunden, während sieben Flughäfen keine Schienenverbindung aufweisen. Darunter ist der Flughafen von Helsinki der einzige, der bis 2050 mit der Schiene erreichbar sein soll. Bereits 2015 wird dessen Anschluss an das Schienennetz realisiert. Die Einrichtung von “Single European Sky” wird auch die Flughäfen des ScanMed-Korridors betreffen, allerdings gibt es noch keine Informationen, welche Flughäfen in der SESAR Road Map 2014 – 2020 enthalten sein werden.

Die 25 ScanMed-**Seehäfen** erfüllen im wesentlichen die Kernnetzanforderungen betreffend seeseitiger und Hinterlandinfrastruktur. Hingegen ist die umweltrelevante Infrastruktur der Häfen noch in Entwicklung begriffen. Bereits 2014 wurden etliche “Motorways of the Sea”-Projekte aufgestellt, um diesen Mangel zu beheben. Die I&C-Technologien sind auf hohem Niveau. “Vessel Traffic Service” (VTS) und “SafeSeaNet” (SSN) sind zur Gänze implementiert; “e-Maritime Services” müssen im Hinblick auf eine Harmonisierung von IT und Datenaustausch noch weiterentwickelt werden, insbesondere durch “Single Window”-Lösungen. Obwohl diese Aufgabe bereits durch ein “Motorways of the Sea”-Projekt abgedeckt ist, sollten die Häfen noch im Detail überprüfen, wie sie den Anforderungen entsprechen können.

Alle **Schienen-Straßen-Terminals** sind zumindest über ein Gleis mit dem Schienennetz und eine Fahrbahn mit dem Straßennetz verbunden, sodass dieses Grundkriterium erfüllt ist. Die anderen Indikatoren wie die Bereitstellung von Informationsflüssen können ohne die Einbeziehung der Betreiber kaum beurteilt werden. Mit diesen wird die Frage zu diskutieren sein, ob sie derartige Informationssysteme planen oder ob sie bereit sind, diese Art von Informationen, insbesondere in Echtzeit, zu teilen und mit wem. Das sollte mit der Einbeziehung der Betreiber im Jahr 2015 geklärt werden.

Multimodale Transportmarktstudie (MTMS)

Im Jahr 2010, dem letzten Jahr, für das disaggregierte Daten verfügbar waren, betrug der internationale Güterverkehr im Korridor 129 Millionen Tonnen auf der See, von denen 59,9 Millionen Tonnen zwischen Häfen des Kernnetzes transportiert wurden, sowie 50,3 Millionen Tonnen auf der Straße und 36,0 Millionen Tonnen auf der Schiene.

Die MTMS verfolgt das Ziel, ein grobes Bild der derzeitigen und künftigen Situation des Verkehrsmarkts auf dem ScanMed-Korridor zu geben. Grundlage bilden umfangreiche Literaturrecherchen, Berichte und Prognosen; es wurden Abschnitte und Knoten des Korridors untersucht, wobei die Daten aus bestehenden Datenbanken oder von Infrastrukturbetreibern, nationalen Ministerien und anderen Stakeholdern stammen. Dieses umfangreiche Datenvolumen wurde gesammelt und gesichtet, um ein Gesamtbild der Verkehrsentwicklung im ScanMed-Korridor zu erhalten. Mit diesem Ansatz war es möglich, die Korridorabschnitte mit den höchsten Verkehrsmengen im Jahr 2030 zu identifizieren. Auf der Schiene, und zwar im Personen- und Güterverkehr, sind dies: Mjölby – Malmö, Malmö – Kopenhagen – Taulov, Bremen/Hamburg – Hannover – Würzburg, München – Innsbruck und Bologna – Florenz – Rom – Neapel. Die größten Verkehrsströme auf der Straße treten in den Abschnitten Lübeck – Hamburg, Hamburg/Bremen – Hannover, Würzburg – Nürnberg – München sowie Florenz – Rom auf.

Der Vergleich der für 2030 erwarteten Verkehrsmengen und Netzbelastungen ermöglicht es, potentielle Kapazitätsengpässe festzustellen, die das künftige Wachstum des Personen- und Güterverkehrs einschränken könnten. Diese ergeben sich insbesondere:

- in Finnland auf der Schiene: Kouvola – HaminaKotka, Luumäki – Vainikkala, Knoten Helsinki, Helsinki – Turku; und auf der Straße: in den Regionen von Turku und Helsinki sowie im Abschnitt Kotka – Hamina – Vaalimaa;
- in Schweden auf der Schiene: in den Knoten Stockholm und Göteborg, auf den Strecken Hässleholm – Lund und Trelleborg – Malmö (- Kopenhagen);
- in Dänemark auf der Schiene: (Malmö-) Region Kopenhagen;
- in Deutschland auf der Schiene[11]: Bremen/Hamburg – Hannover, Würzburg – Nürnberg, Raum München; auf der Straße: in den Räumen Hamburg, Hannover und München sowie im Abschnitt Würzburg – Nürnberg;
- in Italien auf der Schiene (gemäß Informationen von RFI): Waidbruck (Ponte Gardena) – Verona (bis zur Fertigstellung des gesamten Südzulaufs zum Brenner-Basistunnel), Florenz – Livorno/La Spezia in Abhängigkeit von der Entwicklung dieser Häfen. Zusätzlich sind einige Engpässe in städtischen Ballungsräumen zu erwarten;
- in Malta auf der Straßenverbindung zwischen dem Hafen, dem Flughafen und der Hauptstadt.

In Österreich werden nach Fertigstellung aller Infrastrukturprojekte keine Kapazitätsprobleme erwartet.

Ziele

Gemäß Artikel 4 der Verordnung 1315/2013 soll das transeuropäische Verkehrsnetz die territoriale, soziale und wirtschaftliche Kohäsion der EU stärken. Ziel ist es, einen einheitlichen europäischen Verkehrsraum zu schaffen, der effizient und nachhaltig ist, den Nutzern Vorteile vermittelt und integratives Wachstum fördert. Die Mitgliedsstaaten haben der folgenden Liste korridorspezifischer Ziele zugestimmt, die der ScanMed-Korridor bis längstens 2030 erfüllen muss. Zusätzlich sollen bis spätestens 2030 die Maßnahmen und Projekte, die die Mitgliedsstaaten letztendlich vereinbart haben, nach den Vorgaben in Artikel 1 (4) der Verordnung 1315/2013 umgesetzt werden.

[11] Wie das BMVI mit E-Mail vom 17.10.2014 bekanntgab, erfolgt die endgültige Festlegung der Engpässe im Zuge der Untersuchungen für den Bundesverkehrswegeplan, die 2015 abgeschlossen werden sollen.

Verkehrsträger	Ziel
Schiene	Vollständige Elektrifizierung
	Achslast 22,5 t
	Mindeststreckengeschwindigkeit 100 km/h
	Zuglänge 740 m für Güterzüge
	ERMTS vollständig implementiert
	Spurweite 1.435 mm für Neubaustrecken
Straße	Schnellstraßen oder Autobahnen
	Intelligente Transportsysteme (ITS) / Mautsysteme
	Sichere Parkplätze mindestens alle 100 km
	Infrastruktur für alternative, CO_2-arme Treibstoffe
Flughäfen	Terminal zugänglich für alle Nutzer
	Infrastruktur für Luftverkehrsmanagement, SESAR
	Infrastruktur für alternative, CO_2-arme Treibstoffe
	Die wichtigsten Flughäfen sollen an das (Hochgeschwindigkeits-)Schienennetz angeschlossen sein.
Seeverkehr, Häfen, MoS	Anschluss an Schiene, Straße, Binnenwasserstraße (soweit möglich)
	Infrastruktur für alternative, CO_2-arme Treibstoffe
	Ausrüstungen zur Entsorgung der Abfälle der Schiffe
	VTMIS, “SafeSeaNet”, “e-Maritime services”
Multimodaler Transport	Verknüpfung aller Verkehrsträger in Güterterminals, Personenbahnhöfen, Flughäfen und Seehäfen
	Echtzeitinformation in Güterterminals, Seehäfen und Frachtflughäfen
	Hinreichende Verladeeinrichtungen in Güterterminals
	Kontinuierlicher Passagierverkehr durch Telematikanwendungen in Bahnhöfen, Busbahnhöfen, Flug- und Seehäfen
Umweltziele	Die Mitgliedsstaaten können im Einklang mit EU-Gesetzen für bestimmte Korridorabschnitte spezifische Zielwerte festsetzen, die detaillierter sind als die der TEN-Verordnung.

Ziele für den ScanMed-Korridor

Projektliste

Die Gesamtliste der Projekte, die sich aus der Analyse der Dokumente, Berichte, Studien, Soll-Ist-Vergleiche, der Identifizierung der kritischen Punkte sowie der nationalen Entwicklungspläne ergibt, wurde von den Mitgliedsstaaten und den Stakeholdern überprüft und ergänzt. Informationen zu den geforderten Datenfeldern, die bis zum 28. November 2014 eingelangt sind, wurden vom Auftragnehmerkonsortium in die Liste aufgenommen. Das Konsortium hat die Projekte im Hinblick auf die Erfüllung der Kriterien geprüft, die sie als “kritische Punkte” charakterisieren und ob sie in der Menge der “vorermittelten Abschnitte und Projekte" entsprechend der Verordnung (EU) 1316/2013, Anhang 1, enthalten sind, und die Liste dementsprechend überarbeitet.

Die aktuelle Projektliste für den ScanMed-Korridor umfasst 394 in Umsetzung befindliche oder geplante Projekte mit geschätzten Gesamtkosten von etwa 144,6 Milliarden €. Allein die “vorermittelten Abschnitte” enthalten 115 Projekte mit Gesamtkosten von 76,3 Milliarden €. Die folgende Tabelle gibt eine Übersicht über die Anzahl der Projekte nach Abschnitten und Verkehrsträgern.

Land	Schiene	Schiene + andere	Straße	Straße + andere	See-häfen	Seehäfen + MoS	MoS	Flughäfen	SST	Andere	Gesamt
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Gesamt	147	28	80	5	49	11	17	40	14	3	394

Anzahl der Projekte per Verkehrsträger und Land
(“Diverse” = Projekte, die mehrere Länder betreffen, “andere” = multimodal und ITS)

Sommario

Tracciato

Il Corridoio Scandinavo-Mediterraneo, il più esteso dei nove Corridoi Core TEN-T, collega i principali centri urbani in Germania e in Italia alla Scandinavia (Oslo, Copenaghen, Stoccolma, Helsinki) e al Mediterraneo (porti marittimi italiani, Sicilia e Malta). Esso copre sette Stati membri dell'UE e la Norvegia, e rappresenta un asse fondamentale per l'economia europea che attraversa quasi tutto il continente da nord a sud.

Le regioni del Corridoio ScanMed costituiscono un'importante area socio-economica all'interno dell'Unione europea. Nel 2011, le regioni del Corridoio ScanMed comprendono una quota di popolazione di quasi 23% del totale UE 28. Pur rappresentando circa il 16% del territorio europeo, le regioni del Corridoio ScanMed generano oltre il 27% della produzione economica europea (PIL) e di conseguenza superano il PIL medio pro capite europeo con un valore di più di 30.000 € pro capite.

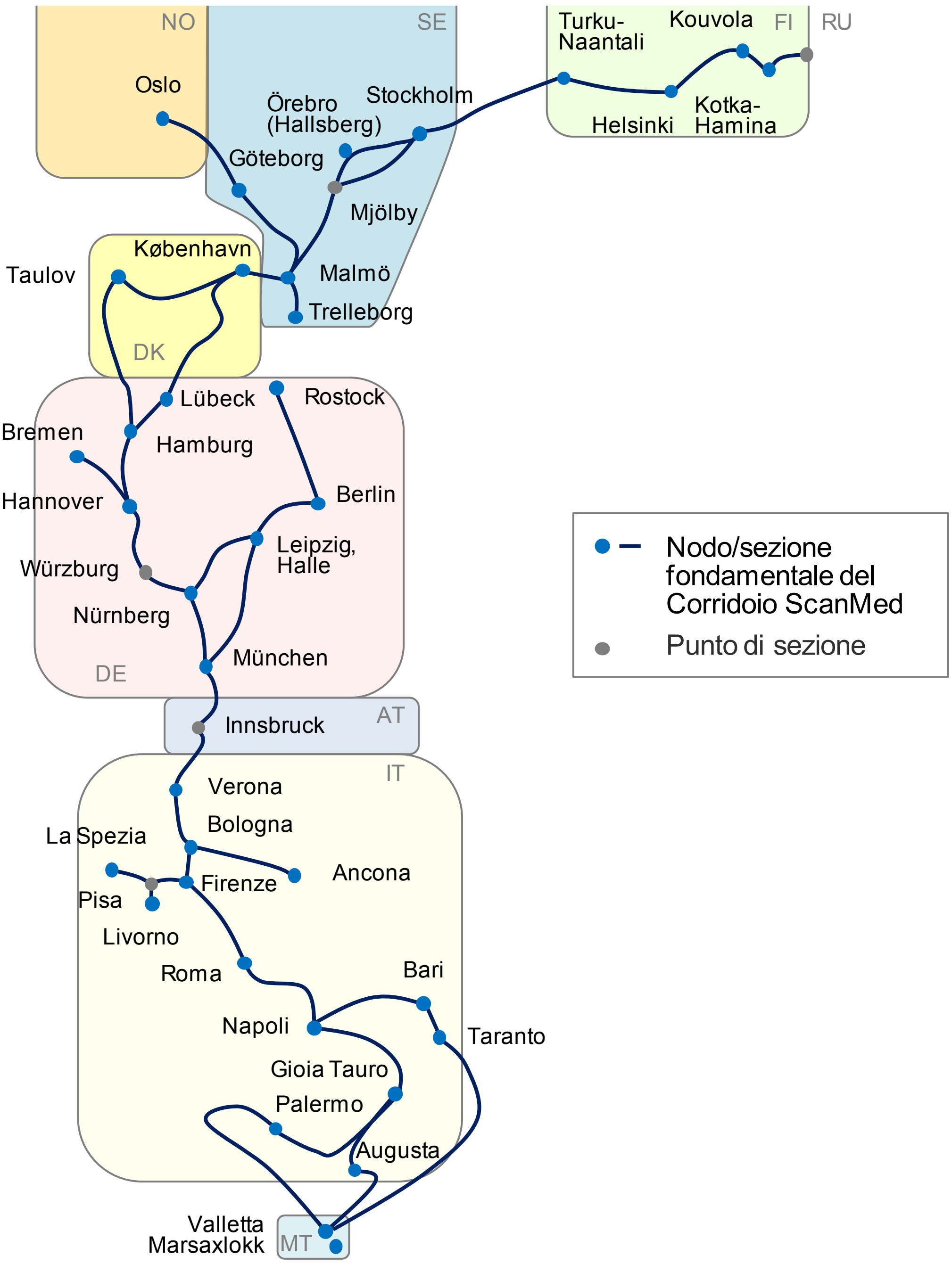
L'immagine successiva mostra lo schema del tracciato del Corridoio e i relativi nodi fondamentali in accordo con i Regolamenti (UE) 1315/2013 e 1316/2013.

Le modalità "lineari" assegnate al corridoio sono prevalentemente quella ferroviaria e stradale. [12]

Alcuni tratti del tracciato, in particolare i collegamenti Finlandia - Svezia e Italia - Malta, attraversano il mare. L'altra dimensione del corridoio è composta da infrastrutture "puntuali": gli aeroporti, porti e terminal ferroviario-stradali della rete fondamentale. I "nodi urbani" sono di particolare importanza sia per l'interconnessione modale che per la connessione della rete trans-Europea dei trasporti con le infrastrutture dedicate al traffico locale e regionale. Ai sensi del regolamento (UE) 1315/2013, Allegato II, i nodi urbani della rete fondamentale del Corridoio ScanMed sono i seguenti:

- FI: Helsinki e Turku;
- SE: Stoccolma, Göteborg e Malmö;
- DK: Copenaghen;
- DE: Amburgo, Brema, Hannover, Berlino, Lipsia, Norimberga e Monaco;
- IT: Bologna, Roma, Napoli e Palermo; e,
- MT: La Valletta.

[12] Le vie di navigazione interne non sono state studiate come modalità alternativa a causa della limitata importanza per il Corridoio ScanMed.



Tracciato del Corridoio Scandinavo-Mediterraneo

Caratteristiche quantitative

In termini di lunghezza della rete delle ferrovie (> 9.300 km) e delle strade (> 6.300 km), così come per il numero di porti principali, aeroporti e terminal ferroviario-stradali (in totale circa 90 siti), il Corridoio ScanMed è il più grande tra i nove corridoi TEN-T della rete fondamentale. Una panoramica delle caratteristiche quantitative del corridoio è fornita nella seguente tabella.

Modo/ Nodo	Dimensione	FI	NO	SE	DK	DE	AT	IT	MT	Totale
Ferrovia	Lunghezza rete [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Strada		376	116	1.039	440	1.869	109	2.401	22	6.372
Aeroporti	Numero	2	1	3	1	7	-	4	1	19
Porti		4	1	4	1	4	-	9	2	25
Terminal ferro/gomma		5	1	7	2	16	0	13	-	44
Ferrovia	Percentuale del Corridoio [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Strada		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Aeroporti		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Porti		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
Terminal ferro/gomma		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

Caratteristiche del Corridoio Scandinavo-Mediterraneo

I parametri tecnici delle infrastrutture del corridoio sono stati raccolti dalla rassegna completa di studi, statistiche ufficiali, prospetti informativi della rete nonché attraverso il contatto con i gestori delle infrastrutture. Tutti gli studi esaminati sono documentati nella relazione finale. Infine, le informazioni richieste dal sistema informativo TENtec sono state raccolte in massima parte e integrate nel database TENtec. Dopo aver superato il processo integrato di validazione del sistema, il compito di raccolta dati e aggiornamento di TENtec è stato completato alla fine di agosto 2014.

Coinvolgimento degli stakeholder

Il coinvolgimento degli stakeholder in una fase iniziale dello sviluppo del piano di lavoro è essenziale per il successo dell'attuazione del corridoio. A questo scopo, il consorzio ha individuato i soggetti interessati che soddisfano i criteri stabiliti dal regolamento (UE) 1315/2013 per la partecipazione al Corridor Forum in qualità di organo consultivo per il coordinatore europeo. Dopo l'approvazione della Commissione e degli Stati membri, i rispettivi gruppi di stakeholder sono stati invitati a quattro riunioni del Corridor Forum che sono state organizzate dal consorzio. Alla fine, 56 attori nazionali e regionali e 65 gestori di infrastrutture di ferrovie, strade, porti e aeroporti, nonché i rappresentanti del corridoio ferroviario merci ScanMed e di due progetti transfrontalieri predeterminati (Fehmarn Belt Fixed Link e tunnel di base del Brennero) hanno contribuito allo studio sul corridoio per l'anno 2014. Come obiettivo per gli anni successivi, è stato proposto il coinvolgimento supplementare di gestori dei terminal ferroviario-stradali, nonché la partecipazione degli utenti dell'infrastruttura.

Analisi di conformità

L'analisi di conformità ha confrontato i parametri attuali (infrastrutture) e i valori obiettivo fissati per l'anno 2030 nel regolamento (UE) 1315/2013. L'analisi ha individuato i rispettivi deficit su sezioni singole TENtec e nodi.

Per quanto riguarda gli obiettivi **ferroviari** specifici, i seguenti risultati sono stati identificati:

- Lo scartamento standard di 1435 mm è presente in tutto il corridoio, ad eccezione della Finlandia.
- Vincoli di interoperabilità derivanti da diversa elettrificazione e alcuni tratti non elettrificati in Danimarca e in Germania richiedono un cambio di locomotiva e trazione Diesel. La maggior parte delle linee non elettrificate in Germania sono in procinto di essere elettrificate nel quadro dei progetti concordati.
- Diversi standard in materia di
  - lunghezza dei treni in generale, e sotto lo standard in particolare su alcuni tratti della rete svedese, su poche sezioni in Germania, sulla linea del Brennero fino a Firenze / Ancona, e su molte sezioni in Italia a sud di Firenze;
  - peso assiale sotto i parametri standard sul 25% delle sezioni in Italia;
  - profilo di carico per il trasporto di semirimorchi ("P400"), che non viene raggiunto sulle linee attuali in Italia a sud di Firenze / Bologna.
- Un basso tasso di implementazione dell' ETCS con l'eccezione dell'Austria, orizzonti temporali in fase di discussione e risultanti in un "patchwork" di applicazioni ETCS, così come problemi pratici di dettaglio causati da diverse specifiche utilizzate nei differenti orizzonti temporali.

Ci sono notevoli problemi di congestione sulla rete **stradale** intorno alle maggiori città durante le ore di punta che vengono generalmente considerati nei piani nazionali e regionali di ciascun paese. Importanti misure non direttamente correlate a infrastrutture stradali, ma ad altri elementi quali i regolamenti, i miglioramenti tecnologici o la migliore unitizzazione della capacità dei veicoli, sono in via di sviluppo. Non è chiaro se questioni come parcheggio sicuro o la fornitura di carburanti alternativi siano meglio affrontate dal settore pubblico o privato. Pertanto, la cooperazione è raccomandata tra tutti i partner coinvolti, pubblici e privati.

In tutti gli **aeroporti** principali l'accesso al mercato è sostanzialmente concesso. La connettività con la rete stradale TEN-T è garantita per tutti gli aeroporti, mentre sette aeroporti non hanno alcun collegamento alla ferrovia. Helsinki, l'unico aeroporto che manca di un collegamento tra il gruppo di aeroporti che dovrebbero essere collegati alla ferrovia entro il 2050, avrà il suo primo collegamento ferroviario nel 2015. La strada per l'attuazione dello spazio aereo unico europeo coinvolgerà gli aeroporti

ScanMed, anche se le informazioni su aeroporti coinvolti nella "road map SESAR 2014-2020" non sono ancora disponibili.

I requisiti di base sui **porti** sono soddisfatti principalmente dai 25 porti ScanMed fondamentali in materia di infrastrutture di trasporto marittime e terrestri. Tuttavia, le infrastrutture ambientali dei porti sono ancora in fase di sviluppo. Di conseguenza, già nel 2014, alcuni progetti di "autostrade del mare (MoS)" sono stati istituiti per attenuare questa lacuna. Le tecnologie ICT sono presenti ad un alto livello. Vessel Traffic Service (VTS) e SafeSeaNet (SSN) sono pienamente sviluppati; servizi e-Maritime devono essere ulteriormente sviluppati con particolare attenzione alla armonizzazione delle IT e scambio di dati, soprattutto attraverso soluzioni "sportello unico". Anche se questo compito è già coperto da un progetto MoS, i singoli porti devono controllare in dettaglio come potranno soddisfare il requisito.

Tutti i **terminal ferroviario-stradali** sono collegati alla ferrovia e alla strada da almeno un binario o una corsia stradale cosicché che questo criterio fondamentale risulta soddisfatto. Gli altri indicatori, come ad esempio la fornitura di flussi informativi, difficilmente possono essere valutati senza il coinvolgimento dei gestori dell'infrastruttura e dei loro clienti. La questione da discutere con operatori di terminal è se essi forniscano tali sistemi informativi o se siano disposti a condividere questo tipo di informazioni, in particolare quelle "in tempo reale", e con chi. Questo dovrebbe essere fatto con il coinvolgimento dei soggetti interessati nel 2015.

Lo studio di mercato sul trasporto intermodale (MTMS)

Nel 2010, l'ultimo anno per il quale si è potuto recuperare i dati disaggregati, il traffico merci internazionale sul corridoio è stato di 129.0 milioni di tonnellate via mare, di cui 59.9 milioni di tonnellate attraverso i porti principali, 50.3 milioni di tonnellate su strada e 36.0 milioni di tonnellate per ferrovia.

Lo studio persegue l'obiettivo di fornire un "quadro" della situazione attuale e futura del mercato dei trasporti per il Corridoio ScanMed sulla base di un'ampia rassegna di studi, relazioni e previsioni, indagando il mercato nelle sezioni e nei nodi del corridoio attraverso database esistenti, e tramite i dati aggiuntivi forniti dai gestori delle infrastrutture, i ministeri nazionali e altri soggetti interessati. Ciò rivela una quantità complessiva di dati, in seguito raccolti, corretti e inseriti, in una visone di ampia scala dello sviluppo del traffico del Corridoio ScanMed. Seguendo questo approccio, è stato possibile identificare le sezioni corridoio con il volume di trasporto più alto al 2030. Per quanto riguarda la ferrovia, sia passeggeri che merci, sono i seguenti: Mjölby - Malmö, Göteborg - Malmö, Malmö – Copenaghen - Taulov, Brema / Amburgo - Hannover - Würzburg, Monaco - Innsbruck e Bologna - Firenze - Roma - Napoli. I più alti volumi di traffico stradale appaiono lungo le sezioni Lubecca - Amburgo, Amburgo / Brema - Hannover, Würzburg - Norimberga - Monaco e Firenze - Roma.

Il confronto tra i volumi di traffico previsti e carichi di rete nel 2030 facilita l'individuazione di eventuali vincoli di capacità (bottleneck) che possono ostacolare la futura crescita del trasporto passeggeri e merci. Questi possono essere individuati in particolare:

- in Finlandia per la ferrovia: Kouvola - HaminaKotka, Luumäki - Vainikkala, nodo di Helsinki, Helsinki - Turku; e per la strada: le regioni di Turku e Helsinki e Koskenkyla - Kotka - Hamina - Vaalimaa;
- in Svezia per la ferrovia: (nodo di Stoccolma e Göteborg, Hässleholm - Lund, Trelleborg - Malmö (- Copenaghen);
- in Danimarca per la ferrovia: (Malmö-) Regione di Copenhagen;
- in Germania per la ferrovia[13]: Brema / Amburgo - Hannover, Würzburg - Norimberga, area di Monaco; e per strada: le regioni di Amburgo, Hannover e Monaco, nonché la sezione Würzburg - Norimberga;
- in Italia per la ferrovia - sulla base delle informazioni fornite da RFI: Verona - Ponte Gardena fino al completamento delle intere linee di accesso alla galleria di base del Brennero; Firenze - Livorno / La Spezia relative allo sviluppo del traffico dei porti; ci saranno inoltre alcuni vincoli nel traffico delle aree urbane.
- A Malta per il collegamento tra il porto, l'aeroporto e la capitale.

In Austria non sono identificati problemi di capacità dopo che I progetti infrastrutturali sono stati completati.

Obiettivi

L’articolo 4 del Regolamento (UE) 1315/2013 descrive gli obiettivi della rete trans-Europea dei trasporti, che deve rafforzare la coesione sociale, economica e territoriale dell'Unione Europea. L'obiettivo è quello di creare uno spazio unico europeo dei trasporti, che sia efficiente e sostenibile, per aumentare i benefici per i suoi utenti e per sostenere la crescita inclusiva. Gli Stati membri hanno approvato il seguente elenco di obiettivi specifici di corridoio, che devono essere soddisfatti dal Corridoio ScanMed entro il 2030. Oltre a questi, le misure e i progetti infine concordati dagli Stati Membri devono essere realizzati entro il 2030, secondo le disposizioni di cui all'articolo 1 (4) del Regolamento (UE) 1315/2013.

[13] In accordo con BMVI, e-mail del 17.10.2014, l’identificazione finale dei bottleneck è subordinata all’indagine da parte del Piano Federale delle Infrastrutture, che sarà completata nel 2015.

Modo	Obiettivo
Ferrovia	Elettrificazione completa
	Peso assiale22.5 t
	Velocità minima di linea 100 km/h
	740 m treni merci
	ERMTS implementato totalmente
	Scartamento standard 1435 mm per nuove linee
Strada	Autostrade o superstrade
	Sistemi Intelligenti di Trasporto (ITS) / sistemi di esazione
	Aree di parcheggio ogni 100 km, minimo
	Infrastrutture per carburanti alternativi
Aeroporti	Apertura terminal a tutti gli operatori
	Infrastrutture per la gestione del traffico aereo, SESAR
	Infrastrutture per carburanti alternativi
	Aeroporti principali connessi alle rete ferroviaria (alta velocità)
Trasporto marittimo, porti, MoS	Connessione con ferrovia, strada, vie di navigazione interna (dove possibile)
	Infrastrutture per carburanti alternativi
	Strutture per il trattamento dei rifiuti generate dalle navi
	VTMIS, SafeSeaNet, e-servizi marittimi
Trasporto multimodale	Tutte le modalità connesse a terminal merci, stazioni passeggeri, aeroporti, porti marittimi
	Informazione in tempo reale su terminal merci, porti marittimi, aeroporti cargo
	Attrezzature per il transhipment sufficienti nei termina merci
	Traffico passeggeri fluido attraverso applicazioni telematiche in stazioni ferroviarie, stazioni bus, aeroporti, porti marittimi
Obiettivi ambientali	Valori obiettivo specifici più dettagliati di quelli menzionati nel Regolamento TEN-T potranno essere identificati per sezioni specifiche del corridoio dagli Stati Membri interessati in accordo con la legislazione Europea.

Obiettivi del Corridoio ScanMed

Lista dei Progetti

La lunga lista di progetti derivata dall'analisi di documenti, relazioni, studi, piani di sviluppo nazionali, dall'analisi di conformità e dall'individuazione delle "criticità" è stata controllata e completata dagli Stati membri e dalle parti interessate. Le informazioni ricevute fino al 28 novembre 2014 e rispetto ai dati richiesti, sono state incluse dal consorzio contraente nella lista indicativa. Il consorzio ha controllato i progetti in base ai criteri di caratterizzazione che li rendono "criticità" e la loro eventuale presenza tra le "sezioni e progetti pre-identificati", secondo il regolamento (UE) 1316/2013, allegato 1, e ha aggiornato l'elenco di conseguenza.

L'elenco attuale dei progetti del corridoio ScanMed comprende circa 394 progetti e misure in corso o in programma, con un costo totale stimato di circa 144.600 milioni di euro. Solo le sezioni pre-individuate sono rappresentate da 115 progetti con un costo totale di 76,3 miliardi di euro. La tabella che segue mostra una panoramica sul numero di progetti per sezione e modalità.

Nazione	Ferrovia	Ferrovia + altro	Strada	Trada + altro	Porti	Porti + MoS	MoS	Aeroporti	Terminal ferro/ gomma	Altro	Totale
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diversi							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Numero di progetti per modo e nazione (“Diversi” = progetti multi-nazione, “altro” = multimodali e ITS)

Sommarju Eżekuttiv

Il-Pożizzjoni tal-*Corridor ScanMed*

L-*Scandinavian-Mediterranean (ScanMed) Corridor*, l-ikbar wieħed mid-disgħa *Corridors* tat-TENT-T *Core Network*, jgħaqqad l-ikbar ċentri urbani fil-Ġermanja u l-Italja ma' l-Scandinavja (Oslo, København, Stockholm, Helsinki) u mal-Mediterran (portijiet marittimi Taljani, Sqallija u Malta). Hu jkopri seba' Stati ta' l-Unjoni Ewropeja u n-Norveġja u jirrapreżenta assi kruċjali għall-ekonomija Ewropeja, li taqsam kważi l-kontinent sħiħ mit-Tramuntana għan-Nofsinhar.

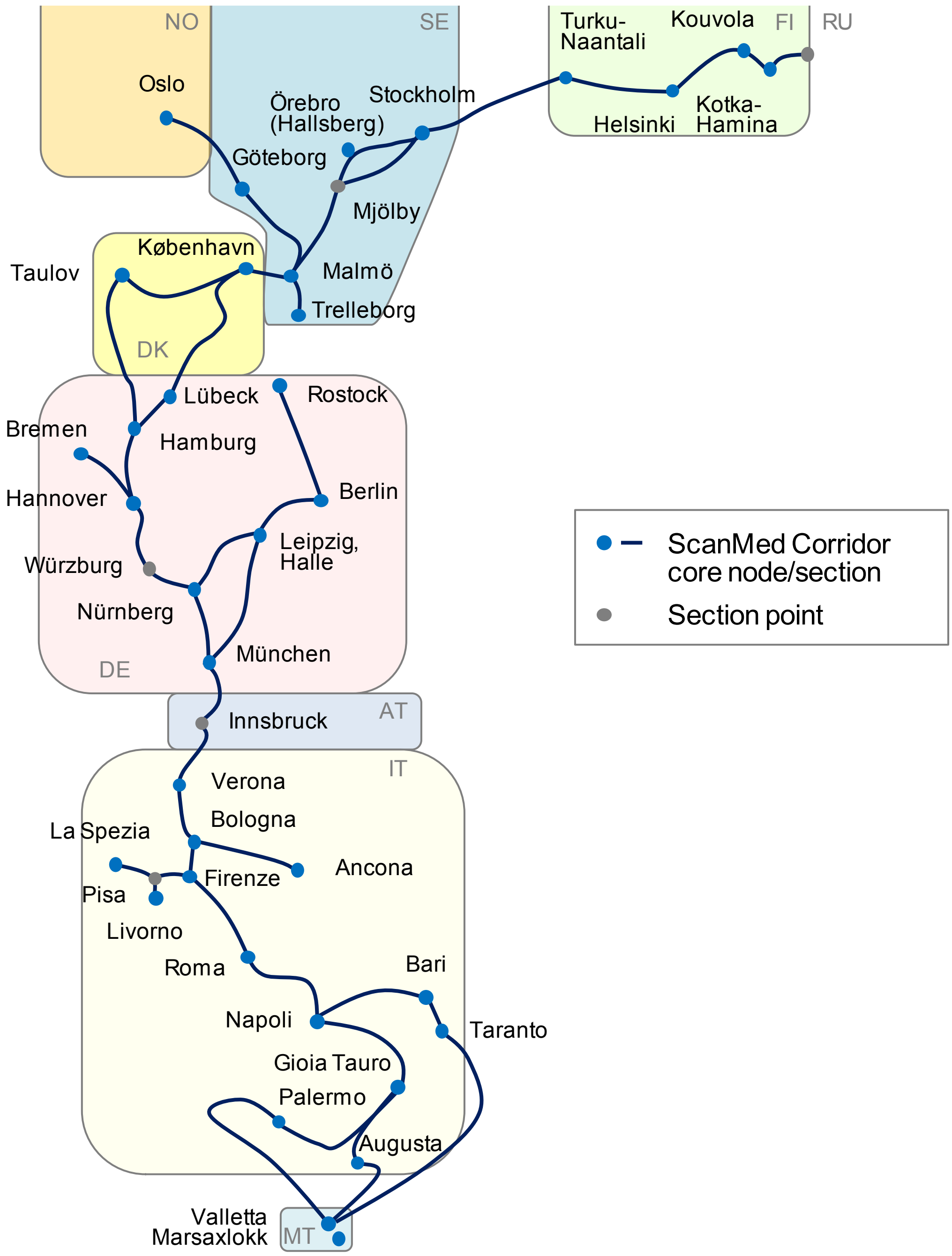
Ir-regjuni ta' l-*ScanMed Corridor* jkopru żona soċio-ekonomika importanti fl-Unjoni Ewropea. Fl-2011, ir-regjuni ta' l-*ScanMed Corridor* kellhom popolazzjoni li tammonta għal madwar 23% tal-EU 28. Għalkemm dawn ir-regjuni jkopru madwar 16% tat-territorju Ewropej, huma jiggeneraw aktar minn 27% tal-Prodott Gross Domestiku (PGD), u għaldaqstant issuperaw il-medja Ewropeja tal-PGD b'valur t'aktar minn 30.000Euros per capita.

Il-*cartogram* hawn taħt turi il-pożizzjoni skematika tal-*Corridor* u n-nodi prinċipali skond ir-Regolamenti (EU) 1315/2013 u 1316/2013.

Il-mezzi tat-trasport "lineari" li huma assoċjati mal-*Corridor* huma prinċiparjament il-linji tal-ferrovija u t-toroq[14]. Xi partijiet mill-*Corridor*, speċjalment il-konessjonijiet Finland-Sweden u Italja-Malta jaqsmu l-baħar. Id-dimensjoni l-oħra tal-*Corridor* hi magħmula minn infrastruttura "statika": ajruporti, portijiet marittimi, terminals bejn linji tal-ferrovija u toroq tal-*Core Network*. Għall-konnessjonijiet intermodali kif ukoll għall-konnessjoni tat-*Trans-European Network,* b'infrastruttura għat-traffiku lokali u reġjonali, "*nodes* urbani" huma ta' importanza partikolari. Skond ir-Regolament (EU) 1315/2013, Annex II, in-*nodes* urbani tal-*core network* tal- ScanMed Corridor huma:

- FI: Helsinku u Turku
- SE: Stockholm, Göteborg u Malmö;
- DK: København;
- DE: Hamburg, Bremen, Hannover, Berlin, Leipzig, Nürnberg u München;
- IT: Bologna, Roma, Napoli u Palermo; u,
- MT: Valletta.

[14] *Waterways* Interni ma ġewx studjati bħala mezz ta' trasport separat minħabba l-importanza limitata għall-*ScanMed Corridor*.



Pożizzjoni ta' l-Scandinavian-Mediterranean Corridor

Karatteristiċi Kwantitattivi

F'dak li għandu x'jaqsam mat-tul tal-linji tal-ferrovija (> 9,300 km) u tat-toroq (> 6,300 km), kif ukoll in-numru ta' portijiet prinċipali, ajruporti u terminals bejn il-ferrovija u toroq (f'madwar 90 post), l-*ScanMed Corridor* hu l-akbar wieħed mid-disa' *Corridors* tal-*Core Network* tat-TEN-T. It-tabella hawn taħt turi l-karatteristiċi kwantitattivi ta' l- *ScanMed Corridor*.

Mezz ta' transport	Dimensjoni	FI	NO	SE	DK	DE	AT	IT	MT	Total
Ferrovija	Tul tan-network [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Toroq		376	116	1.039	440	1.869	109	2.401	22	6.372
Ajruporti	Numru	2	1	3	1	7	-	4	1	19
Portijiet		4	1	4	1	4	-	9	2	25
Termals bejn ferrovija u triq		5	1	7	2	16	0	13	-	44
Ferrovija	Persentaġġ mill-Corridor [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Toroq		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Ajruporti		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Portijiet		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
Termals bejn ferrovija u triq		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

Karatteristiċi ta' l-Scandinavian-Mediterranean Corridor

Il-parametri tekniċi tal-infrastruttura ta' l-*Corridor* kienu miġbura minn riċerka komprensiva, statistika uffiċjali, dikjarazzjonijiet tan-network kif ukoll minn kuntatti ma' managers tal-infrastruttura. L-istudji kollha li ġew analizzati huma dokumentati fir-rapport finali. Fl-aħħar, il-biċċa l-kbira tal-informazzjoni meħtieġa mis-Sistema' Informatika TENtec setgħat tigi migbura u kienet integrata fid-database TENtec. Wara li tlesta l-proċess ta' validazzjoni inerenti, x-xogħol tal-ġbir ta' data u l-aġġornamenti fit-TENtec kienu lesti sa l-aħħar t'Awissu 2014.

Involviment tal-Partijiet Interessati

L-Involviment tal-partijiet interessati fi stadju bikri tal-iżvilupp tal-pjan ta' ħidma hu neċessarju għas-suċċess tal-implementazzjoni tal-*Corridor*. Għal din ir-raġuni il-konsortju ta' kuntratturi identifika l-partijiet interessati kollha skond il-kriterji tar-Regolament Ewropew (EU) 1315/2013 sabiex jipparteċipaw f'*Corridor Forum* u jsarraf f'kumitat konsultattiv għall-*European Coordinator*. Wara l-approvazzjoni tal-Kummissjoni u tal-Istati Membri, gruppi rispettivi ta' partijiet interessati kienu mistiedna għall-erba' laqgħat tal-*Corridor Forum* li kienu preparati mill-konsortju. Eventwalment, 56 partijiet nazzjonali u regjonali, 65 managers tal-infrastruttura tal-ferrovija, toroq, portijiet u ajruporti kif ukoll rappreżentanti ta' l-*ScanMed Rail Freight Corridor* u zewg progetti li jaqsmu konfini (Fehmarn Belt Fixed Link and Brenner Base tunnel), ikkontribwixxew għall-istudju tal-*Corridor* fl-2014. L-involviment addizjonali tal-managers tat-terminals bejn il-ferrovija u it-toroq, u kif ukoll l-parteċipazzjoni ta' nies li jużaw din l-infrastruttura kienet proposta biex issir waħda mil-objettivi fis-snin li ġejjin.

Compliance analysis

Il-*Compliance Analysis* ikkumparat il-parametri tal-infrastruttura attwali mal-valuri fil-mira tas-sena 2030 skond ir-Regolament (EU) 1315/2013. L-analiżi wriet in-nuqqasijiet rispettivi fuq sezzjonijiet u *nodes* speċifiċi tat-TENtec.

Għar-rigward l-objettivi speċifiċi għall-ferrovija, dawn kienu r-risultati li ħarġu:

- Spazju fiss bejn il-linji tal-ferrovija ta' 1,435mm huwa provdut fuq il-linji tal-Corridors kollha apparti dawk tal-Finlandja.
- Restrizzjonijiet fuq l-interoperabbilta' kawża tal-elettrifikazzjoni differenti u l-ftit sezzjonijiet li fadal li mhumiex elettrifikati ġod-Danimarka u l-Ġermanja jirrikjedu bidla fil-locomotives u d-Diesel traction. Il-biċċa l-kbira tal-linji li mhumiex elettrifikati fil-Ġermanja se jkunu elettrifikati fil-pjanijiet tal-proġetti miftiehma.
- Standards differenti f'dak li għandu x'jaqsam ma:
  - It-tul generali tal-ferrovija u l-parametri inqas mill-istandard partikolarment fuq partijiet tan-network Svediża, ftit sezzjonijiet fil-Ġermanja, fuq il-Brenner Line sa Firenze/Ancona u fuq ħafna mis-sezzjonijiet fl-Italja l-isfel minn Firenze.
  - It-tagħbija tal-fus taħt l-parametru standard ta' 25% f'sezzjonijiet tal-Italja.
  - Il-profil ta' tagħbija għat-trasport tas-semi-trailers ("P400") li mhuwiex milħuq fuq il-linji attwali ġo l-Italja, l-isfel minn Firenze/Bologna.
- Rata baxxa tal-implementazzjoni tal-ETCS, bl-eċċezzjoni ta' l-Austria, ż-żmien li attwalment qed jiġi diskuss u jirriżulta f'patchwork ta' implimentazzjoni tal-ETCS kif ukoll problemi prattiċi ikkawżati minn speċifikazzjonijiet differenti użati fiż-żminijiet differenti.

Fil-maġġoranza tal-ibliet il-kbar hemm problemi kbar ta' konġestjoni fit-toroq fil-ħinijiet ta' filgħodu li ġeneralment huma ikkunsidrati fil-pjanijiet nazzjonali u reġjonali ta' kull pajjiż. Miżuri mportanti li mhumiex direttament relatati mal-infrastruttura tat-toroq, imma ma' kwistjonijiet oħra bħal regolamenti, titjieb teknoloġiku u titjieb fl-ipparkjar tal-karozzi bdew ukoll. Għadu mhuwiex ċar, jekk kwistjonijiet bħal ipparkjar issorveljat jew provista ta' fjuwil alternattiv huma l-aħjar indirizzati mis-settur pubbliku jew privat. Għaldaqstant, kooperazzjoni bejn il-partijiet involuti kollha, kemm jekk mis-settur pubbliku jew privat, hija rrakkomandata.

Fl-ajruporti prinċipali kollha, l-aċċess huwa miftuħ. L-ajruporti kollha għandhom konnessjoni mat-TEN-T network, filwaqt li seba' ajruporti m'għandhomx konnessjoni mal-infrastruttura tal-ferrovija. Helsinki, l-uniku ajruport li m'għandhux konnessjoni u li suppost ser ikun konness mal-linja tal-ferrovija sa l-2050, se jkollu l-ewwel konnettivita' bil-ferrovija fl-2015.

Il-ħamsa u għoxrin port tal-*ScanMed Corridor* kollha għandhom infrastruttura marittima u ta' *hinterland* skond il-bżonn u r-regoli. Madankollu, l-infrastruttura ambjentali tal-portijiet għadha qed tiġi żviluppata. Għaldaqstant, fl-2014 kien hemm diga' proġetti tal-*Motorways of the Sea* (MoS) li ġew żviluppati biex itaffu din il-problema. L- *I&C Technologies* huma fuq livelli għoljin. *Vessel Traffic Service (VTS)* u *SafeSeaNet (SSN)* huma implementati kompletament; is-servizzi *e-Maritime* jridu jiġu żviluppati b'aktar qafas fuq l-integrazzjoni ta' l-IT u fuq l-iskambju ta' data, speċjalment b'soluzzjonijiet "single window". Għalkemm dan ix-xogħol diga' qed jaqa taħt proġett MoS, il-portijiet individwali jridu jigu iċċekjati f'detall dwar kif jistaw jilħqu dan il-bżonn.

It-terminals kollha bejn il-ferrovija u t-toroq huma konnessi mal-ferrovija u mat-triq b'ta l-inqas binarju wieħed tal-ferrovija jew korsa waħda tat-triq biex dan il-kriterju fundamentali jkun milħuq. L-indikaturi l-oħra, bħal provista tal-fluss ta' informazzjoni, ma jistawx jiġu analizzati mingħajr l-involviment tal-managers tal-infrastruttura u l-klijenti tagħhom. Il-mistoqsija prinċipali li trid tiġi diskussa mal-operaturi tat-terminals hi jekk huma jipprovdux dawn is-sistemi informattivi jew jekk humiex lesti li jaqsmu din it-tip ta' informazzjoni speċjalment f'*real-time*, u ma' min. Din trid issir bl-involviment tal-partijiet ikkonċernati fl-2015.

Studju fuq is-suq ta' diversi mezzi ta' transport

Fl-2010, l-aħħar sena li għaliha hemm informazzjoni diżaggregata, it-traffiku tal-merkanzija internazzjonali fuq il-Corridor kien ta' 129 miljun tunellata bil-baħar, li minnhom 59.9 miljun tunellata kienu bejn il-portijiet prinċipali, 50.3 miljun tunellata fuq l-art u 36 miljun tunellata bil-ferrovija.

Dan l-istudju (Multimodal Transport Market Study - MTMS) jaspira li jippresenta stampa aktar ċara tas-sitwazzjoni attwali u futura tas-suq tat-trasport għal l-ScanMed Corridor, ibażat fuq riċerka estensiva, rapporti u previżjonijiet, analiżi tas-suq u tan-nodes fil-Corridor li joħorġu minn databases eżistenti, kif ukoll informazzjonu oħra ipprovduta minn managers tal-infrastruttura, ministeri fl-iStati Membri u partijiet oħra. Dan jiżvela ammont ta' informazzjoni komprensiva li eventwalment ġiet miġbura, editjata, u inkluża fi skala ikbar fl-iżvilupp tat-traffiku fl- ScanMed Corridor. Dan wassal biex jiġu identifikati s-sezzjonijiet fil-Corridor li se jkollhom l-akbar volum ta' transport fis-sena 2030. Fir-rigward tal-ferroviji, kemm tal-passiġġieri u tal-merkanzija, il-linji huma: Mjölby – Malmö, Göteborg – Malmö, Malmö – København – Taulov, Bremen/Hamburg – Hannover – Würzburg, München – Innsbruck u Bologna –

Firenze – Roma – Napoli. L-akbar volum ta' traffiku huwa fuq is-sezzjonijiet Lübeck – Hamburg, Hamburg/Bremen – Hannover, Würzburg – Nürnberg – München u Firenze – Roma.

Il-paragun bejn il-volumi tat-traffiku u l-ammont li n-network mistenni jiflaħ fl-2030, tiffaċilita l-identifikazzjoni ta' konġestjoni u bottlenecks li jistaw jillimitaw iż-żieda ta' trasport tal-passiġġieri u tal-merkanzija fil-futur. Dawn jistaw jinstabu l-aktar:

- fil-Finlandja għall-ferrovija: Kouvola – HaminaKotka, Luumäki – Vainikkala, Helsinki node, Helsinki – Turku; u għat-toroq: regjuni f' Turku u Helsinki u Koskenkylä – Kotka – Hamina – Vaalimaa;
- fl-Iżvezja għall-ferrovija15: (Stockholm u Göteborg node, Hässleholm – Lund, Trelleborg – Malmö (- København);
- fid-Danimarka għall-ferrovija: ir-reġjun ta' (Malmö-) København
- fil-Ġermanja għall-ferrovija2: Bremen/Hamburg - Hannover, Würzburg - Nürnberg, München; u għat-toroq: reġjuni f'Hamburg, Hannover u München kif ukoll is-sezzjoni Würzburg – Nürnberg;
- fl-Italja għall-ferrovija – ibbażata fuq l-informazzjoni pprovduta minn RFI: Verona – Ponte Gardena sa tlestija tal-aċċess kollu tal-linji għal Brenner Base Tunnel; Firenze - Livorno/La Spezia relatati mal-iżvilupp tat-traffiku fil-portijiet; ser ikun hemm ukoll ftit restrizzjonijiet fit-traffiku taż-żoni urbani.
- F'Malta għall-konnessjoni bejn il-port, l-ajurport u l-belt kapitali.

Fl-Austria, ma hemm l-ebda problemi ta' volum irrapurtati, wara li tlestew il-progetti ta' infrastruttura.

Objettivi

Artiklu 4 tar-regolament (EU) 1315/2013 jiddiskrivi l-objettivi tan-network trans-Ewropew, li ser isaħħaħ il-koeżjoni soċjali, ekonomika u territorjali fl-Unjoni Ewropea. L-għan prinċipali hu biex tiġi żviluppata żona waħda ta' trasport Ewropew, li tkun effiċjenti u sostenibli, biex b'hekk jiżdiedu l-benefiċji għall-pubbliku u jissawwar tkabbir inkluživ. L-iStati Membri qablu mal-lista mgħurija hawn taħt dwar l-objettivi speċifiċi ta' kull *Corridor*, li jridu jiġu implimentati fl-*ScanMed Corridor* sa s-sena 2030, taħt il-provvedimenti ta' Artiklu 1(4) tal-Regolamenti (EU) 1315/2013.

[15] Skond BMVI bl-email datata 17.10.2014 l-identifikazzjoni finali tal-kongesstjoni hija suġġet għall-investigazzjonijiet tal-*Federal* Infrastructure *Plan*, li se jkun lest fl-2015.

Mezz ta' Trasport	Objettiv
Ferrovija	Eletrifikazzjoni Kompluta
	Tgħabija tal-fus 22.5t
	Veloċita' ta' l-inqas 100km/hr
	740m ferroviji tal-merkanzija
	ERMTS implementata kollha
	Spazju fiss ta' 1435mm bejn il-linji tal-ferrovija għal-linji ġodda
Toroq	Toroq jew motorway express
	Sistemi intelliġenti ta' trasport (ITS)/ sistemi ta' ħlas
	Zoni ta' parkegg kull 100km, tal-inqas
	Infrastruttura għal fjuwil alternattiv
Ajruporti	Terminals miftuħa għall-operaturi kollha
	Infrastruttura għall-immaniġjar tat-traffiku fl-ajru, SESAR
	Infrastruttura għal fjuwil alternattiv
	Ajruporti prinċipali konnessi ma' network tal-ferrovija (high-speed)
Trasport Marritimu, Portijiet, MoS	Konnettivita mal-ferrovija, toroq, IWW (fejn possibli)
	Infrastruttura għal fjuwil aternattiv
	Faċilitajiet għal-iskart iġġenerat mil-vapuri
	VTMIS, SafeSeaNet, servizzi elettorniċi Marittimi
Mezzi differenti ta' trasport (multimodal)	Il-mezzi kollha tat-trasport konnessi fit-termals tal-merkanzija, fl-istazzjonijiet tal-passiġieri, fl-ajruport u fil-portijiet marittimi
	Informazzjoni real-time fit-terminals tal-merkanzija, fil-portijiet marittimi u fl-ajruporti tal-merkanzija
	Tagħmir suffiċjenti tat-trasbord fit-terminals tal-merkanzija
	Traffiku kontinwu tal-passiġġieri permezz ta' apparat u applikazzjonijiet telematiċi ġewwa l-istazzjonijiet tal-ferrovija, stazzjonijet tal-coaches, ajruporti u portijiet marittimi.
Objettivi ambjentali	F'sezzjonijiet partikolari tal-Corridor, valuri speċifiċi aktar iddetaljati minn dawk imsemmija fir-Regolamenti tat-TEN-T, jistaw jiġu identifikati minn Stati Membri skond il-ligi Ewropea

Objettivi tal-ScanMed Corridor

Lista ta' Proġetti

Il-lista twila ta' proġetti konklużi mill-analiżi ta' dokumenti, rapporti, studji, pjanijiet ta' żvilupp nazzjonali, *compliance analysis* u l-identifikazzjoni ta' "kwistjonijiet kritiċi", ġiet iċċekjata u konkluża mill-iStati Membri u l-partijiet ikkonċernati. L-informazzjoni li rċieva l-Konsorzju sat-28 ta' Novembru 2014 fir-rigward tal-oqsma tal-informazzjoni meħtieġa, kienu inklużi fil-lista indikattiva. Il-Konsorzju iċċekja l-proġetti fir-rigward tal-kriterj li jikkaratterizzhom, u li jagħmilhom "kwistjonijiet kritiċi" u jekk humiex fost is-sezzjonijiet u l-progetti identifikati qabel skond ir-Regolament (EU) 1316/2013, Annex 1 u l-lista li ġiet aġġornata rispettivament.

Il-lista attwali tal-proġetti ta' l-ScanMed Corridor tinkludi madwar 394 progett u miżuri ppjanati jew diġa mibdija, bi spiża totali ta' madwar 144.6 biljun Ewro. Is-sezzjonijiet li diġa' huma identifikati biss jammontaw għal 115 proġett b'valur totali ta' 76.3 biljun Ewro. It-tabella li jmiss tipprovdi ħarsa ġenerali tal-ammont ta' proġetti skond is-sezzjoni u l-mezz ta' trasport.

PajjiŻ	Ferrovij a	Ferrovij a +aktar	Toroq	Toroq +aktar	Port marittim u	Port marittim u +MOS	MoS	Ajrupor t	RRT	Oħrajn	Total
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Numru ta progetti skond il-me ta' transport u l-pajjiż (*Diverse* = proġett f'diversi pajjiżi, Oħrajn = Mezzi differenti ta' trasport u Sistemi ta' Trasport Intelliġenti, RRT = Terminals bejn il-ferrovija u toroq)

1 Information on the Study as such

1.1 Aim and Organisational Structure (KombiConsult)

Particular transport infrastructure throughout the European Union (EU) and of international importance forms the trans-European transport network (TEN-T). This network aims at fostering the social, economic and territorial cohesion of the EU and should inure to the benefit of its population.

Practically, TEN-T consists of two layers. The basis is built by the comprehensive network; a subset thereof is called the "core network". In general, the objectives for these two layers are the same, only the time horizon reflects a prioritisation: Whereas the core network has to be implemented by the year 2030, the comprehensive network should be realised by 2050.

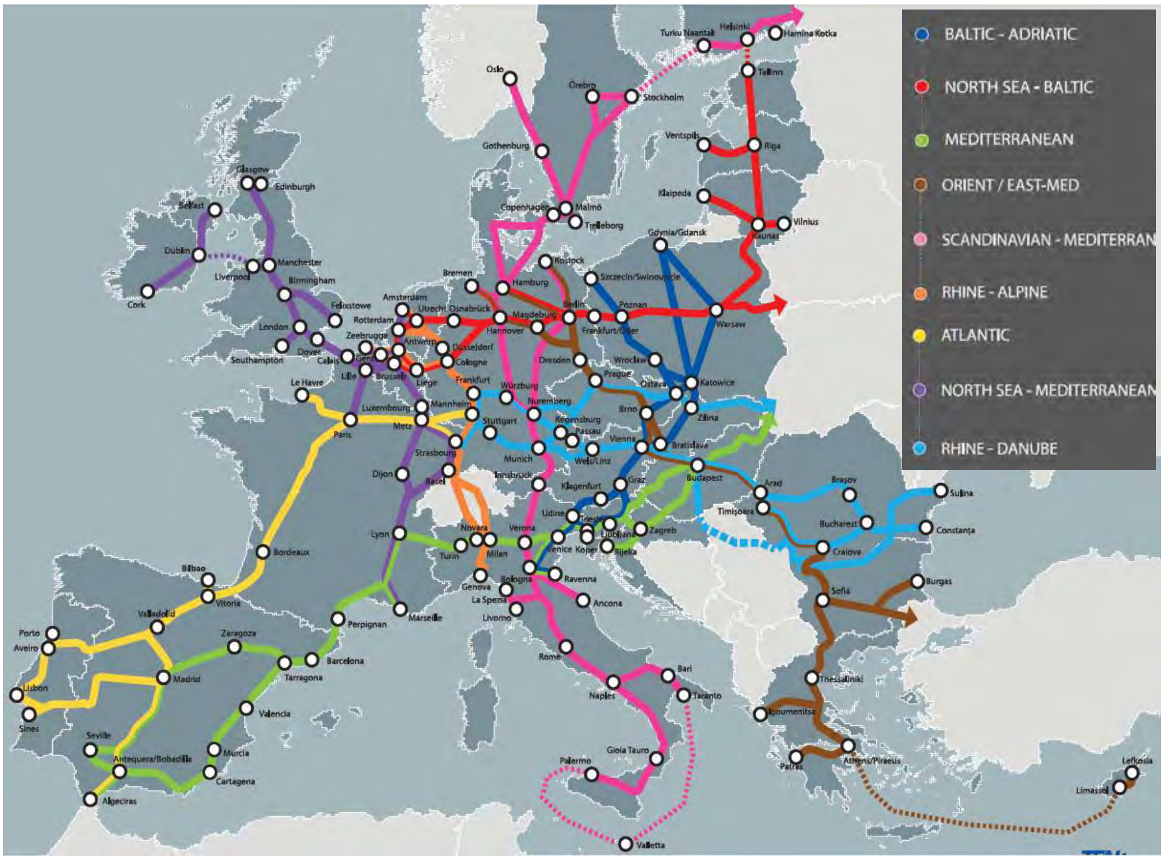
Within the core network, special attention is given to nine corridors, the so-called "core network corridors" (CNC), which are the new implementation tool of the TEN-T Guidelines.[16] An overview of the corridors as defined in Regulation (EU) 1316/2013 is shown in Figure 1. Therein, the magenta line symbolises the Scandinavian-Mediterranean core network corridor (ScanMed Corridor).

Each corridor is headed by a European Coordinator. In the case of ScanMed, this function is held by Mr. Pat Cox who was appointed on 12th March 2014 and was previously coordinator for the TEN-T Priority Project No. 1 – the high capacity railway axis Berlin-Verona / Milano-Bologna-Napoli-Messina-Palermo – since 2010, before the CNC entered into force.

However, the new corridors are much more extensive in scope and nature than the Priority Projects and other corridor instruments preceding them (e.g. Pan-European Corridors) or run in parallel (e.g. Rail Freight Corridors, "Green Corridors"). The core network corridors are an instrument established to:

- support the implementation of the core network;
- synchronize investments in order to optimise network benefits;
- be or become "multimodal", involving at least three Member Sttes;
- involve stakeholders; and
- co-operate also with the appointed coordinators for European Rail Traffic Management System (ERTMS), Mr. Karel Vinck, and Motorways of the Sea (MoS), Mr. Brian Simpson.

[16] Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network; Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility.



European Commission; http://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/site/en/maps.html

Figure 1: TEN-T core network corridor overview map

The new set-up has to be inclusive also in its stakeholder approach within the Commission, with the Member States, with the infrastructure managers, local and regional authorities, transport users and civil society. The implementation of the core network corridors is therefore accompanied by the Member States and other stakeholders selected by the Member States who are working in the Corridor Forum.

The main tasks of the Corridor Forum, as a consultative body to the European Coordinator, are to:

- provide access to relevant data, information and projects relevant for the analysis; and,
- actively contribute to establish the corridor work plan by the end of 2014, which is the central output of the first year.

The European Coordinator and the Member States in the Corridor Forum are supported by consultancy firms contracted by the European Commission. For the study of the ScanMed Corridor, the Commission accepted the tender of a consortium of seven companies; namely:

- KombiConsult GmbH, Frankfurt am Main, as lead partner;
- Gruppo CLAS S.p.A., Milano;
- HaCon Ingenieurgesellschaft mbH, Hannover;

- Prognos AG, Basel;
- Ramboll Management Consulting A/S, København;
- Snizek + Partner Verkehrsplanungs GmbH, Wien; and,
- UNICONSULT Universal Transport Consulting GmbH, Hamburg.

The main tasks of the contractors are:

- fact finding,identification of stakeholders, gathering and review of existing studies and materials, introduction of infrastructure parameters in TENtec;
- support for the meetings of the Corridor Forum; and,
- preparation of the work plan to be presented to the Corridor Forum and to be adopted by the Member States at a later stage.

The contract[17] between the European Commission and the contractors defines these works in detail. The responsibilities for the single tasks are illustrated in the following diagram (Figure 2).

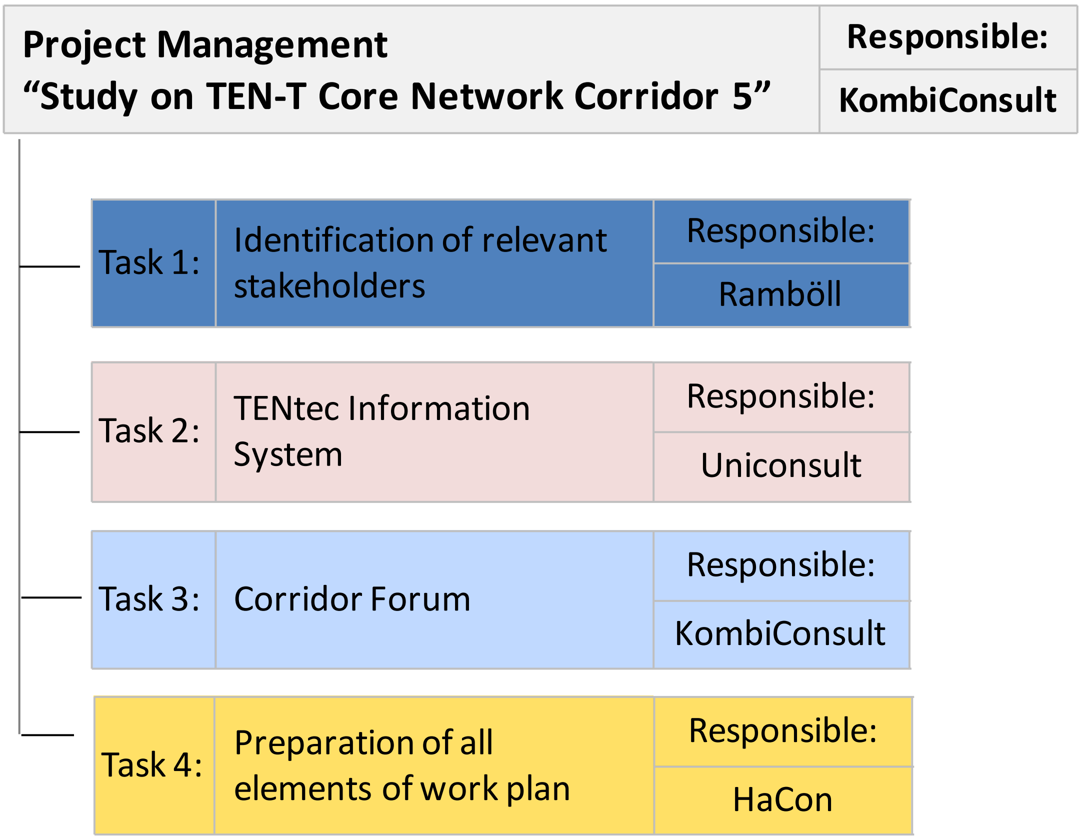


Figure 2: Breakdown of the tasks assigned to the contractors of the ScanMed Corridor

These tasks and the corresponding work packages (WP) are carried out in accordance with a jointly agreed time schedule (see Figure 3). The draft final work plan has been sent to the stakeholders, was presented and finally discussed in the 4th Corridor

[17] Contract N° MOVE/B1/FV2012-573/Study on Scandinavian-Mediterranean TEN-T Corridors/ LOT 5/SI2.669456.

Forum Meeting. The present Final Report includes comments received by the 28 November 2014.

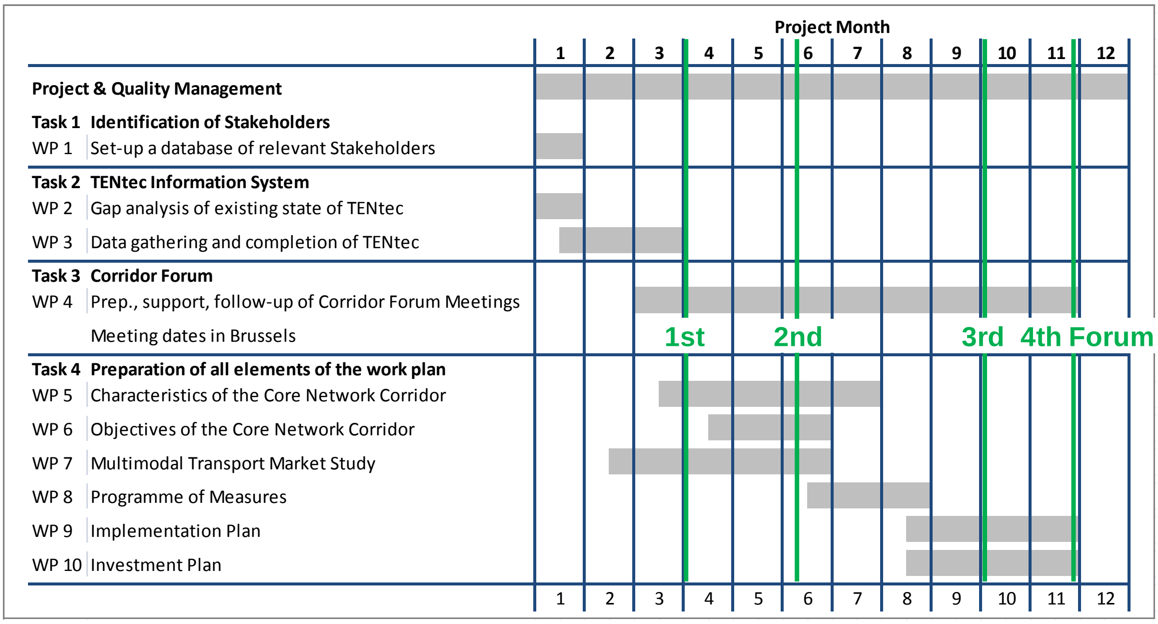


Figure 3: Scheduling of tasks and work packages

1.2 Definition of the Corridor (KombiConsult)

1.2.1 General Alignment

The longest of all TEN-T core network corridors, the ScanMed Corridor, links the major urban centres in Germany and Italy to Scandinavia (Oslo, København, Stockholm and Helsinki) and the Mediterranean (Italian seaports, Sicily and Malta). It represents a crucial axis for the European economy, crossing almost the entire continent from North to South.

The ScanMed Corridor regions and thus the corridor itself constitute an important socio-economic area within the European Union. In 2011, the ScanMed corridor regions include a population share of almost 23% of the EU 28. While comprising approximately 16% of the European territory, the ScanMed Corridor regions generated more than 27% of the European economic output (GDP) and thus outreached the European average GDP per capita with a value of more than 30.000 € per capita (see Table 1).[18]

[18] Data of Eurostat; calculations by Prognos and KombiConsult.

	Area (km²)	Inhabitants	GDP (million €)
EU28	4.383.136	504.990.610	12.675.264
ScanMed Corridor regions	687.323	113.975.409	3.478.339
	15,7%	22,6%	27,4%

Table 1: Socio-economic indicators of ScanMed Corridor

The cartogram[19] in Figure 4 shows the corridor's schematic alignment and its core nodes according to TEN-T and CEF-Regulations.

As defined in Regulation (EU) 1316/2013, Annex I, Part 1, the corridor consists of several branches which can be split into main sections as listed in Table 2. In that table, information on their overlapping with the Scandinavian-Mediterranean Rail Freight Corridor (RFC3), former Priority Projects (PP) as well as the maritime character of respective sections is included.

Similar to the cartogram, sections belonging to other corridors beside ScanMed have also been indicated, as follows:

- Bremen – Hannover (North Sea–Baltic and Orient/East-Med)
- Würzburg – Nürnberg (Rhine–Danube)
- Rostock – Berlin (Orient/East-Med)

[19] To enable an impression of the whole corridor, this non-scale kind of illustration does not map the corridor infrastructure exactly, and not all connections between corridor nodes are shown. For detailed routing per mode of transport, see Chapter 1.3.2.

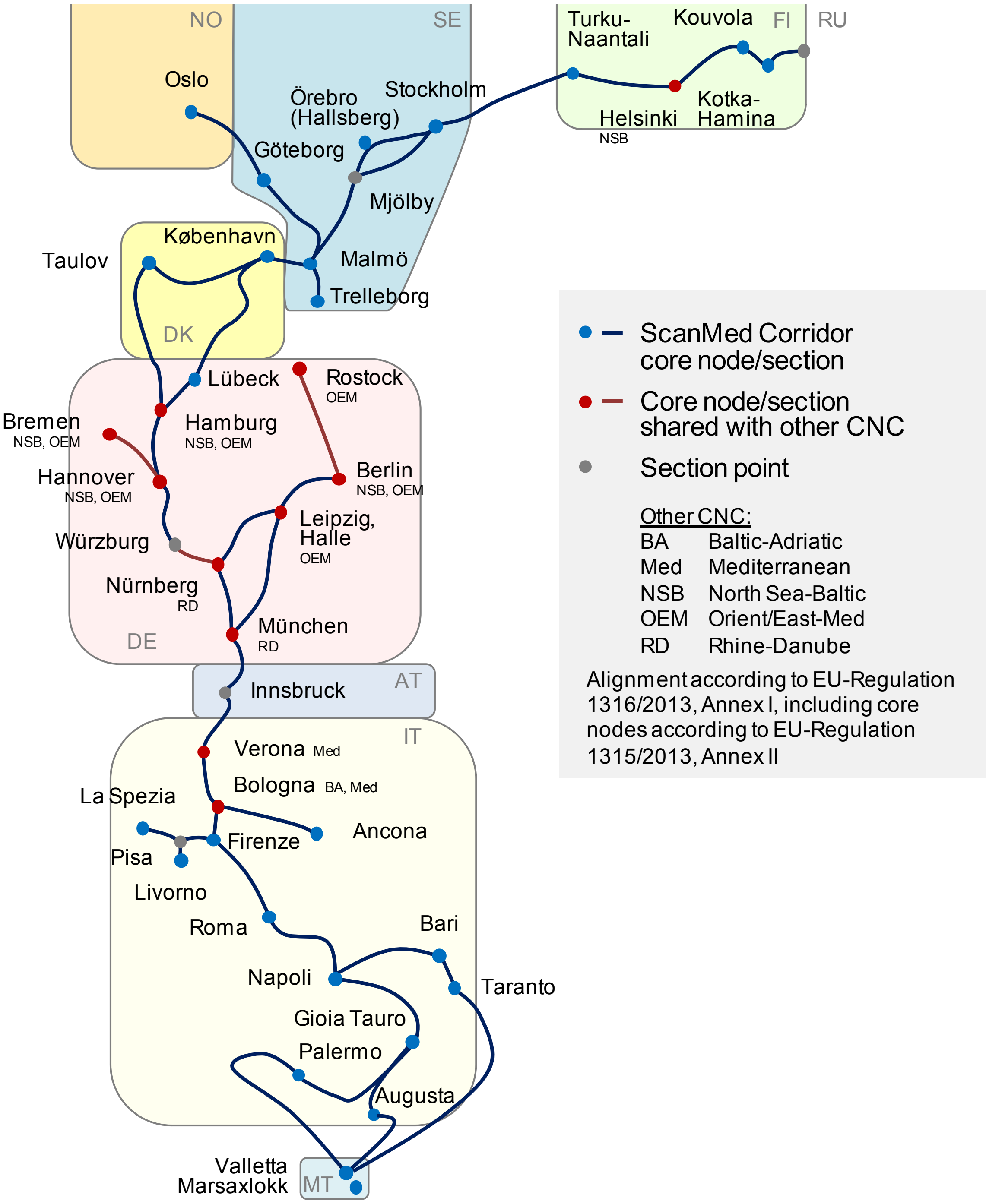


Figure 4: General alignment (cartogram) of ScanMed Corridor

Country	Section name	Maritime section / Priority Project (PP) / Rail Freight Corridor (RFC)**	Shared with other core network corridor
FI	RU border – Hamina/Kotka	Nordic Triangle rail/road (PP 12)	
	Hamina/Kotka - Helsinki	PP 12	
	Helsinki - Turku/Naantali	PP 12	
FI/SE	Turku/Naantali - Stockholm	Maritime section	
SE	Stockholm - Malmö	PP 12, RFC 3	
NO/SE	Oslo - Göteborg	PP 12	
SE	Göteborg - Malmö	PP 12, RFC 3	
	Malmö - Trelleborg		
SE/DK	Malmö - København	Öresund Strait rail/road (PP 11), RFC 3	
DK	København - Kolding (Taulov)	RFC 3	
DK/DE	Kolding (Taulov) - Hamburg	RFC 3	
DK/DE	København - Lübeck	Fehmarn Belt railway axis (PP 20), RFC 3	
DE	Lübeck - Hamburg	PP 20, RFC 3	
	Hamburg - Hannover	PP 20, RFC 3	
	Bremen* - Hannover	PP 20	North Sea-Baltic, Orient/East-Med
	Hannover - Würzburg	RFC 3	
	Würzburg - Nürnberg	RFC 3	Rhine-Danube
DE	Rostock - Berlin		Orient/East-Med
	Berlin - Leipzig	Railway axis Berlin..Palermo (PP 1)	
	Leipzig - München		
DE	Nürnberg - München	PP 1, RFC 3	
DE/AT	München - Innsbruck	PP 1, RFC 3	
AT/IT	Innsbruck - Verona	PP 1, RFC 3	
IT	Verona - Bologna	PP 1, RFC 3	
	Bologna - Ancona	RFC 3***	
	Bologna - Firenze	PP 1, RFC 3	
IT	Livorno - Firenze	RFC 3***	
	La Spezia - Firenze	RFC 3***	
	Firenze - Roma	PP 1, RFC 3	
	Roma - Napoli	PP 1, RFC 3	
	Napoli - Bari	RFC 3***	
	Bari - Taranto	RFC 3***	
IT/MT	Taranto - Valletta	Maritime section	
IT	Napoli - Gioia Tauro	PP 1, RFC 3	
	Gioia Tauro - Palermo	PP 1, RFC 3	
IT/MT	Palermo - Valletta	Maritime section	
IT	Gioia Tauro - Augusta	RFC 3***	
IT/MT	Augusta - Valletta	Maritime section	

* Wilhelmshaven and Bremerhaven as well as their connection to Bremen are explicitly not part of ScanMed according to Regulation (EU) 1316/2013, although they have an important functional relation to the corridor.
** Rail Freight Corridor 3 = Rail Freight Corridor Scandinavian-Mediterranean, preliminary alignment will be defined after its transport market study has been completed and adopted by its implementation bodies.
*** Identification that section belongs to RFC 3 was added by RFI after the 2nd Progress Report.

Table 2: Main branches and sections of ScanMed Corridor

Along with the sections, the corridor is punctuated by special infrastructure within core nodes. The following categories of nodes are differentiated:

- airports,
- maritime and inland ports,
- rail-road terminals (RRT).

Due to the fact that inland waterways are not subject of the analysis of this corridor, the Commission and Member States consequently agreed to disregard inland ports from the analysis.

Another special type of node is the "urban node", defined as an "urban area where the transport infrastructure of the trans-European transport network, such as ports including passenger terminals, airports, railway stations, logistic platforms and freight terminals located in and around an urban area, is connected with other parts of that infrastructure and with the infrastructure for regional and local traffic." (Regulation (EU) 1315/2013, Article 3 (p)). This term confirms the importance of certain nodes regarding multimodal integration and as access points to the corridor's 'hinterland'. Urban nodes of the core network of the ScanMed Corridor are displayed in Figure 5, according to Regulation (EU) 1315/2013, Annex II.

Table 3 shows the compilation of ScanMed core nodes and their categories according to Regulation (EU) 1315/2013, Annex II. The nodes shared with other corridors are:

- Helsinki (North Sea–Baltic);
- Rostock (Orient/East-Med);
- Hamburg, Bremen, Berlin, Hannover (North Sea–Baltic and Orient/East-Med);
- Leipzig, Halle (Orient/East-Med);
- Nürnberg, München (Rhine-Danube);
- Verona (Mediterranean); and,
- Bologna (Baltic–Adriatic and Mediterranean).

The Commission and the consortia agreed upon a work share for these nodes, as well as sections that are included in more than one corridor. Accordingly, each consortium shall analyse every section and node belonging to its respective corridor, leaving only the final input of data into the TENtec Information System to be performed by one contractor consortium per shared entity.

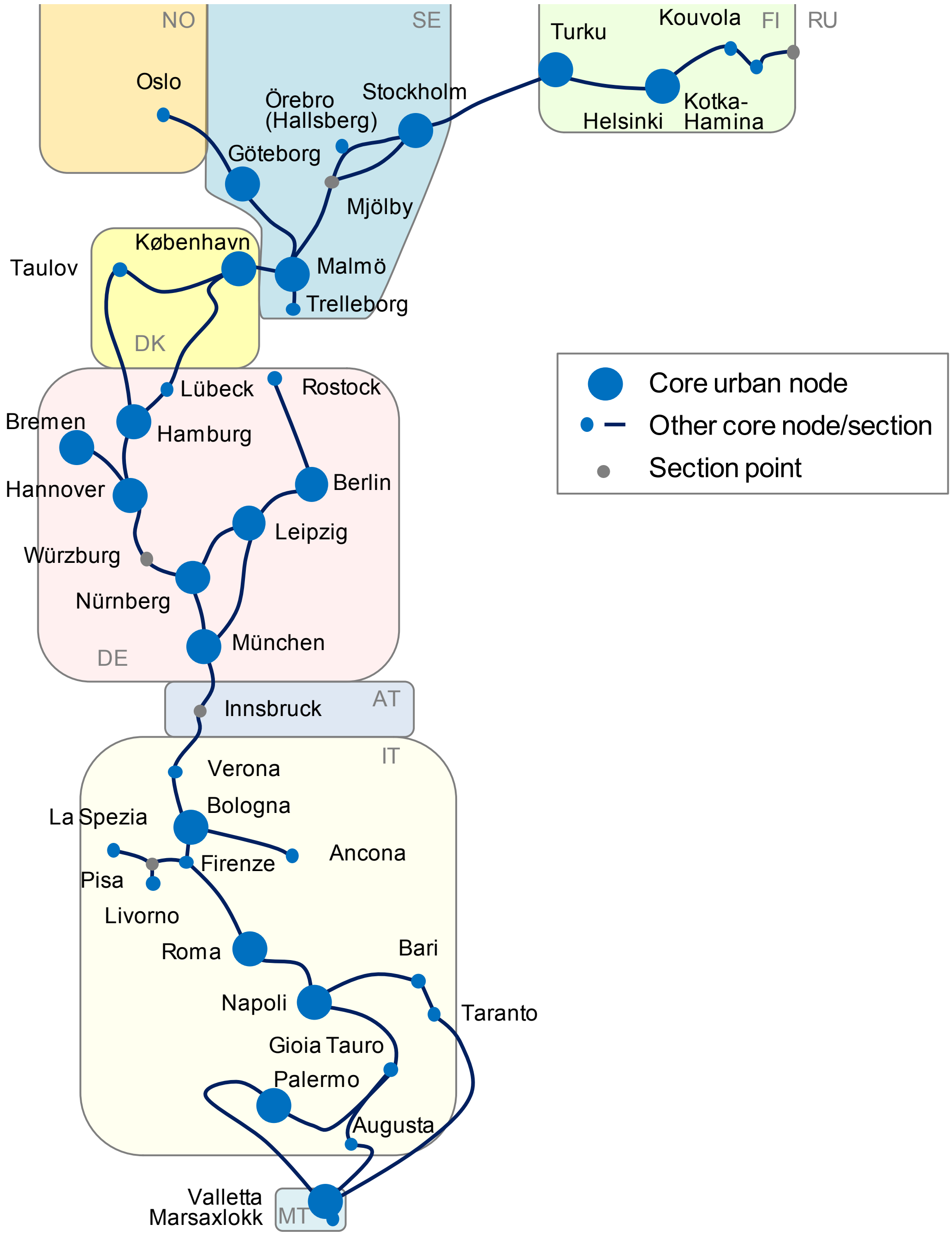


Figure 5: Urban nodes of ScanMed Corridor

Country	Node name	Airport	Maritime Port	Inland Port	RRT	Shared with other core network corridor
FI	Kotka-Hamina		HaminaKotka**			
	Kouvola				x	
	Helsinki*	Vantaa	x			North Sea-Baltic
	Turku*-Naantali	Turku	Turku, Naantali			
SE	Stockholm*	Arlanda	x	x	x (Arsta, Stockholm North)**	
	Örebro				Hallsberg	
	Malmö*	x Sturup	x		x	
	Göteborg*	Landvetter	x	x	x	
	Trelleborg		x		x	
NO	Oslo	x	x	x	x	
DK	København*	Kastrup	x		x (Taastrup)**	
	Taulov				x	
DE	Rostock		x		x	Orient/East-Med (OEM)
	Lübeck		x	x	x	
	Hamburg*	x	x	x	x	North Sea-Baltic + OEM
	Bremen*, Bremerhaven	Bremen	Bremen	Bremen	Bremen	North Sea-Baltic + OEM
	Berlin*	BBI (BER)		x	Großbeeren	North Sea-Baltic + OEM
	Hannover*	x		x	x	North Sea-Baltic + OEM
	Leipzig*, Halle	Leipzig-Halle			Schkopau, Wahren	OEM
	Nürnberg*	x		x	x	Rhine-Danube
	München*	x			Riem	Rhine-Danube
IT	Verona				x	Mediterranean (Med)
	Bologna*	x			x	Med + Baltic-Adriatic
	Ancona		x		Iesi	
	Firenze				Prato	
	La Spezia		x			
	Livorno		x		Guasticce Collesalvetti	
	Roma*	Fiumicino			Pomezia	
	Napoli*	Capodichino	x		Nola, Marcianise-Maddaloni	
	Bari		x		x	
	Taranto		x			
	Gioia Tauro		x			
	Palermo*	x	Palermo, Termini Imerese terminal			
	Augusta		x			
MT	Valletta*	Malta-Luqa	x			
	Marsaxlokk		x			
Wilhelmshaven and Bremerhaven are explicitly not part of ScanMed Corridor; * Urban Node according to Regulation (EU) 1315/2013, Annex II; ** Names clarified by the Member State.						

Table 3: Nodes of ScanMed Corridor

1.2.2 Considered Modes of Transport

With respect to their network length, rail and road are the major modes of transport on ScanMed Corridor. As shown in Table 2, large parts of the corridor's alignment coincide with Rail Freight Corridor 3[20] (almost congruent with ERTMS Corridor B) and also with former TEN-T Priority Projects for improving rail and road connections; namely:

- Priority Project 1: "Railway axis Berlin-Verona/Milano-Bologna-Napoli-Messina-Palermo", which is ongoing;
- Priority Project 11: "Öresund Fixed Link" to connect Malmö and København directly by rail and road, which was completed and opened in the year 2000;
- Priority Project 12: "Nordic Triangle railway/road axis"; and,
- Priority Project 20: "Fehmarn Belt railway axis", which is an extension of the Öresund crossing and the Nordic Triangle. Besides constructing a tunnel to ease crossing the Fehmarn Belt by rail and road, it foresees the upgrade of the railway connection København-Hamburg-Bremen/Hannover.

The corridor also has a maritime dimension, first via ports connected to it and second through sections crossing the sea. Four sections result from the definition of the alignment and are explicitly mentioned in the schematic overview map of the TEN-T core network corridors[21]. These shall not be confused with Motorways of the Sea (see below) and maritime services (short sea shipping, ferry and other regular services) between the ports of the corridor and between corridor ports and other ports (aligned with other core network corridors, the core network, the comprehensive network, third countries and other parts of the world).

Since several statements were made both from ports and ‘maritime regions’ on the importance of “Motorways of the Sea” after the 3rd Corridor Forum meeting[22] we offer for clarification that not each ship connecting two ports make the link a “Motorway of the Sea” and that only projects which received the “MoS”-Label by the European Coordinator or which receive a funding decision by INEA are “MoS” according to the Regulations (EU) 1315/2013 and 1316/2013. On the other hand, it is to be highlighted that MoS and other services via sea are an integral part of transport in Europe since they connect the core network corridors to each other, the core and comprehensive network, as well as third countries and other parts of world.

To illustrate the utmost concern of some stakeholders and their requirement to consider maritime sections in the ScanMed Corridor even if these connections do not

[20] Since 2014 the official name of this Rail Freight Corridor is "Scandinavian-Mediterranean" analogue to the CNC. To avoid misunderstanding and ease reading, the old term "RFC 3" is used in this report.

[21] European Commission: http://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/site/en/maps.html

[22] Among others by Copenhagen Malmö Port on 08.10.2014, Region Skane on 10.10.2014, Swedish Transport Administration on 17.10.2014 to name but a few.

match the official alignment of the corridor, a statement from Port of Trelleborg sent by e-mail on 21 November 2014 is quoted below:

"Some sections show scheduled traffic carrying big and stable volumes of freight and passengers between two or more ports, which form bridgeheads for those sections. Such sections should therefore be indicated in the same way as rail and road links irrespective of wether the alignment of the Corridor indicates such a link or not. This is the case regarding for instance the sea links between Trelleborg and Rostock and Trelleborg and Lübeck."

For this issue, clarification by the Commission and Member States is needed. If it is wanted to include more maritime sections than yet defined in the Regulation (EU)1316/2013, a selection process would be mandatory regarding the numerous existing connections, e.g. in the Baltic Sea (see Figure 6).

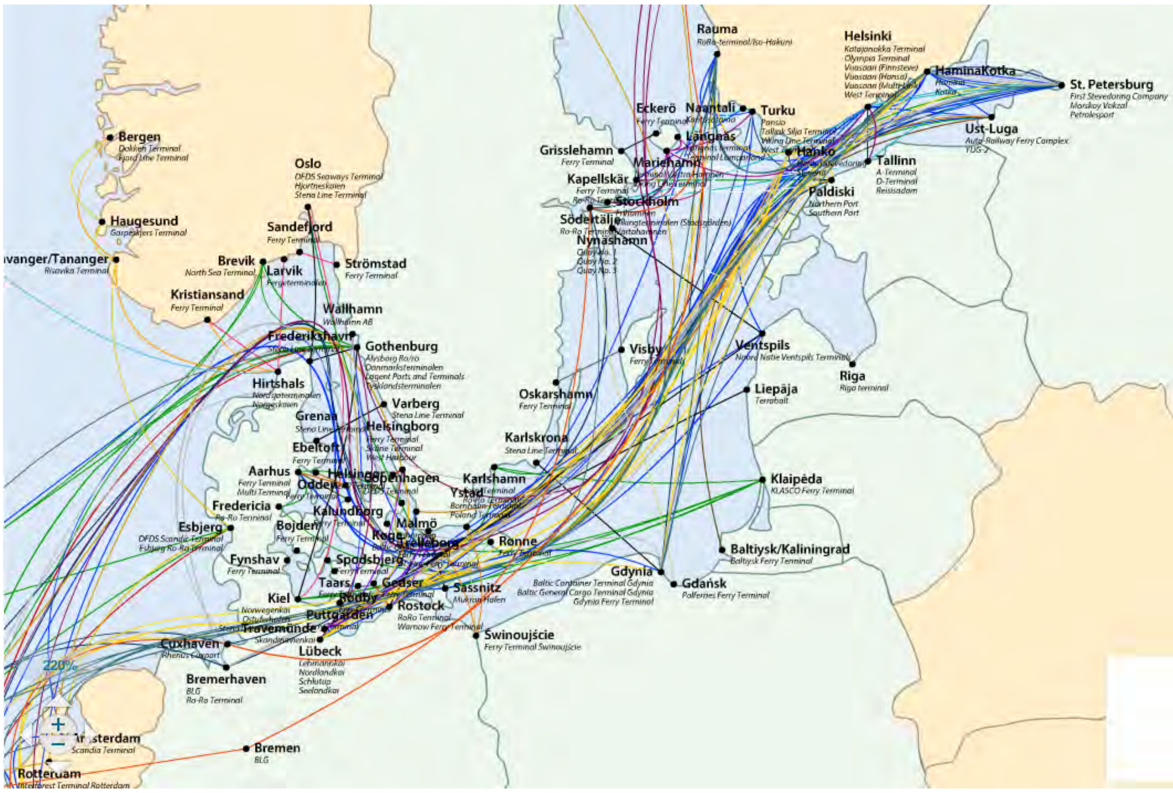


Figure 6: Maritime connections in operation in the Baltic Sea[23]

[23] http://www.baltictransportmaps.com/contmap/mapa/theme/flash/mapa.swf

However, transport via sea was included in the Multimodal Transport Market Study.

There is a particular case with Wilhelmshaven, the newly built, single deep-sea port in Germany, and in particular Bremerhaven. Bremerhaven and Bremen are separate municipalities, but one core node of the TEN-T. Bremerhaven and Bremen together form the German Federal State of Bremen. Bremen is the sixth largest port in Germany by tonnage(with a focus on bulk cargo) with an annual throughput volume of 12.6 million tons (2013). Bremerhaven is the largest port in Europe in terms of automobile handling (2.2 million automobiles in 2013) and fourthe largest in terms of container transport (5.8 million TEU in 2013). Bremerhaven could be regarded as a “good practice” with respect to the container hinterland transport by rail which increased from 35.9% in 2004 to 46.6% in 2013, while the absolute container volume transported by rail more than doubled to 1.05 million TEU (2013). Bremerhaven is connected to Bremen (by rail and road) by a distance of about 70 km.[24] However, the Regulation (EU) 1316/2013 which defines the ScanMed Corridor does not include Bremerhaven and Wilhelmshaven so that for the current analysis both ports are not included in ScanMed; instead, they are categorized in the North Sea-Baltic and Orient/East-Med Corridors. All analyses and potential projects can be formally included in these corridors.

Maritime sections and ports are related to “Motorways of the Sea” which are based on Priority Project 21 (see Figure 7). The definition of MoS is quite complex - they consist of short-sea routes, ports, associated maritime infrastructure, equipment and facilities as well as simplified administrative formalities enabling short-sea shipping or sea-river services to operate between at least two ports, including hinterland connections. MoS are coordinated “horizontally” by a European Coordinator, Mr. Brian Simpson.

The following diagram illustrates the geographic dimension of the MoS concept.

[24] Free Hanseatic Town of Bremen, e-mail of 16.10.2014.

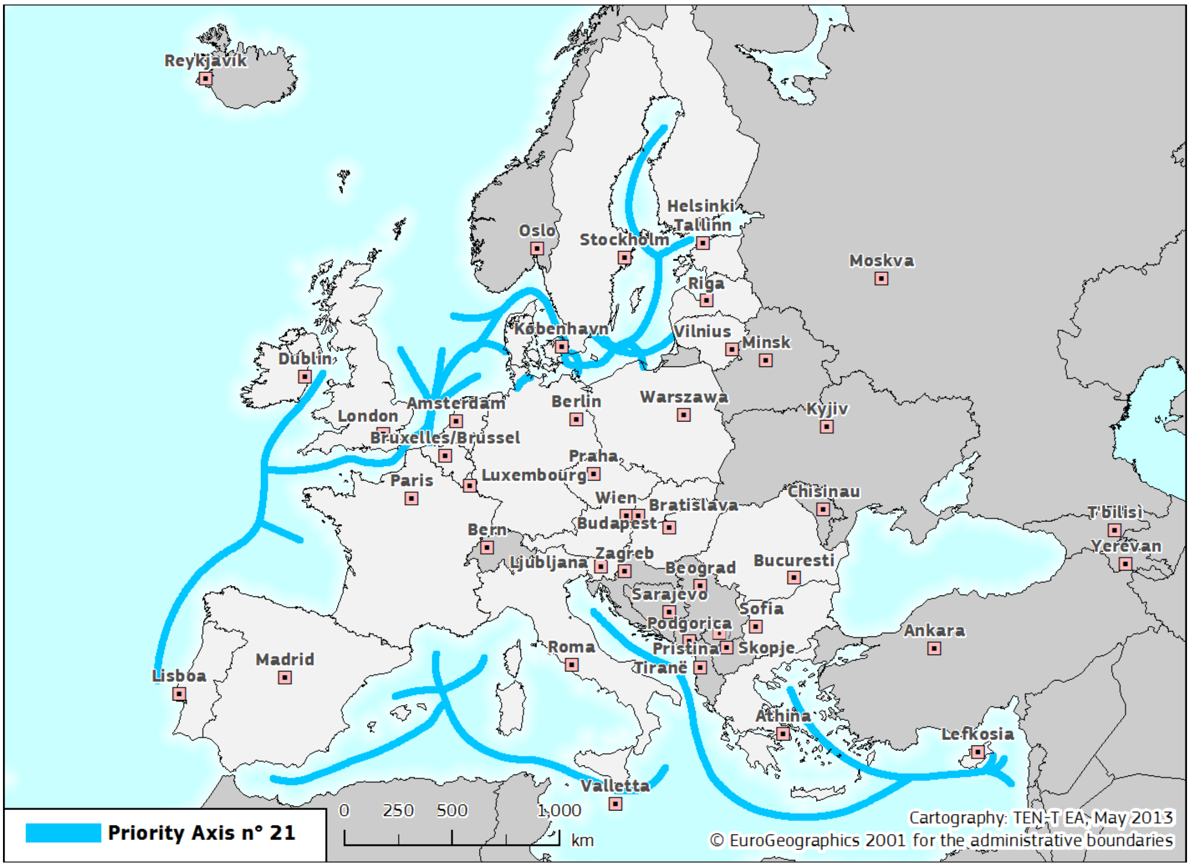


Figure 7: Motorways of the Sea according to TEN-T Priority Axis 21 (INEA)

The Motorways of the Sea (MoS) projects awarded by INEA and provided on their website have been analysed.[25] There are several MoS-Projects which are entirely (Rødby-Puttgarden) or partially covering the ScanMed Corridor since they are related to the Baltic Sea, North Sea and Mediterranean Sea which are, as regards the ports and maritime sections between them, also part of ScanMed corridor analysis. The following table (Table 4) presents an overview of these MoS which are at least partly related to ScanMed.

[25] INEA - CEF Transport - Motorways of the Sea (www.mos-helpdesk.eu), access on 17.10.2014.

Section/ node or other geography	Short title and INEA ID	Beneficiaries	Objectives
Rødby - Puttgarden	Sustainable Traffic Machines - On the way to greener shipping (2012-EU-21023-S)	Scandlines Deutschland GmbH, Scandlines Danmark A/S	Installation of hybrid propulsion and exhaust gas cleaning solutions on 2 RoPac vessels deployed on the aforementioned link Rødby - Puttgarden
Baltic Sea, Mediterranean Sea	Monalisa 2.0 (2012-EU-21007-S)	Swedish Maritime Administration	Strengthen efficiency, safety and environmental performance of maritime transport, reducing administrative burden, Studies include Sea Traffic Management testings, maritime route exchange through common interface & data format.
Baltic Sea	Winter Navigation Motorways of the Sea, WINMOS (2012-EU-21008-M)	Swedish Maritime Administration Finnish Ministry of Transport, Image Soft Oy, Yrkeshögskolan Novia, ILS Oy, Aaalto-korkeakoulusäätiö, Aker Artctic Technology Oy, Ilmatieteen laitos	Develop efficient maritime transport during winter. Developing and adapting winter navigation system, piloting new fuel injection technique, upgrading existing Icebreaking Management System.
Baltic Sea	LNG Bunkering Infrastructure Solution and Pilot actions for Ships operating on the Motorway of the Baltic Sea (2012-EU-21009-M)	Preem AB Skangass AB Rederi AB Donsötank AB Sirius Rederi AB Erik Thun AB Lloyds Register EMEA Furetank Rederi AB Öresund Drydocks AB SSPA Sweden AB Fartygskonstruktioner AB Sveriges Rederiservice AB	Three pilot actions for LNG, methanol and the use of scrubbers. Implementation of an LNG bunker supply infrastructure at Port of Brofjorden (SE). Studies aim at deployment of LNG in vessels in Baltic Sea and North Sea.
Baltic Sea	PILOT SCRUBBER – New Generation Lightweight Pilot Scrubber Solution installed on a Ro-Ro Ship operating on the Motorway of the Baltic Sea (2012-EU-21010-S)	Swedish Orient Line AB Rederi AB TransAtlantic Stora Enso Oyj Sveriges Hamnars Service AB Svensk Rederiservice AB The Swedish Agency for Marine and Water Management SSPA Sweden AB Port of Oulu	Installation, evaluation and demonstration of a new generation, innovative lightweight scrubber technology on existing RO-Ro vessels. Verification and evaluation of specific port infra and preparatory investments.
Baltic Sea	Methanol: The marine fuel of the future (2012-EU-21017-S)	Stena Aktiebolag Wärtsilä Finland Oy Stena Oil AB Seehafen Kiel GmbH & Co. KG Göteborgs Hamn AB	Pilot action to test the performance of methanol on the existing passenger ferry Stena Germanica (Göteborg-Kiel). Create appropriate port infrastructure for supply of methanol for bunkering.
Baltic Sea, Mediterranean Sea	ANNA - Advanced National Networks for Administrations (2012-EU-21019-S)	Kingdom of Sweden Italian Republic	Adoption of national Maritime Single Window and electronic data transmission for the fulfilment of reporting requirements for vessels entering and departing European ports.
Baltic Sea, Mediterranean Sea	Business to Motorways of the Sea (2012-EU-21020-S)	Valencia Port Foundation	Pilot actions aimed at preparing and adapting business communities and port authorities' systems.
Baltic Sea, Mediterranean Sea	WiderMoS (2012-EU-21021-S)	Autorità Portuale della Spezia La Spezia Container Terminal S.p.A.	Improve long term effective and sustainable connection between the sea and other transport modes by developing new port/ship/train interfaces. E.g. five pilot projects, policy supporting activity.
Baltic Sea (Trelleborg - Kiel - Lübeck)	Green Bridge on Nordic Corridor (2011-EU-21010-M)	Trelleborgs Hamn AB Hafen-Entwicklungsgesellschaft Rostock Lübecker Hafen-Gesellschaft mbH TT-Line GmbH & Co. KG	Piloting equipment of two large, multi-engine RoPax ships with exhaust gas cleaning technologies, in form of wet-scrubbers and preparation of corridor for operating next Baltic RoRo/RoPax ship generation. Also ferry berths re-constructions, shore side electricity installations.

Section/ node or other geography	Short title and INEA ID	Beneficiaries	Objectives
Baltic Sea (Helsinki, Stockholm, København, Aarhus, Helsingborg, Turku)	LNG in Baltic Sea Ports (2011-EU-21005-S)	Port of Aarhus Port of Copenhagen-Malmö Port of Helsingborg Port of Helsinki Port of Stockholm Port of Turku	Develop harmonised approach towards LNG bunker filling infrastructure. Achieve standardised process for planning and construction LNG infrastructure.
Baltic Sea (Aarhus, Göteborg)	The Baltic Sea Hub and Spokes Project (2010-EU-21108-P)	Municipality of Aarhus Port of Gothenburg Trafikverket APM Terminals Gothenburg AB	Common Hub and Spoke concept. Four main activities: Marine Integration Project (MIP), Port Access Aarhus, Port Access Gothenburg and Port Security Tallinn.
Baltic Sea	MonaLisa (2010-EU-21109-S)	Swedish Maritime Administration Finnish Transport Agency Danish Maritime Safety Administration SAAB TransponderTech AB SSPA Sweden AB Chalmers tekniska högskola AB GateHouse A/S	New methodology in maritime route planning. New pilot system of automated verification of ship crew certificates. Re-surveys of HELCOM fairways. Pilot system of sharing maritime data at a global scale.
Mediterranean Sea	COSTA (2011-EU-21007-S)	RINA Grimaldi Group Grandi Navi Veloci	Developing framework conditions for the use of LNG for ships. LNG Master plan for short sea shipping between Mediterranean Sea and North Atlantic Ocean as well as Deep Sea cruising in North Atlantic ocean.
North Sea (Rotterdam, Göteborg)	LNG Rotterdam Gothenburg (2012-EU-21003-P)	Havenbedrijf Rotterdam N.V. Vopak LNG Holding B.V. Port of Gothenburg AB Swedegas LNG Break Bulk Rotterdam CV	Create break bulk infrastructure for small-scale LNG supply in the ports of Rotterdam and Gothenburg. Both ports combined have the critical mass to assist the market transition to maritime LNG in Northern Europe.

Table 4: Motorways of the Sea projects (INEA, status per 7/2014)

The information provided in the project summary sheets is restrictive to the extent that it either does not allow an exact location of the project with respect to the corridor or the geographic scope covers a variety of ports, countries and sea areas so that cartography related to the corridor alignment cannot be provided.

In order to partly overcome this, the following diagram (Figure 8) illustrates the ScanMed core ports and core sections and adds exemplary maritime sections. These were proposed by the contractor consortium based on its market expertise or added by the stakeholders after the 3rd Progress Report. In addition to these, many other shipping services for container, ro-ro, ro-pax, bulk and project cargo are acknowledged to exist, as correctly informed by the Finnish Transport Administration.[26]

Thus, this selection of existing significant sea links does not exclude the appearance of additional or different links. They may serve as a basis for the appreciation of

[26] Feedback from the Finnish Transport Administration, e-mail, 15.10.2014.

investment needs in relation to ports, land links and fairways, and may as such also be the object of co-financing in MoS projects.

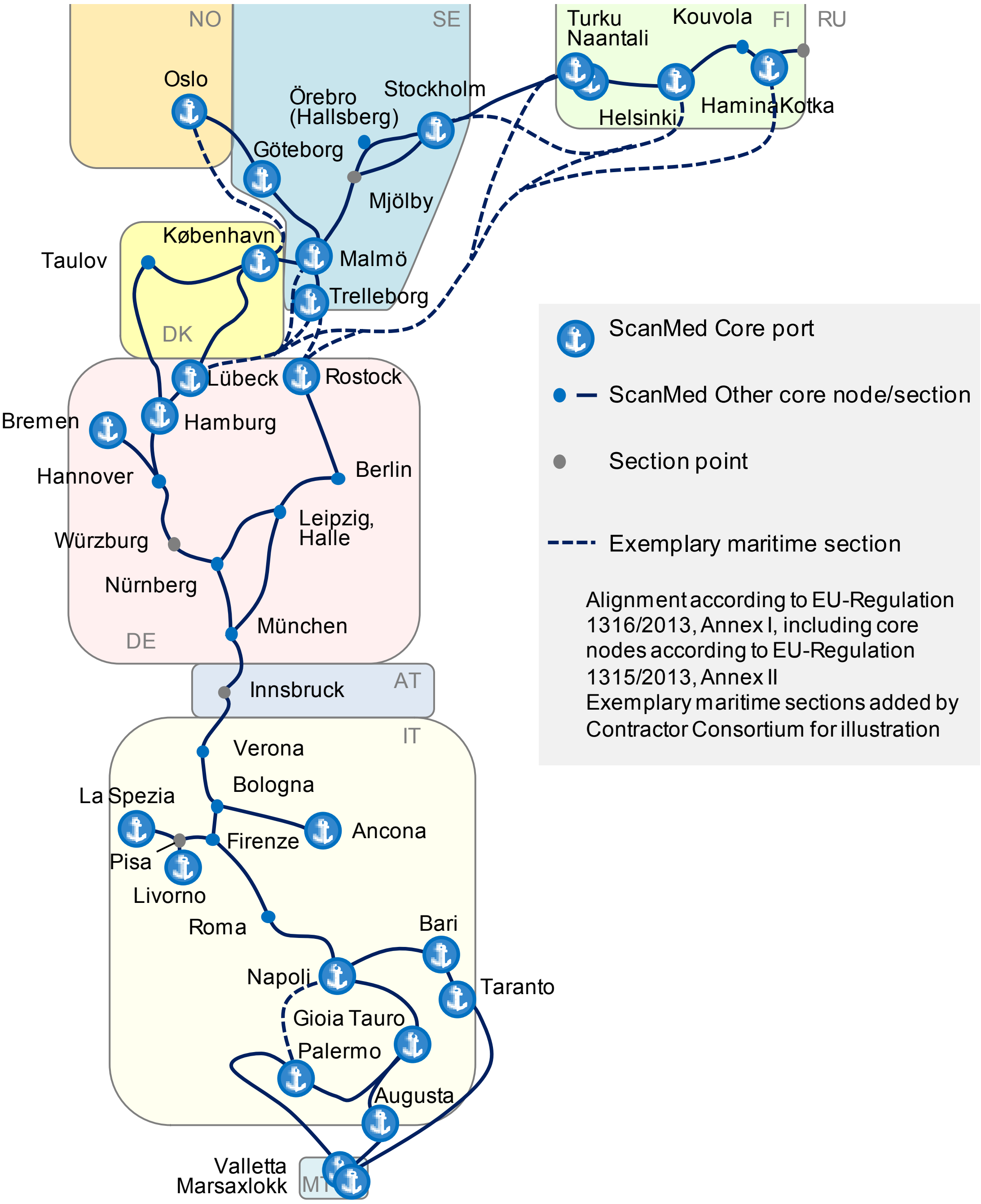


Figure 8: General alignment (cartogram) of ScanMed Corridor and exemplary martime sections

As mentioned above, inland waterways are outside the scope of the ScanMed Corridor. In the framework of the PLATINA II project, the 2nd ScanMed Progress Report was evaluated and re-inclusion of inland waterways into ScanMed analysis was attempted in July 2014[27]. This approach was however not pursued further, because it was agreed that inland waterway traffic (IWT) is not part of the corridor. We will therefore not provide a literature analysis on IWT, nor provide the characteristics, transport market study, objectives, RIS or trucking possibilities for ports as suggested in the PLATINA II report.

The PLATINA II report also suggests looking at some “orphan” waterways and inland ports which have “considerable related IWT traffic”. Therein, the port of Lübeck is mentioned. Lübeck is indeed a seaport which is also connected to an inland waterway, the Elbe-Lübeck-Kanal (ELK). In 2012, Lübeck produced 440 thousand tons transshipped in IWT;that amount is 1.7% of their total handling volume of more than 26 million tons, according to their annual statistics.

IWT on ELK accounts for 558 thousand tons in the same year. The volume is quite stable in recent years and low compared to the all time high during World War II in 1940 of 1 million tons, , and during peace time in 1970 when still 863 thousand tons were handled. There are about 500 vessel arrivals/departures p.a. Since the vessel carrying capacity is used is only 50%, volume could be doubled without significant change of the infrastructure. In our mind, the ELK has its role in the German transport network, but one could also argue that two barges a day each carrying fewer than 500 tons of goods could also be replaced by a pair of trains. There is no evidence to raise this issue to the attention of a European Coordination.

The Elbe-Seiten-Kanal (ESK) connecting the port of Hamburg to some of its hinterland regions is of higher transport importance (9.1 million tons in 2012), but not part of the ScanMed corridor. Corridors OEM or NSB are more appropriate for consideration of inclusion.

Therefore, these issues proposed by PLATINA II will not be analysed in the ScanMed corridor study. They are nevertheless of great value for the inland navigation sector and can be taken into account by concerned stakeholders.

1.2.3 ScanMed Core Network Corridor and Rail Freight Corridor

As explained above, the Rail Freight Corridor 3 "Stockholm – Palermo" (according to Regulation (EU) 913/2010)[28] partly overlaps with the Scandinavian–Mediterranean core network corridor, although Finland and Malta (which does not have a railway) are absent and specific sections in Germany, e.g. the Rostock – Berlin – Nürnberg routing,

[27] European Commission e-mail of July 18, 2014.

[28] Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight.

and Italy, e.g. the access to some ports, are not entirely the same.[29] Moreover, the RFC 3 governance structure will define the exact infrastructure belonging to the corridor only after its transport market study has been adopted (see below).

According to information provided by the European Commission in the Kick-off Meeting[30], *"all rail freight aspects are analysed in detail by the RFC. The RFC representatives will report to the Forum on all these aspects."* In order to fulfill the coordination task resulting from Article 48 of the TEN-T Regulation (EU) 1315/2013, the Member States agreed to the consortium's proposal to invite the respective representatives of the Management and Executive Boards of RFC 3 to the 2nd and further Corridor Forum meetings, and to ask for their detailed analysis of “all rail freight aspects”.

However, the rail freight corridor regulation requests of the implementation plan for the RFC 3 needs to be completed by November 2015, while the first package of Rail Freight Corridors have already been implemented as of November 2013. A draft Transport Market Study and Implementation Plan for RFC 3 were announced to become available in March 2014 which was not the case. Therefore, data gathering for completing TENtec parameters was performed using other sources by the contractor consortium.

A first technical meeting with RFC 3 took place in April 2014 and demonstrated a couple of similarities between the approaches of the RFC and the core network corridor. However, the contractors conclude that there are also significant differences between the two approaches (see Table 5). These differences are, in particular, the scope (rail freight vs. multimodal freight and passengers), character (annual time table and train path availability vs. long term infrastructure planning), type of traffic (trains crossing one corridor border but having origin and/or destination in the corridor vs. network load on each corridor section regardless its origin/destination), target years for the transport market study (2017 vs. 2030) and the availability of final results (11/2014 for market study and 11/2015 for implementation plan vs. 9/2014 for Multimodal Transport Market Study and 12/2014 for implementation plan).

A second meeting (in July 2014) between representatives of Prognos and KombiConsult from the contractor consortium and RFC 3 representatives on the draft results of the market study confirmed these methodological differences which result from two different EU-Regulations (EU) underlying the activities.

29 Regulation (EU) 1316/2013, Annex II stipulates that the missing sections which define the ScanMed corridor but not yet the RFC 3 "shall be included in the respective [freight] corridors at the latest 3 years after their implementation" in November 2015, thus November 2018.

30 European Commission presentation in the Kick-off Meeting with Contractors on 08.01.2014.

Criterion	RFC3	CNC
Scope	Rail Freight	Multimodal Freight & Passengers
Main character	Annual time table among business partners Pre-arranged train path One-Stop-Shop	Infrastructure planning where co-ordination at EU level is needed
Traffic	Trains crossing one corridor border and origin and/or destination on corridor	Network load on respective corridor sections
Target year (market analysis)	≈ 2017 (short term) ≈ 2030 (long term)	2030
Scheduling of market studies' completion	Short term by 11/2014 Long term by 11/2015	by 9/2014
Alignment of Infrastructure	Exact infrastructure will be defined after the TMS has been approved	Defined in the EU-Regulation already

Table 5: Comparison of approaches of RFC 3 and ScanMed Corridor

A possible separation of work between ScanMed and RFC 3, avoiding also doubling of activities, could be that the ScanMed project focuses on infrastructurel aspects while RFC 3 also focuses on operational aspects such as how to improve interoperability and increase rail traffic in the short/medium term. The RFC set-up is generally prepared for that purpose since it had to establish two Advisory Groups, one for railway undertakings ("railway advisory group - RAG") and one for (rail-road) terminals ("terminal advisory group – TAG"). Since both of these stakeholder types are not directly involved in the ScanMed process in 2014, their interests can alternatively be considered in the RFC 3 process and incorporated in the ScanMed project only in phases occurring beyond 2014. This approach was discussed at the 3rd Corridor Forum meeting and basically agreed upon. On October 17th another draft version of the RFC 3 transport market study was made available and its adoption by the respective bodies governing the RFC 3 by end of November was also confirmed.

1.2.4 ScanMed Core Network Corridor and SWIFTLY Green

The "SWIFTLY Green" project also provides mapping of a corridor that is partly overlapping with the ScanMed corridor in 2014. No final, approved results were published by October 17th. The "SWIFTLY Green" project, which was selected for funding under the 2012 TEN-T Annual Call, consists of a study analysing ways to improve the environmental performance of transport on a specific TEN-T Corridor and developing a toolbox for green issues in the context of TEN-T planning.[31] Due to the completion of that project by the end of 2015, validated results can only be taken into

[31] Commission Decision C(2013) 5397 final, project code 2012-EU-94167-S.

account at that stage. SWIFTLY Green will utilise the results of many preceding projects including Supergreen, Grecor and others which deal with the "greening" of transport corridors. European Coordinator Pat Cox has already explained to the SWIFTLY Green Coordinator that he anticipates a proper definition of the "toolbox" and that it shall get a useful content.[32]

1.2.5 The Particular Case of Malta

Due to its size compared to the entire length of the corridor, Malta is often considered marginal in the modal consideration. In order to mitigate that false impression, we have illustrated the particular transport infrastructure belonging to the corridor in Figure 9[33]. In fact, Malta is connected to the ScanMed Corridor via sections across the sea, their two seaports, the airport and subsequently the main road connecting these nodes on the Island of Malta. There is no railway network in Malta, thus Malta is exemted from all provisions regarding railways.

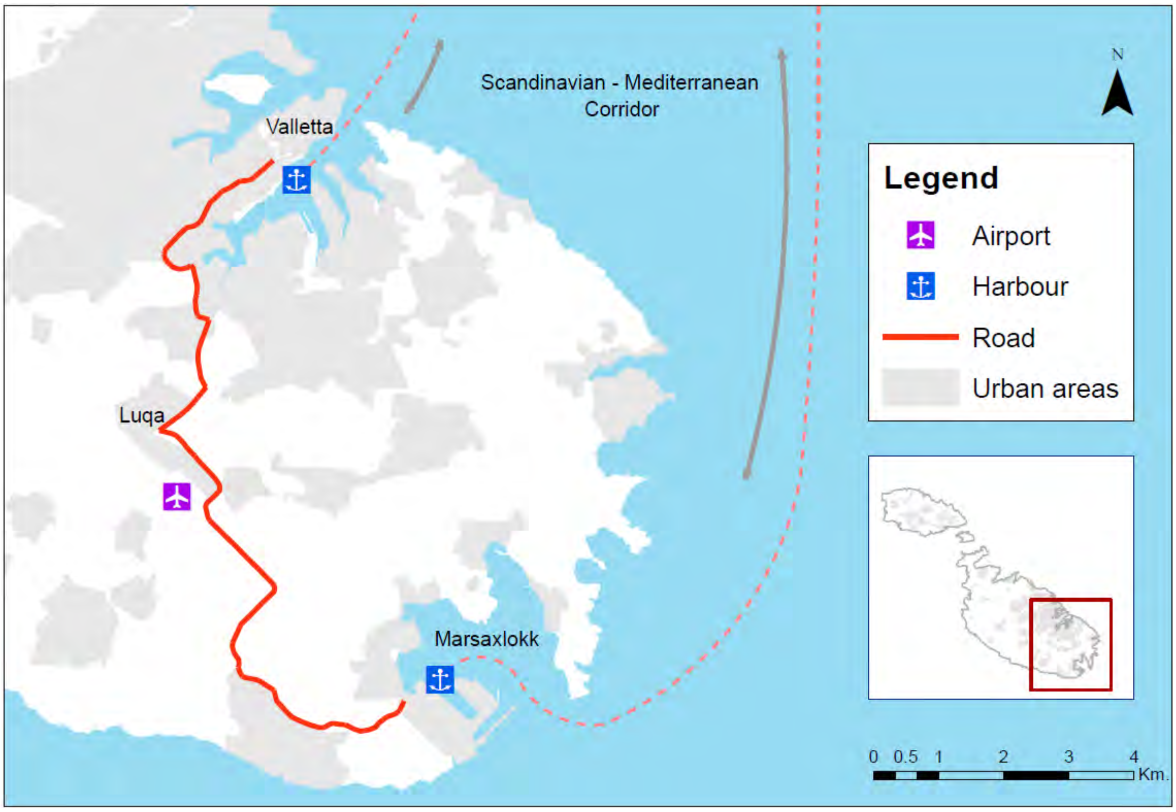


Figure 9: Transport infrastucture in Malta

[32] Statement at the Aktionsgemeinschaft Brennerbahn/Land Tirol, Verkehrswoche Innsbruck 2014.
[33] Provided by Prof. Maria Attard on behalf of KombiConsult, 29.10.2014.

1.2.6 Conclusion

The tables of sections and nodes were submitted to the European Commission and the Member States in the 1st and 2nd Corridor Forum meetings for comment on the information and to ultimately adopt the alignment. After this coordination process, an assignment of the linear as well as nodal infrastructure is understood to be accepted. A description of the detailed routing follows in Chapter 1.3.2.

However, the alignment was subject to various discussions - even in the 3rd Corridor Forum meeting when additional stakeholders were involved and the e-mail interventions sent after that. These discussions resulted from the Commission's concept to involve an increasing number of stakeholders in each of the meetings; their new views in turn brought new discussion. For example, some rail sections in Italy belonging to the comprehensive network were asked to be included in the corridor because they allow the completion of the rail infrastructure link along the corridor. For the Italian rail infrastructure manager, Rete Ferroviaria Italiana (RFI), it is most important to include comprehensive sections into the corridor where the core line is planned but waiting for its realisation while the comprehensive line carries the traffic.

Another major case of rail section belonging to the comprehensive network and requested to be part of the corridor is the Adriatic (railway) line linking Ancona, Pescara, Foggia with Bari and finally Taranto. RFI attempted to have this and the Gioia Tauro – Taranto lines included into the analysis and proposed projects which were about to remove two important bottlenecks on the Italian rail network; namely, the train length which is below the required 740 m on many sections and the (intermodal) loading profile which is below the required P/C400 profile. The upgrade of those lines is considered to be necessary to run freight traffic because of the high costs necessary to upgrade the connection between Bologna and Bari via Firenze-Roma-Napoli.

The Commission made clear that the alignment set in the EU-Regulation cannot be changed at this stage. The Member States agreed upon this in principle, in particular Germany, where the Ministry of Transport clarified that it would not accept to add other – even core - rail lines to the CNC alignment in Germany, even if these are the only ones allowing freight services, e.g. the Würzburg/Nürnberg - Treuchtlingen – Augsburg – München route.

Thus the infrastructure managers and users are reminded of the dual layer principle of the core and the comprehensive network and the role of the core network corridors as an instrument for facilitating the implementation. The indication of a certain line to the corridor does however not prevent them from upgrading or using the other existing lines. The core network corridors cover parts of the core network, but the rest of the core network, as well as the comprehensive network, serve as "feeders" to the corridors and are also important freight and passenger lines in their own right. The corridors do not exist independently from the rest of the network, they are only the forerunners with respect to the 2014 study and the prioritisation of activities coordinated by the European coordinators.

After nearly eight months of experience with the “alignment” issues, the following can be concluded: The new definition of comprehensive and core network as well as the respective objectives to be achieved by the year 2030 and 2050, and the core network corridors as an instrument to facilitate this should be “marketed” by the Commission and analysed more carefully by the stakeholders. The infrastructure aligned with a corridor has been fixed in the Regulation. At a later stage, when it becomes possible to modify the detailed alignment, the stakeholders should be aware that including additional lines or nodes into the core network requires that each of the objectives are fulfilled by the respective time line for that additional infrastructure as well. The intention of the core network corridors is to focus, rather than spread, activities.

1.3 TENtec Information System (Uniconsult)

1.3.1 Gap Analysis

The TENtec Information System has been introduced by the European Commission as the central information tool for the trans-European transport network's implementation. The data requirements have been defined by the Commission services and are published in a "Glossary", the latest version of which is relevant for the analysis dating 05.02.2014[34]. Parameters marked with “Y” = “YES” should be completed by the contractor consortium.

The data included in TENtec were already explained to be validated by the Member States and it was concluded that the Member States would also play a role in providing further input since the majority of information is owned by public institutions controlled by the States, e.g. national rail and road infrastructure managers.

The work for analysing and completing the data with respect to modes and countries concerned has been shared among the consortium partners led by work package leader UNICONSULT with support of area managers and country managers. Area managers are responsible for understanding and analysing the data from a modal point of view (e.g. rail, road) while country managers are supposed to help if data sources require "local knowledge" with respect to language or contacting a stakeholder. The following separation of work arises for the ScanMed consortium:

- HaCon (rail)
- Ramböll (road; Denmark, Sweden, Finland, Norway)
- Gruppo CLAS (airports; Italy)

[34] European Commission, DG MOVE Unit B1, Open Method of Coordination - Geographical Information System, Glossary: Technical* and Financial Data, DRAFT Update - Corridor Studies, 05.02.2014.

- UNICONSULT (ports; Germany,
- KombiConsult (RRT; Malta via subcontractor)
- Snizek+Partner (Austria)

The first two months were challenged by analysing data content and functionalities of the TENtec Information System; among other things, the following fundamental observations were made:

- delay in the access to the TENtec Information System;
- low data base functionality (download, upload, data analysis);
- occasionally: no access to the data base, error messages;
- given names and length of sections irrespectively of potential changes of parameters in between and only lengthy process for adaptations, but generally no change to the nodes and sections presented in Regulation (EU) 1315/2013,
- low filling rate of mandatory data;
- no geographical alignment of corridor sections, just alphabetical country specific list; and,
- for railway data: different alignment of links, no numbering or reference to network statement section identifiers.

In light of that the above observations, the consortium opted to collect the parameters required in Excel files that can be uploaded to the TENtec Information System by the TENtec team of DG MOVE upon completion.[35] According to the time plan of the study the analysis of TENtec data was to be completed within the first two months.

According to the methodology provided by the Commission, each Contractor Consortium shall investigate the data and analyse the corridor on its own. Cooperation, even on shared sections or nodes, was not desired, since the role of a section or node for in corridor could be different. Only the final encoding of data into the TENtec information system was assigned to one Contractor Consortium for the shared sections or nodes.

In a meeting on 30 April 2014, consortia were informed that their tables could not be used by the TENtec system and that they had to retype the data into tables downloaded from TENtec instead. Between May and August, there were various instructions from the Commission to the consortia on how to integrate the collected data into TENtec. The procedure needed to be changed many times due to technical insufficiencies of the system and methodoligical problems which caused several new releases of the TENtec system and led to unanticipated efforts for the consortium. Finally, the upload of ScanMed Corridor data was realised for all countries and modes of transport by the contractors in August 2014. Now the TENtec Information System is provided with the requested data and thus the installed validation process can be

[35] This approach was basically agreed upon in the preparatory meeting with the European Commission on 18.03.2014.

carried out. The “14 days in-built validation period” expired at the end of August 2014 so that the data included in TENtec can be evaluated for validity.

In the Corridor Forum meetings and in the e-mails received after it, the analysis was criticized since several values do not correspond to real values, sections were not numbered according to the network statements and other reasons. Therefore, Figure 10 illustrates how the real values were transformed into the TENtec values. It becomes clear that the change of a parameter within a section cannot be taken into account and the “lower” value which might restrict operations as the determining value for the entire section was used since the split of sections by parameter was not possible.

TENtec Section	1 – 360 km long			Result
Parameter 1 Electrification	No	Yes		No
Parameter 2 N° of tracks	1		2	1
Parameter …				

Figure 10: Illustration on the relation of Network Statement parameter and TENtec data

If the TENtec or a similar central information system is to be maintained, a direct mechanism of data integration from the “owners” of such data should be developed and implemented rather than involving Member States or consultants in this process.

The following chapter contains a synopsis of the data gathering process. These data were analysed per mode of transport and used for the description of the characteristics of the corridor which are shown in Chapter 4.1.

1.3.2 Data Gathering

As a direct continuation of the TENtec gap analysis and meant to complete the missing data, "data gathering" using studies, public data and expertise of the contractors has been done with a focus on the most actual data: 2013, sometimes 2012 or 2011, or even 2014 (e.g. for railway parameters). The following sources of information were used:

- proprietary databases and research results of the partners of the consortium: since some data were classified as confidential by clients the respective partner must check whether they can be declassified;
- data and statistics published by national and EU authorities;
- network statements of the national rail infrastructure managers (IM);

- data supplied by national infrastructure authorities for road; and,
- data supplied by port and airport operators, or associations and RRT operators.

Table 6 shows the availability and reliability of data in the TENtec Information System per transport mode before and after the consortium's data collection effort, as of 13.05.2014 (percentage refers to relevant data fields = nodes/ links times "Y"-Parameters).

Mode	N° of relevant data fields (nodes/links times „Y“ parameters)	Availability in TENtec (Total = 100%)			Data availability after consortium‘s data collection	
		Quality data, prior to consortium‘s data collection	Existing but not reliable data	Not existing data at all	Including traffic figures	Excluding traffic figures
Road	2.024	58 %	1 %	41 %	88 %	100 %
Rail	7.344	40 %	10 %	50 %	85 %	98 %
Airports	45	33 %	58 %	9 %	92 %	99 %
Seaports	240	25 %	40 %	35 %	95 %	100 %
Rail-Road Terminals	78* 156**	0 %	0 %	100 %	90 % 78 %	100 % 93 %

* RRT in the narrow sense ** RRT and trimodal terminals

Table 6: Filling rate of TENtec parameters of ScanMed Corridor

The Contractors were able to increase the data quality and filling rate with respect to mandatory data fields (marked "Y" = Yes in the latest TENtec Glossary) considerably:

- 85% to 95% of relevant data (including traffic data) have been collected and documented in Excel files by the consortium by end of May 2014.
- Consortium has spent major efforts and resources on the TENtec data identification, collection and documentation exercise. However, some data are not accessible for the consortium, respectively are publicly not available.
- Member States were asked to provide additional data, but they are also not in the position to supply these on the level of detail required by TENtec (e.g. traffic data by exact rail line).
- Thus, almost 100% of the required static data ("excluding traffic data") was collected by the consortium.

The following chapters provide the detailed findings by mode of transport and node.

Rail

	TEN-T SCAN-MED								28.04.2014
1	RAILWAYS								
No.	TENtec Technical Parameter Name	*	FI	NO	SE	DK	DE	AT	IT
1	Length of section (km)	Y	x	x	x	x	x	x, RA	x
2	Type	Y	x		x		x	RA	
4	Activity	Y	x		x	x	x	RA	
5	Number of tracks	Y	x	x	x	x	x	x	x
6	Traction	Y	x	x	x	x	x	x	x
7	Track gauge (mm)	Y	x	x	x	x	x	x	x
8	Load gauge (UIC type)	Y	x	x	x	x	x	x	x
11	Max operating speed (km/h)	Y	x	x	x	x	x	x	x
12	Max inclination (%)	Y	x	x	x		x	x	RA
13	Max axle load (kN) -> (conversion in ton/axle will be done by TENtec)	Y	x	x	x	x	x	x	x
14	Rail voltage (Volt)	Y	x	x	x	x	x	x	RA
15	Maximum train length (m)	Y		RNE	RNE	x	RNE	RNE	x
18	Passenger traffic flow (pax per year)	Y							
19	Passenger traffic flow (trains per year)	Y	EUR	EUR	EUR	EUR	EUR	EUR	EUR
21	Freight traffic flow (net tons per year)	Y							
22	Freight traffic flow (trains per year)	Y	EUR	EUR	EUR	EUR	EUR	EUR	EUR
23	ERTMS in operation	Y	x	x	x	x	x	x	x
23a	ERTMS baseline	Y							
24	ERTMS Level	Y	x	x	x	x	x	x	
25	Control & command system	Y	x	x	x	x	x	x	x
27	Voice system radio (GSM-R)	Y	x	x	x	x	x	x	x
30	Passenger traffic flow (trains per year)	Y	(=19)	(=19)	(=19)	(=19)	(=19)	(=19)	(=19)
31	Freight traffic flow (gross tons per year)	Y							
32	Junction (for nodes)	Y							
	* Glossary: Technical and Financial Data, Draft Update - Corridor Studies, 08.01.2014								
x	Network Statement	RNE	Rail Net Europe			qualitative remarks - to be proved if valid on all sections			
RA	Railway Atlas	EUR	Eurostat 2010			not available			

Table 7: Data availability of detailed TENtec rail parameters of ScanMed Corridor

With respect to rail, data availability[36] can be seen from Table 7. The major concern and need to involve the infrastructure managers is related to the following data fields required by TENtec:

- No public data are available for Parameters[37]:
  - 18: Passenger traffic flow (pax per year);
  - 21: Freight traffic flow (net tons per year); and,
  - 31: Freight traffic flow (gross tons per year).
- It is unclear what is to be filled-in for Parameters (therefore, they are not filled, in the scope of the study):
  - 23a: ERTMS baseline; and,
  - 32: Junction for nodes.

[36] Feedback from RFI by e-mail on 14.10.2014 claimed that data on parameters 2, 4 and 24 in Italy are available, but no evidence on when they were sent to the Contractors was provided so that these data could not be analysed or encoded inTENtec.

[37] E.g. „Suomen Rautatietilasto 2014 – The Finnish Railway Statistics", http://www2.liikennevirasto.fi/julkaisut/pdf8/lti_2014-02_suomen_rautatietilasto_web.pdf, has been released (June 2014) after the analysis works within this corridor study has been completed. Furthermore it contains predominantly global data, which do not fit to the TENtec sections predefined by EC.

- Partially, in Eurostat there is more than one value for one TENtec section; therefore, no value has been filled in on some sections for Parameters:
  - 19: Passenger traffic flow (trains per year); and,
  - 22: Freight traffic flow (trains per year).
- For Parameter 15: Maximum train length, in some network statements there is only general information but none that refers to specific sections.

For the trainload, there are data available in Eurostat for the year 2010, but those values are assigned to rail sections that only partially match with the TENtec sectioning. Therefore, it was only possible to derive trainload data for about two-thirds of sections. Thus, input of the respective IM's to update and complete the database was required. Due to the central role with respect to rail transport and length of the rail section DB Netz was asked to provide the respective data for Germany. DB Netz explained that they either do not own such data or it is business sensitive, but agreed to provide some type of data that would support the analysis. Finally, DB Netz opted to provide "capacity utilisation" on longer sections rather than train numbers per TENtec section in July 2014 so that the analysis could be based on that.

Data about moved tons or passengers on the respective sections are not available in Eurostat and there are no other sources known from where these data could be derived. In the contractor's view, it is also questionable if these data could be delivered by the IMs for the respective sections. Based on our expertise, we submit that these data could perhaps be estimated by multiplying the number of trains with average loading factors for freight and passenger trains; this exercise can be improved if there is a categorisation of the trains possible for the different types of freight and passenger trains. Another option could be to disregard this set from the detailed TENtec sectioning and agree to use larger sections between nodes for the traffic-related data and transport market study. Both possibilities have been discussed with the IM's and the representatives of the MS involved in the 2nd Corridor Forum Meeting. Since the consortium did not receive information on the number of trains in the required level of detail on a significant length of the corridor (see above), this first option could not be carried out and it was instead concluded to work with market-relevant sections in the MTMS.

Figure 11[38] provides a more accurate alignment of sections and nodes as well as additional core lines (Fulda - Würzburg/Nürnberg – Treuchtlingen – Augsburg – München) which should be included in the corridor alignment according to the analysis in order to respect market or operational needs (freight by-pass routes where only the pas-senger high speed line (HSL) Nürnberg – Ingolstadt was associated with the corridor in the Regulation (EU) and TENtec). On the HSL Nürnberg – Ingolstadt, freight traffic information is currently not available due to operational and infrastructural

[38] The blue line indicates corridor sections via the sea according to the corridor alignment and they shall not be confused with Motorways of the Sea or any maritime service offered to/from the core ports.

boundary conditions. However, the rail unit of the German BMVI does not want these core lines to be included in the CNC anyway.

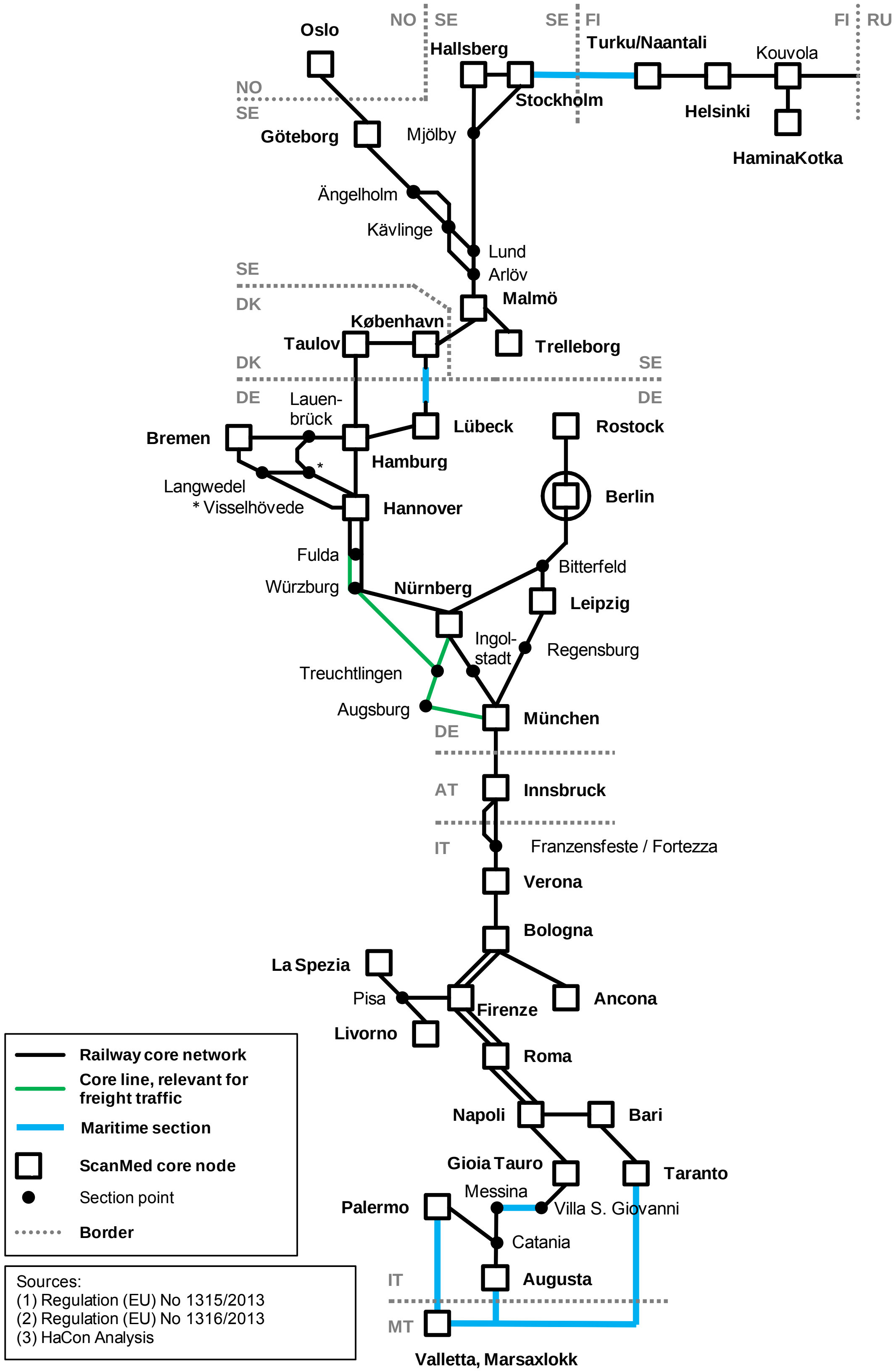


Figure 11: Rail lines of the ScanMed Corridor

Road

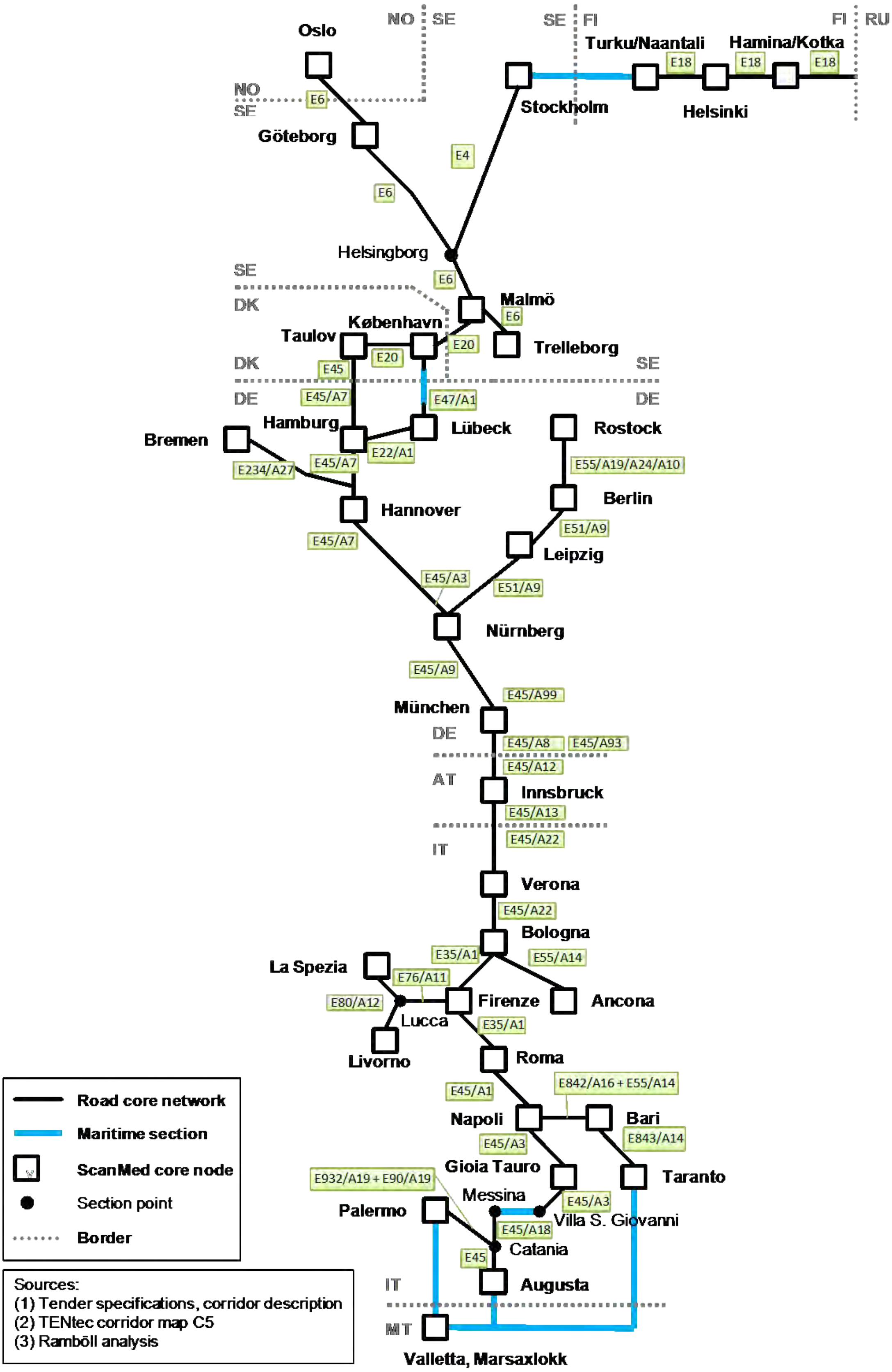


Figure 12: Roads on the ScanMed Corridor

With respect to roads, all the static TENtec data could be filled and the alignment could be fixed. The diagram in Figure 12[39] aligns the motorways (by their number) with the ScanMed Corridor. There are no motorways on Malta; however, other qualified roads link the ports, airport and the capital city of Valletta.

Airports

Concerning the airports allocated to the corridor, the respective airport managers' websites do generally provide a time series of the mandatory information of passenger and freight traffic flow. However, the definition of the TENtec parameter "Connection with rail" requires further clarification by the Commission since the difference between the "integration into long distance rail network", "rail shuttle" and "other local public shuttle such as METRO" is not clearly defined because this separation of heavy and light rail as well as local rail is not the same across Europe.

Airport access by rail was already included in TENtec, but could not be validated due to vagueness in thedefinition. Passenger and freight volumes were incomplete and found to be incorrect when checked against comprehensive airport databases and airport statistics. Figures have been updated to 2012, and 2013, where available. The post-survey data availability rate was 91,8%.

The airports analysed are included in the following cartogram.

[39] The blue line indicates corridor sections via the sea according to the corridor alignment and they shall not be confused with Motorways of the Sea or any maritime service offered to/from the core ports, in particular since the cartogram's main purpose is "road".

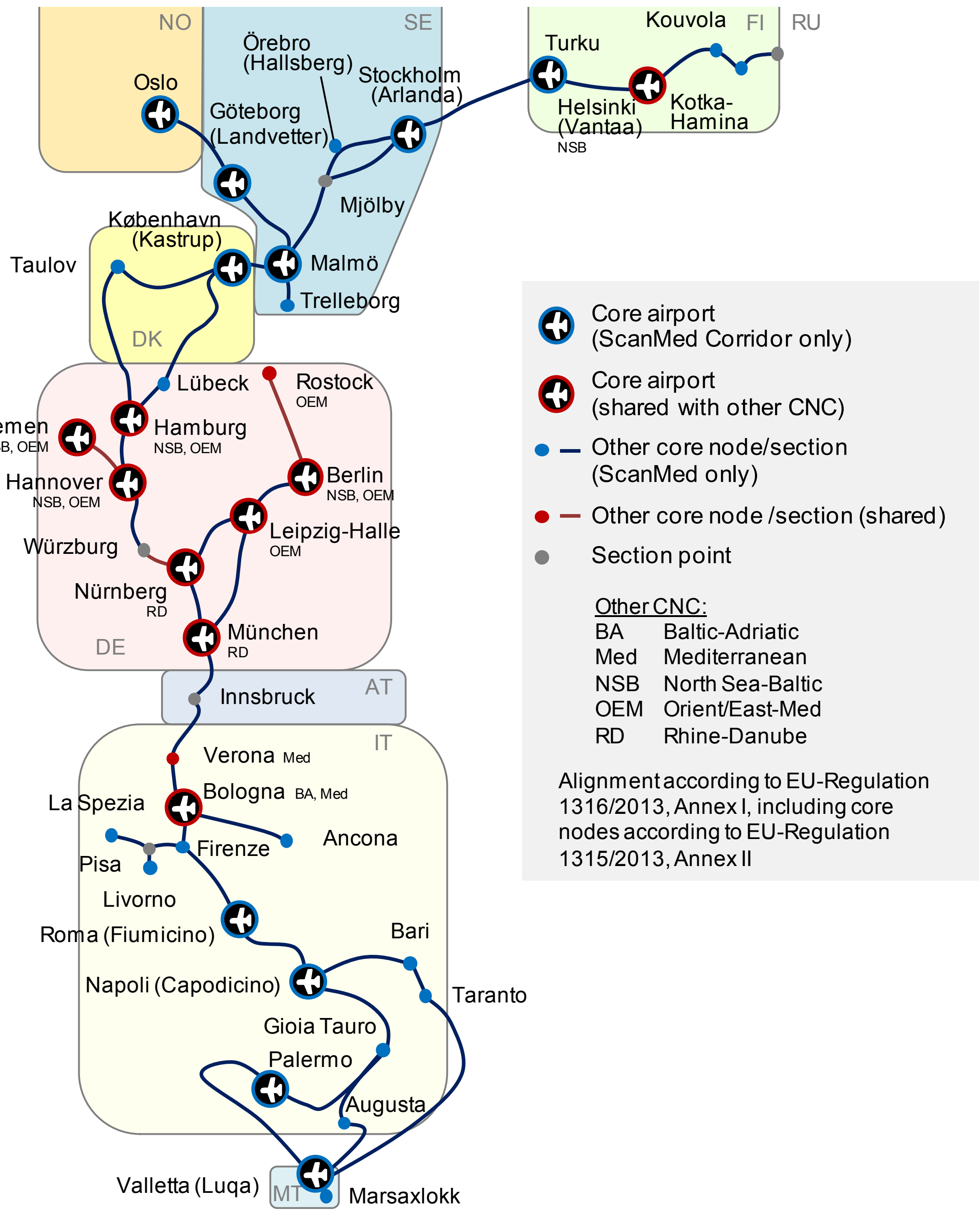


Figure 13: Airports on the ScanMed Corridor

Ports

An analysis was also performed for the corridor's seaports Figure 14 provides an overview of the ports.

The technical port parameters foreseen in TENtec were expanded in the excel files produced by the ScanMed consortium with the following items:

- to meet the infrastructure parameters as defined by the Regulation (EU) 1315/2013 by
  - Availability of clean fuel stations at the seaports (Y/N) and
  - Availability of regular MoS ferry connections (Y/N , number of departures per week); and,
- to incorporate the additional parameters per the response to open questions from contractors related to TENtec (Glossary Version 05/02/2014):
  - Maritime Chamber lock (m wide x m long), parameter 3 and
  - Transshipment facilities for intermodal transport, parameter 19.

Port authorities and terminal managers' websites as well as proprietary databases of the contractor were used to check and improve the data quality on TENtec parameters. The post-survey data availability rate was 95%.

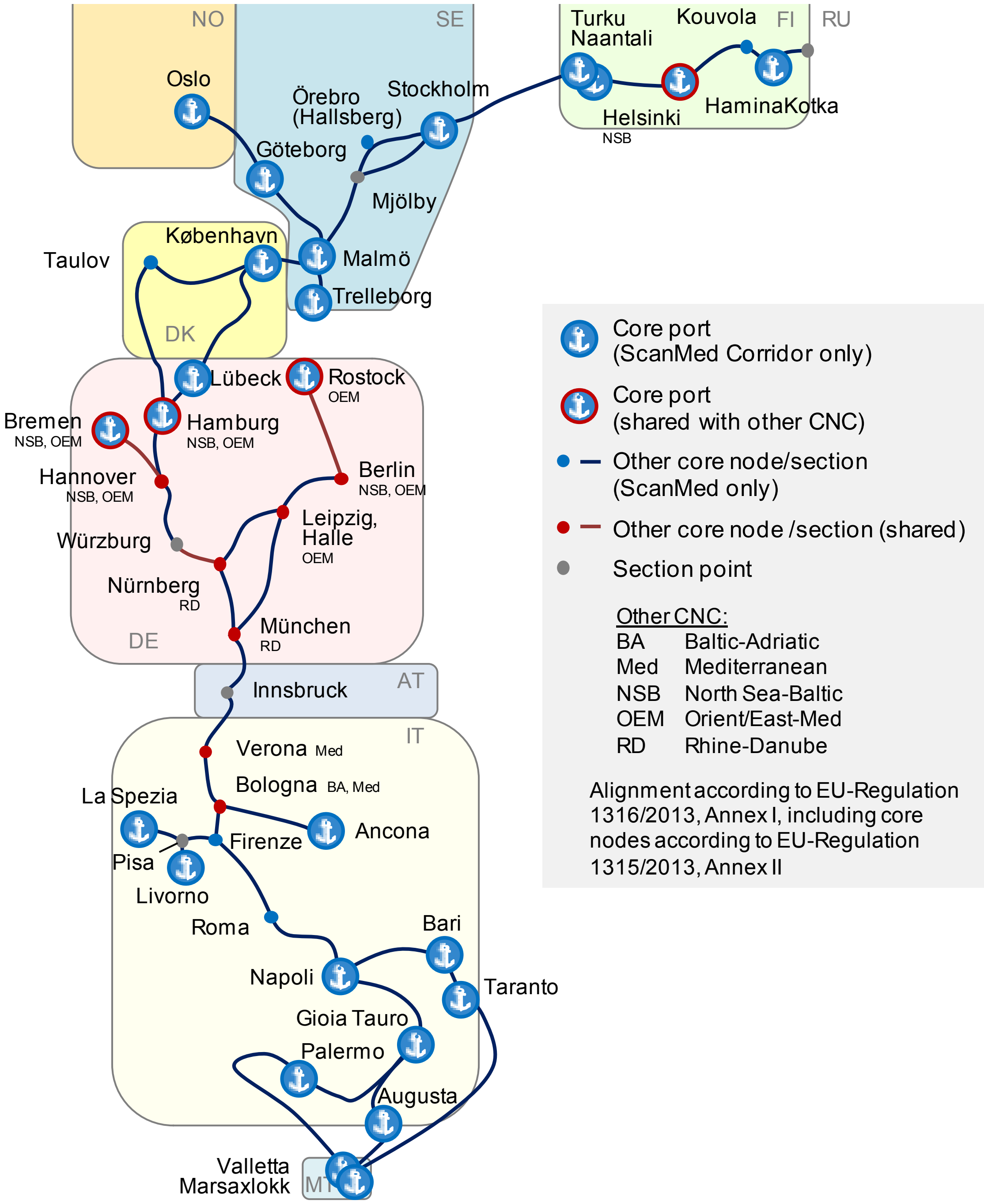


Figure 14: Ports on the ScanMed Corridor

Rail-road terminals

The TEN-T regulations highlight the role of rail-road terminals (RRT) and have already defined their locations along the corridor in Annex II of the Regulation (EU) 1315/2013. A visualisation on those nodes explicitly marked as "core RRT" is provided in Figure 15. Some of the nodes may contain more than one terminal.

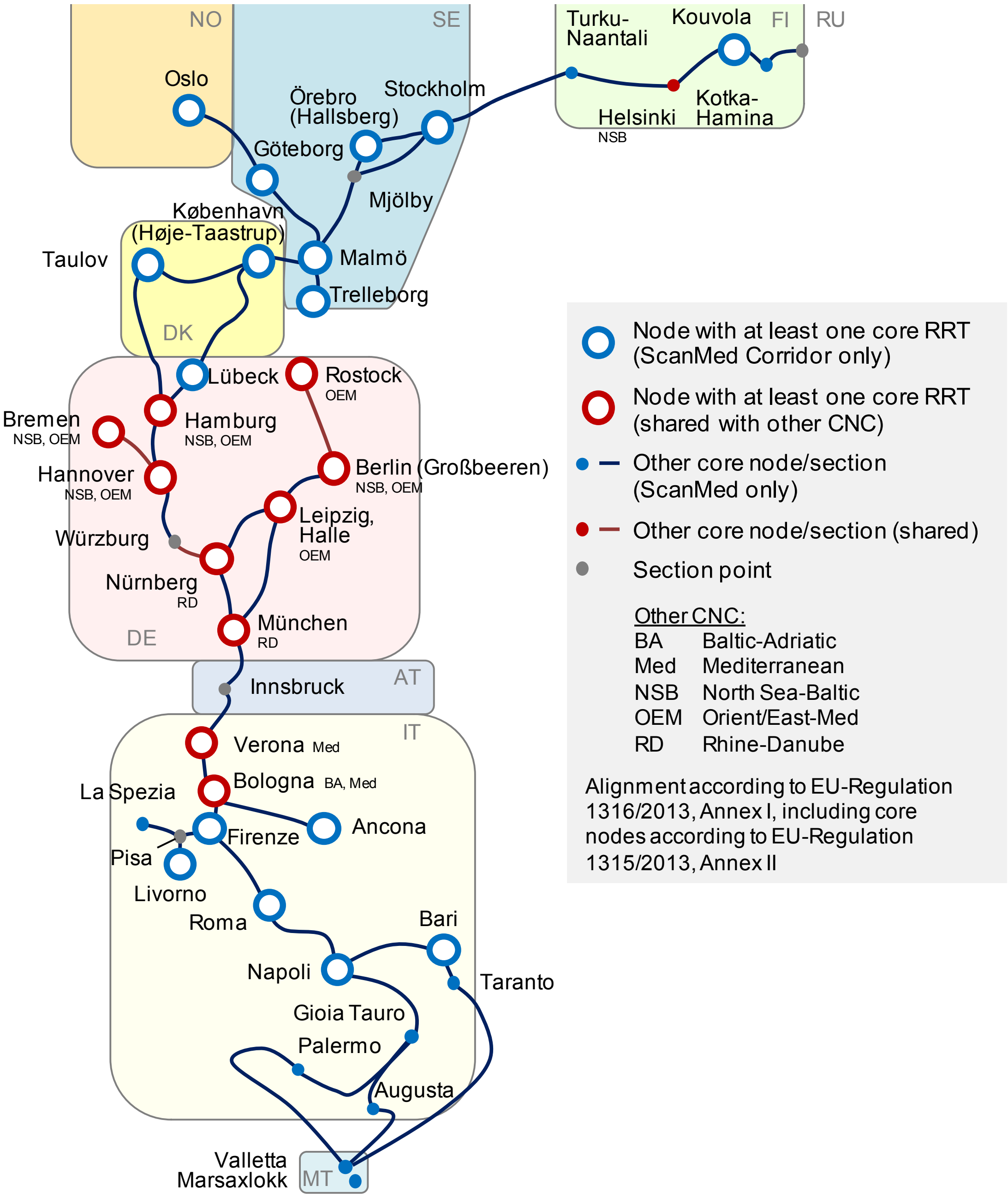


Figure 15: Nodes with at least one core rail-road terminal on the ScanMed Corridor

A precise definition of rail-road terminals is however missing from the Regulation (EU) 1315/2013. Article 3 defines 'logistic platform' as an area which is directly linked to the transport infrastructure of the trans-European transport network including at least one freight terminal, and which enables logistics activities to be carried out. A 'freight terminal' means a structure equipped for transhipment between at least two transport modes or between two different rail systems, and for temporary storage of freight, such as ports, inland ports, airports and RRT.

The TENtec Glossary defines rail-road terminals as part of multimodal platforms (MMP). MMP's are created by assembling a number of existing TEN-T sections/ nodes. Thus multimodal platforms are a specific term for the use of TENtec. For establishing MMP's, interconnecting points are needed. They are comprised of seaports, inland ports and airports, as well as rail-road terminals. The Glossary further expresses that a RRT is a terminal which only transfers goods between rail and road. That could be virtually any piece of infrastructure for handling freight. The TENtec Information System itself calls for "rail-road intermodal terminals", and thus focuses on a particular type of freight transport; namely, intermodal transport.

For the purpose of coherence with other European legislation and the common professional use of words, contractors have specified rail-road terminals as intermodal terminals facilitating intermodal transport as defined in EC-Directive 92/106, thus basically the transhipment of containers, swap bodies, semi-trailers between two modes of transport, in this case rail and road ("rail-road-terminal").

With the pragmatic definition of RRT in a narrow sense as intermodal terminals facilitating intermodal transport we could focus the analysis to a quantifiable number of installations. By extending the scope to transhipment of loading units between road, rail and (inland) waterway and ferry lines as well as short sea shipping we extended the approach. It allows including RRT which are part of "inland ports" in the sense of "trimodal terminals" linking rail, road and inland waterways or even “seaports”. If an extension to all kinds of installations for the transfer of goods between modes along the corridor is required, the scope of work could be extended considerably and the separation from private installations needs to be assured.

For the ScanMed Corridor, Member States have adopted the detailed assignment of RRT shown in Table 7 of the 2nd Progress Report. After that, it has been agreed with the Member States to disregard from mentioning the “comprehensive” RRT in the report to be in line with the other modes where focus was also given on the core lines.

Table 8 presents the finally agreed terminals and provides some data included also in the TENtec Information System. Freight traffic was converted to tons as required by TENtec from loading units or TEU normally used to measure the performance of a RRT. The data refers to intermodal rail-road volume handled by that terminal in the year 2013.[40] The values for rail and road connection show the number of tracks or lanes that link the terminal to the hinterland network.

[40] One of the feedback items received on the 3rd Progress Report required to update the figures with “2014 data”, which were provided by the requestor for some terminals. Since the intra-annual forecasting methodology was not clear, we maintained to report past full annual figures.

	Node / Terminal	Type Reg. 1315/2013	Terminal Type	Freight traffic (t) 2013	Connections	
					Rail	Road
FI	Helsinki Vuosaari satama	(additional) 2)	Trimodal (port)		3	4
	Kouvola 1)	Core	RRT	500.000	2	2
	Kotka-Hamina: HaminaKotka	(additional) 2)	Trimodal (port)		5	2
	Turku-Naantali	Core				
	- Naantali port	(additional) 2)	Trimodal (port)			
	- Turku Satama	(additional) 2)	Trimodal (port)		1	2
NO	Oslo Alnabru	Core		3.300.000	3	3
SE	Stockholm	Core				
	- Stockholm Årsta		RRT	540.000	3	2
	- Stockholm North Rosersberg		RRT			
	Örebro Hallsberg	Core	RRT	225.000	1	2
	Göteborg	Core				
	- Göteborg Gullbergsvass		RRT	630.000	2	2
	- Göteborgs Hamn		Trimodal (port)		1	2
	Malmö	Core				
	- Copenhagen Malmö Port		Trimodal (port)		1	2
	- Malmö Kombiterminal		RRT	825.000	1	2
	Trelleborg Kombiterminal Öst	Core	Trimodal (port)	300.000	1	2
DK	København (Høje-Taastrup) 3)	Core	RRT	847.000	1	2
	Taulov	Core	RRT	662.000	3	2
DE	Lübeck Skandinavienkai	Core	RRT	975.000	2	2
	Hamburg	Core				
	Hamburg-Altenwerder		Trimodal (port)	7.451.000	1	2
	Hamburg-Billwerder		RRT	4.500.000	3	2
	Hamburg-Burchardkai		Trimodal (port)	5.000.000	1	2
	Hamburg-Eurokombi		Trimodal (port)	5.160.000	1	3
	Hamburg-Tollerort		Trimodal (port)	1.700.000	1	2
	Bremen 4)	Core				
	- Bremen Weserport		Trimodal (port)		1	2
	- Bremen-Roland		RRT	1.740.000	1	2
	Rostock Trimodal	Core	Trimodal (port)	1.043.000	1	2
	Berlin Großbeeren	Core	RRT	600.000	1	2
	Hannover	Core				
	- Hannover-Linden		RRT	525.000	1	2
	- Hannover-Linden Hafen		RRT	359.000	1	2
	Leipzig, Halle					
	- Leipzig-Wahren	(additional) 2)	RRT	1.500.000	1	2
	- Schkopau	Core	RRT		1	2

	Node / Terminal	Type Reg. 1315/2013	Terminal Type	Freight traffic (t) 2013	Connections	
					Rail	Road
	Nürnberg Tricon	Core	Trimodal (IWW)	3.000.000	1	2
	München-Riem	Core	RRT	4.500.000	2	4
AT	No core RRT on ScanMed Corridor					
IT	Verona Quadrante Europa	Core	RRT	4.291.000	5	4
	Bologna: Interporto Bologna	Core	RRT	991.000	2	2
	Ancona					
	- Interporto Marche Jesi	Core			1	2
	- Porto Ancona	(additional) 2)	Trimodal (Port)		1	2
	La Spezia	(additional) 2)	Trimodal (Port)	2.765.070	1	2
	Livorno					
	- Guasticce Collesalvetti (Interporto Amerigo Vespucci)	Core	RRT	34.000	1	4
	- Terminal Darsena Toscana	(additional) 2)	Trimodal (port)		1	2
	Firenze Prato	Core	RRT		1	6
	Roma Pomezia	Core	RRT		1	2
	Napoli					
	- Marcianise-Maddaloni	Core	RRT	270.000	1	2
	- Nola	Core	RRT		1	4
	- Porto Napoli	(additional) 2)	Trimodal (port)			
	Bari Ferruccio	Core	RRT	486.000	3	2
	Total					

1) Kouvola RRT is a developing project by the City of Kouvola to integrate transhipment facilities;
2) added due to its location in a core node
3) The RRT of København is Høje-Taastrup
4) Bremerhaven is not part of ScanMed Corridor, but North Sea-Baltic, according to the Regulation (EU)

Table 8: Detailed rail-road terminals aligned with the ScanMed Corridor

Information about freight traffic refers to past years, mostly 2013, and was converted from loading units or TEU by average values.

Following that definition, the ScanMed Corridor consists of 44 terminals (see Table 9), of which 34 are directly defined as core terminals and 10 were added because they are part of core nodes or ports. 25 of them provide for handling "rail-road, only" while 19 are of the "trimodal" type involving also a connection to ScanMed seaports or inland waterways in the nodes of Hannover and Nürnberg.

Country	Core	Additional	Total
NO	1		1
FI	1	4	5
SE	7		7
DK	2		2
DE	15	1	16
IT	9	4	13
Total	34	8	44

Table 9: Overview on rail-road terminals on ScanMed Corridor by type

Looking to the countries concerned, the largest number of core terminals on the ScanMed Corridor is located in Germany (16), followed by Italy (13) and Sweden (7), while in Finland (5), Denmark (2), Norway (1) and Austria (0), only a few installations are aligned with the core network corridor. Malta, of course,has no RRT..

Country	RRT	trimodal (Port)	trimodal (IWW)	Total
NO	1			1
FI	1	4		5
SE	4	3		7
DK	2			2
DE	8	6	2	16
IT	9	4		13
Total	25	15	2	44

Table 10: Overview on rail-road terminals on the ScanMed Corridor by type of connected modes

This high number of terminals results because single terminal nodes along the corridor can be subject to multiple facilities operating individually or as a unit. Due to the organisation of the rail-road-terminal operators, access to unified data on capacity and traffic flow is scarce in public sources. Expertise on capacity measurement is available[41], but its application would require using more data and information than could be collected within the scope of this study. Annual traffic flows either are not commonly published or do not lead to conclusive comparison between the assessed terminals. Different measurements in tons, loading units and TEU lead to further difficulties in establishing a comprehensive overview for external evaluation.

On the basis of these definitions, the post-survey data included in TENtec reached 93%.

[41] Examples for publicly available sources are the works of the AGORA Interest group of European terminals www.intermodal-terminals.eu

Conclusion on TENtec

With the collection of almost all static infrastructural data and quite a large share of traffic-related information, the data collection process is finished. Remaining data fields cannot be filled given the present definition of a criterion (e.g. road toll fee per section) or reasonable efforts (e.g. rail passengers per rail section) or they are simply in the propriety of the infrastructure manager concerned and classified as commercially sensitive.

After some guidance from the TENtec team of the European Commission, the collected information was finally supplied to the TENtec information system for validation. The fourteen days in-built validation time expired so that the data was deemed to be accepted and the Task 2 of the contract was completed by mid August 2014.

1.4 Preparation of the Corridor Forum (KombiConsult)

A major task of the contractor consortium is to prepare four Corridor Forum meetings which are organised on the premises of the European Commission in Brussels according to an overall schedule synchronised with the other eight corridors.

The Minutes of Meeting of those meetings prepared by the time of issuing this report are provided in Annex 6.

1.4.1 1st Corridor Forum Meeting

The 1st Corridor Forum meeting took place in Brussels on 01 April 2014 and was attended by representatives of the Member States, the European Coordinator and his advisor, financial and technical advisors of the EC and Innovation & Networks Executive Agency (INEA), as well as the contractor consortium. Minutes of Meeting were drafted, circulated and agreed upon by the participants.

The agenda items are listed below:

- Opening by the European Coordinator
- General background of the corridors by the European Commission
- First outline of the corridor including first findings
- Exact determination of the infrastructure belonging to the corridor (all road and rail sections, seaports, airports, rail-road terminals, inland ports)
- Exact identification of responsible persons within the Member States
- Identification of possible stakeholders for the Corridor Forum
- Presentation of the timing for the establishment of the work plan
- Missing data and data encoding in TENtec

1.4.2 2nd Corridor Forum Meeting

The 2nd Corridor Forum meeting included, in addition to the participants of the 1st meeting, infrastructure managers of rails and ports, representatives of Rail Freight Corridor 3 and cross-border infrastructure projects (Fehmarn Belt Fixed Link, Brenner Base Tunnel), as well as a representative for both the European Investment Bank and the Norwegian Transport Administration.

The meeting was held on 17 June 2014 and dealt with these topics:

- Opening and introduction in TEN-T Corridors
- Draft final outline of the corridor
- 2nd Progress Report, including:
  - Characteristics of the corridor (preliminary results),
  - Objectives for the corridor (draft final),
  - Multimodal transport market study (draft final)
- Presentation of activities of RFC 3
- Presentation of activities of Brenner Base Tunnel company (BBT SE)
- Presentation of activities of Fehmarn Belt Fixed Link (Femern A/S)
- Feedback from infrastructure managers/providers (invited for the 2nd Forum)
- Conclusions and next steps

The Minutes of Meeting were accepted by the participants after the event.

In addition, a meeting focused on the Member State's representatives and the Commission was organized, attended, and documented. The draft Minutes of Meeting were accepted after the meeting.

1.4.3 3rd Corridor Forum Meeting

Invitations including the agenda and a list of invited persons for the 3rd Corridor Forum meeting were prepared and agreed upon with the Commission by mid July 2014 and were sent out at the end of August 2014 by the contractors after the Commission completed an internal coordination. The meeting took place on 2nd October 2014. The group of participants was expanded, according to an agreement between the Commission and Member States, to include infrastructure managers of roads and airports and also representatives of regional authorities. The exact persons to be invited were agreed upon with the Member States' representatives, who gratefully contributed by providing contact details.

The following items were dealt with according to the agenda:

- Opening and introduction in TEN-T Corridors
- 3rd Progress Report including:
  - Outline of the corridor (final),

  - Multimodal transport market study (final)
- Presentation on each mode of transport by the contractors, followed by feedback from infrastructure managers, including:
  - Objectives for the corridor (final),
  - Characteristics of the corridor (final),
  - Programme of Measures (draft final)
- Feedback from Working Group regions
- Presentation on financial instruments by EIB and INEA
- Further steps:
  - Implementation Plan (concept),
  - Investment Plan (concept)

One of the outcomes of the 2nd Corridor Forum meeting was to establish a working group meeting for ports and one for regional authorities. The main idea was to provide these stakeholders more time to discuss any items relevant to them and report their conclusions to the Forum meeting in a focused way via rapporteur. The rapporteur has been appointed to the working group respectively, and made a contribution to the 3rd Corridor Forum meeting.

The contractor consortium prepared, moderated and documented the working group meetings which took place on 01 October 2014. Presentations and minutes of meeting were delivered to all respective stakeholders invited, present or represented.

Participants of the meeting and other stakeholders – through sending the minutes of meeting - were invited to provide additional comments to the 3rd Progress Report no later than 17 October 2014, in order to allow the contractor consortium to prepare the Draft Final Report and allow a reading by the Commission before its distribution to the invited participants for the 4th Corridor Forum meeting.

1.4.4 4th Corridor Forum Meeting

For the 4th Corridor Forum meeting, the same participation as for the 3rd meeting was applied. In line with the overall schedule to complete the study by end of November 2014, the 4th meeting took place on 20 November 2014. The invitation, agenda and eventual documents preparing the meeting were sent out on 7 November 2014.

Following the overall schedule, these topics have been discussed at this final stage of the project:

- Presentation of Draft Final Report by contractor, in particular:
  - Programme of Measures (final),
  - Implementation Plan (draft final),
  - Analysis of the investment required (draft final)

- Further steps for the Corridor Coordination and the Corridor Forum in 2015/2016,
- Presentations and discussion on:
  - ERTMS on the ScanMed Corridor (European Coordinator for ERTMS)
  - ITS on the ScanMed Corridor (DG MOVE)
  - Innovation perspective on the ScanMed Corridor (DG MOVE)

The originally planned presentation on MoS could not be performed due to the unavailability of the European Coordinator for MoS.

The contractor consortium prepared, technically contributed to and documented the 4th Corridor Forum meeting. Presentations and minutes of meeting were delivered to all respective stakeholders invited, present or represented.

Participants of the meeting and other stakeholders – through sending the minutes of meeting - were invited to provide additional comments to the Draft Final Report no later than 28 November 2014, in order to allow the contractor consortium to prepare the Final Report to be distributed to the Commission on 5 December 2014.

2 Identification of Stakeholders (Ramböll)

Stakeholders for the ScanMed Corridor (other than the Member States that were contacted by the Commission services directly) have been identified by the contractors through analysis of the TEN-T Regulation and through guidance received in the Kick-off meeting with the Commission. Based on this analysis, leaders and heads of relevant authorities and organisations were identified with a view to establish a "long-list" of stakeholders to be further refined in cooperation with the Commission. A comprehensive stakeholder database was created in Excel containing contact details of all selected authorities and organisations. The identified individuals heading the institutions were invited to either attend Corridor Forum meetings themselves or were asked to alternatively designate a relevant representative for this purpose.

Stakeholder groups indicated in the regulations and agreed upon with the Commission include governments and authorities, infrastructure managers, and users.

While Member States and authorities as well as managers of infrastructure are set by the TEN-T Regulation, the "infrastructure user" is quite a generic expression. It was therefore decided to focus on those organisations or institutions that are directly using transport infrastructure or involved in planning of services for utilisation of infrastructure, such as railway undertakings, providers of regional passenger transport services, ferry and short-sea shipping lines and intermodal operators. Nevertheless, Commission and Member States postponed the involvement of infrastructure users in the Corridor Forum, so that this recommendation remains for the future.

The number of stakeholders identified may be seen as (too) high and thus the size of the group difficult to manage, but it has to be kept in mind that the core network corridor was defined in the geographic scope of eight countries (seven EU Member States plus Norway) and as a multimodal corridor (at least two modes concerned) which means that all the respective modal infrastructure managers are, in principle, relevant. Providing only the minimal number of organisations in each of the eight countries multiplied with three stakeholder groups already equates to 24 authorities or institutions. Taking into consideration that the European legislation has required a more complex set-up of competencies, the number of relevant stakeholders could easily increase. In addition, we have the "nodal" infrastructure managers, which could be port authorities and/or terminal managers – again depending on how the responsibilities have been implemented for “establishing or maintaining transport infrastructure”. This may also include the “management of infrastructure control and safety systems.” (cf. Article 3 e of Regulation (EU) 1315/2013).

Based on the proposed long list, the consortium prepared in cooperation with the European Commission “short lists” of stakeholders to be involved in the respective Corridor Forum meetings, which included infrastructure managers for rail and seaports, RFC 3/ScanMed representatives for the 2nd and additional infrastructure managers of roads and airports, as well as regional authorities[42] for the 3rd Corridor Forum meeting.

Following the 1st Corridor Forum meeting, the list of stakeholders to be invited was agreed upon by the Member States. Representatives of the two cross border projects, the Fehmarn Belt Fixed Link and the Brenner Base Tunnel were also included in the list.

Given the complexity of the subject, the number of items to be discussed and the size of the Forum, it was agreed upon that the involvement of RRT and infrastructure users will be shifted to a later stage after concluding the 2014 work plan.

Table 11 shows the stakeholder groups and the number of institutions (ministries, authorities, infrastructure managers) per country or “cross border”, as well as the total number. The table does not show the number of persons contacted and involved in the process which can easily triple or quadruple the number of institutions.

The list in Annex 1 shows only the institutions' names since it was not agreed upon that the names of persons shall be disclosed.

The “cross border" stakeholders are: BBT SE and Rail Freight Corridor 3 for rail, Øresundsbro Konsortiet for road, as well as the Copenhagen Malmö port authority for seaports.

Stakeholder group		**Country**								**cross-border**	**Total**
		NO	**FI**	**SE**	**DK**	**DE**	**AT**	**IT**	**MT**		
Governments/ authorities	national	1	1	1	1	1	1	1	1	0	8
	regional	0	8	10	3	12	1	14	0	0	48
Infrastructure managers/ providers	rail	1	1	1	2	1	1	1	0	2	10
	road	0	1	1	2	1	1	3	1	1	11
	seaports	1	4	3	0	6	0	9	2	1	26
	inland ports	0	0	0	0	0	0	0	0	0	0
	airports	0	2	1	1	7	0	5	2	0	18
Total		**3**	**17**	**17**	**9**	**28**	**4**	**33**	**6**	**4**	**121**

Table 11: Overview of stakeholders of ScanMed Corridor involved in 2014

[42] There was a common understanding between the Commission and the Member States that only regions in whose territory the infrastructure of the core network corridor is located shall be invited. An enlargement to those regions from and to which freight or passenger flows are related would expand the size of the Corridor Forum meeting participation beyond a manageable size.

3 Review of Studies (Prognos)

The Contract requires documenting the studies and documents mentioned in Appendix 1 of the Tender specifications of the TEN-T core network corridor projects with respect to their usage. Therefore they have been reviewed by the Contractors.

In a first step, the studies and documents were examined in view of Task 2 “TENtec Information System”. The result of this review is presented in the tables in Annex 2 of this report. The information provided in these tables shows if the studies and documents provide information on parameters for the completion of the TENtec information system and which kind of information they provide. In the case where the documents do not contain specific information, the reason for this is also given.

All relevant information within these studies was then integrated in the TENtec information system. In particular, this refers to parameters for the railway network.

In addition to that, the project partners collected and reviewed a great amount of additional sources / studies. These sources are also documented in Annex 2 of this report. By means of this comprehensive data review, the parameters of the TENtec information system were completed to a high extent.

Besides the use of sources for the completion of the TENtec information system, these sources also provided valuable information concerning the “Characteristics of core network corridor” (WP 5) and the “Multimodal Transport Market Study” (WP 7) and are therfore also used as an information base within these work packages.

Within WP5, the studies are used for obtaining data for examining the compliance of the current infrastructure with respect to the objectives set by the EU-Regulations and serve as a base for the deviation analyses of technical parameters.

Within WP7, the sources provide essential insight to demand data for the current and future situation for specific projects, links or even networks covered by the respective study.

The most important sources of information are referred to in the respective sections of the analysis.

The reviewed literature, as partly quoted in Appendix 1 of the tender specifications, covers studies and other relevant documents concerning the ScanMed Corridor. The following review summary is structured similar to the annex of this document, which entails a complete list of the studies and documents. The subsequent structure comprises three major categories: Studies, existing cooperation and additional sources. For each category a number of key publications are summarised in the following sections.

3.1 Studies

Based on the results of the report from 2001, in 'Progtrans (2006): *Aktualisierung der Personen- und Güterverkehrsprognose für den Brenner 2015 und 2025*' forecasts have been updated with new data and complemented by additionally analysed topics. There are two factors that influence the modal split in the traverse of the Alps: global changes in intermodal transport and effects on decisions about the route for a transport mode. One important result of the report reveals that there will be a shift of demand from road to rail, if the political institutions will implement the respective push and pull actions. Information about the road and rail traffic from this report is used for the multimodal transport market study.

The main objective of the '*BRAVO - Brenner Rail Freight Action Strategy Aimed at Achieving a Sustainable Increase of Intermodal Transport Volume by Enhancing Quality, Efficiency, and System Technologies (2004 – 2007)*' was to develop and to demonstrate an action strategy on intermodal rail-road transport services on the Brenner. During the BRAVO project, it was reported that the intermodal transport volume could be increased considerably. The BRAVO report is deployed to gather data about the freight transport at the Brenner for the multimodal transport market study.

The report of *The Fehmarn Belt Fixed Link* dated 2002 provides a forecast of the demand for the fixed link. The report was an update to the Fehmarn Belt Traffic Forecast (FTC 1999). The purpose of the update was, among other reasons, to investigate whether an unfavourable traffic development in general could be expected and to evaluate the influence on the fixed link traffic demand if a ferry service would run in parallel to the fixed link. In the report, road traffic in 2015 has been forecasted about twice the level of the ferry traffic from Rødby-Puttgarden in 2001, while the rail passengers level of 2001 is about four times higher. This study was helpful to define the characteristics of the corridor and for the multimodal transport study concerning the Fehmarn Belt traffic.

The study concerning the *'Storstrøms' bridge (Resumérapport - Handlemuligheder vedrørende Storstrømsbroen, 2012)* is about finding an adequate alternative for the current bridge, because it is not reliable enough for the increasing loads of the freight trains and respective wear. The study analyses five different scenarios. Some of the scenarios include the restoration of the existing bridge (1 and 2), building another new railway bridge while retaining the existing bridge for the road traffic (3), building a new combined bridge for road and rail (4) or building a new bridge for rail and the removal of the old bridge (5). In the socioeconomic perspective, summarising all costs and benefits, the option concerning the new combined bridge is the most attractive scenario. The Storstrøms bridge report is utilized to indicate some characteristics of the corridor. The passenger and freight traffic counts and future development of the traffic are utilized for the transport market study.

The report *European Commission (2010): Towards an integrated transport system - freight focus* states that one of the most important challenges for the European Union is to improve the functioning of the transport system. However, there are still some barriers:

- Operational barriers, due to differences in regulations;
- Technical barriers, because of incompatible technologies;
- Infrastructure barriers, because the major cross-border links are incomplete; and,
- Legal barriers, due to the lack of a pertinent European legislation.

The report addresses issues with a focus on freight traffic. In addition, the report provides a review over the past and ongoing research in these areas. This report was already used to define the objectives of the corridors in the EU-Regulations and will be consulted if additional objectives are to be defined.

3.2 Existing Cooperations

The Action Plan 2009 of the Brenner Corridor Platform ('Aktionsplan Brenner 2009') develops an integrated approach for rail and road on the Brenner corridor. The approach proposes actions for an optimised use of the infrastructure. The report states that some actions, like interoperability, upgrading, etc., have an immediate effect on the shift of traffic, other actions may only have an effect in the medium term. This report was carefully reviewed, but not concretely used for one of the work packages. The Brenner Corridor Platform, initially implemented to support Priority Project 1, continues. Since their plenary meeting in June 2014 was postponed no adopted technical progress reports were provided.

The corridor area covered by the Scandria project (The Scandinavian-Adriatic Corridor for Innovation and Growth) lies between Scandinavia and the Adriatic Sea and between Eastern and Western Europe. The report ("Scandria Investment Strategy", 2012) states that the "Scandria corridor" is not (yet) functionally linked and integrated. However, the corridor has great potential for further integration, based on the industrial structure, which entails many possibilities for further trade and cooperation. The structural change will inevitably lead to the development of knowledge and contact intense sectors, mainly in the southern part of the corridor. The study reveals that only investing in the physical infrastructure is not enough. Instead, there should be a mix of investments into the transport infrastructure, but also into the knowledge infrastructure as well as the promotion and support of innovation and entrepreneurship. The report provides information supporting the definition of the characteristics of the corridor and the transport market study.

The objective of the Transalpine Transport Architects (TRANSITECTS) project is the relief of the transport axes from truck traffic by transnational cooperation in logistics, focussing on potentials, routes and concepts for the shift of freight traffic towards rail. In the TRANSITECTS report, Sustainable shift of cargo transport into rail networks between Berlin/Brandenburg and Italy / Slovenia (2012), it is stated that there are significant freight volumes passing the Alps at the Brenner. In total, 5.8 million tons have been transported per year (2009). About three quarters of the transport volume pass the Alps on the road infrastructure. The report is useful to define further characteristics of the corridor and provides information for the multimodal transport study.

The general goal of iMONITRAF! is to tackle the common challenges, the regions (the region Rhône-Alpes, Province of Bolzano, Region of Aosta Valley, the Piedmont Region, the Friuli- Venezia-Guilia Region, the Canton of Ticino and the Land of Tyrol) are facing in the area of social and environmental impacts from the growing transalpine transport. In the iMONITRAF! Annual Report 2013 two measures are highlighted:

- By extending the driving bans for certain trucks, during certain times or in certain areas the negative impacts were limited,
- Minor adjustments of the HGV fee and the Brenner Maut strengthen the trend for a modal shift.

This annual report reveals information regarding truck traffic at the Brenner for the multimodal transport study in WP7, and the objectives of the corridor (WP6) if accepted by the Member States. iMONITRAF! seeks to monitor not only the transport development on the entire Alpine stretch but also the environmental impact of transport and proposes measure to internalize the external cost of traffic by means of intelligent road tolling systems.

In the working group meeting preceding the 3rd Corridor Forum meeting, the STRING cooperation was introduced and the Swedish Transport Administration supported to include a brief description of STRING into the present report[43] STRING[44] is both a political cross-border cooperation, as well as a geographical area. STRING, as an organisation, is a political cross-border partnership between Hamburg and Schleswig-Holstein in Germany, the Capital Region of Denmark, Region Zealand, and the City of København in Denmark, and Region Skåne in Sweden. These partners come together in STRING in order to create joint politics and initiatives to jointly strengthen regional development by working together for a common agenda concerning infrastructure, green growth, tourism, cross-border barriers, science and research and tourism. The concept of STRING dates back to 1999 with the focus on establishing a new fixed link between Denmark and Germany. In 2008, Germany and Denmark signed a State Treaty, agreeing on the establishment of the fixed Femern Belt link. In light of this, the cooperation between the STRING Partners changed towards promoting regional

[43] Feedback of Swedish Ministry of Transport by e-mail of 17.10.2014.
[44] www.stringnetwork.org

development and green growth in the corridor stretching from the Öresund Region to Hamburg.

In 2011, the partners agreed on establishing a permanent STRING secretariat to coordinate and promote the joint agenda of the partners, and implement the political decisions.[45] The work shall build on the politics and initiatives that are already part of the partners' political agendas, priorities and activities. What STRING adds to this is a joint political goal, emerging when the common objectives and actions of Northern Europe´s strongest economies are put forward and placed on the political agenda. Transport infrastructure is only one of five key themes covered by STRING.

3.3 Additional Sources

In the relevant countries, every year the responsible rail infrastructure mangers publish a Network Statement. In this review, we focus particularly on the Network Statement 2014 (2013) of DB Netz AG, which is responsible for the provision, the further development and operation of most of the German railway infrastructure. In this statement, the terms and conditions governing access to and usage of the rail network are published. Information of the respective network statements is widely used to complete the TENtec information system regarding rail infrastructure parameters.

In addition, exemplary measures to be implemented in the context of European priority projects are used individually:

The project 2010-AT-91134-P Intermodal Terminal Wörgl (PP1) entails the construction of a modal interchange station between road and rail. The intermodal terminal Wörgl was implemented in 2012. The total costs of the project are more than 30 Million €, thereof the EU contributed 5 Million €. Information in this project report is helpful to define characteristics and objectives for the corridor, mainly concerning the upgrade of rail access, parking area and handling capacity.

The Project 2006-DE-101a-P North-South high speed line Berlin-Palermo, nodal point Berlin: Main and Südkreuz railway stations (PP1) encompasses the construction, technical equipment and roof of Berlin main station and the upgrade of Berlin-Südkreuz railway station. The project was finished in 2009. The budget was above 79 Million €, with an EU contribution of above 8 Million €. The information of the short fact sheet is integrated in the works to derive objectives for the corridor, mostly information about the current infrastructure.

[45] Upon request the secretariat made clear that the involvement of STRING would only by complementary to the involvement of the individual regions (e-mail of the STRING secretariat of 10.10.2014).

2009-SE-92605-P Nordic Triangle-Malmö C is connected to the south main line (connecting Stockholm and Göteborg/Oslo) and to the Öresund Fixed Link. This project is part of the global project, constructing the Malmö central station ("Malmö C"), which intends to eliminate the bottleneck in Malmö. The budget for this project, completed in 2011, was above 46 Million €, whereof the EU contributed 10%. The project sheet is used to define the characteristics and objectives for the corridor, especially concerning the future situation of rail infrastructure.

For the other sources of information it is not useful to provide summaries of their content if only a few figures could be obtained. For more details, the full list of reviewed studies and documents is attached in Annex 2.

In addition to that, the use of specific sources of information is referred to in the respective chapter or at the place where the information was used.

4 Elements of the Work Plan

Summary (KombiConsult)

The Contractor Consortium prepared all elements of the work plan consecutively by proposing the objectives for the core network corridor, describing the characteristics of the core network corridor and comparing the present characteristics with the target value for each parameter, and programming of measures which are about to help improve the present situation to reach the objectives. The measures will also include the projects and the implementing body (or project promoter), the timing and the investments. The Multimodal Transport Market Study provides the demand framework for the respective projects.

Alignment

The Scandinavian-Mediterranean Corridor links the major urban centres in Germany and Italy to Scandinavia (Oslo, København, Stockholm, Helsinki) and the Mediterranean (Italian seaports, Sicily and Malta). It covers seven EU Member States and Norway and represents a crucial axis for the European economy, crossing almost the whole continent from North to South. The cartogram in Figure 16 shows the corridor's schematic alignment and its core nodes according to the TEN-T and CEF-Regulations.

"Linear" modes of transport that are assigned to the corridor are mainly rail and road. A few sections of the alignment, in particular the connections Finland - Sweden and Italy - Malta, cross the sea. The other dimension of the corridor is composed of "punctual" infrastructure: airports, seaports and rail-road terminals of the core network. For modal interconnection as well as the connection of the trans-European transport network with infrastructure for local and regional traffic, "urban nodes" are of specific importance. According to Regulation (EU) 1315/2013, Annex II, urban nodes of the core network of the ScanMed Corridor are the following:

- FI: Helsinki and Turku;
- SE: Stockholm, Göteborg and Malmö;
- DK: København;
- DE: Hamburg, Bremen, Hannover, Berlin, Leipzig, Nürnberg and München;
- IT: Bologna, Roma, Napoli and Palermo; and,
- MT: Valletta.

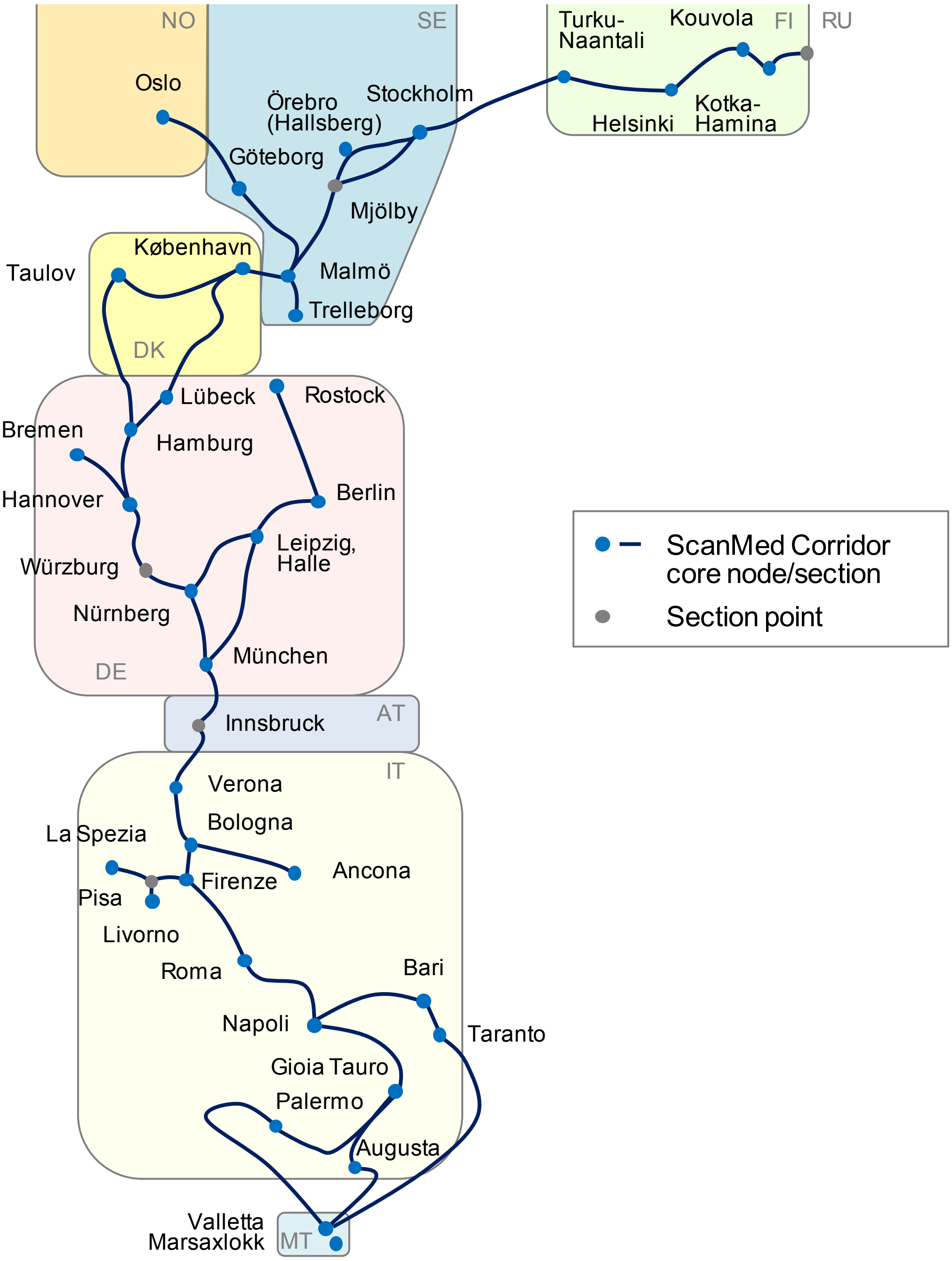


Figure 16: Alignment of the ScanMed Corridor

Characteristics

ScanMed Corridor is among[46] the largest in terms of core network length of rail (> 9,300 km) and road (> 6,300 km) and number of core ports, airports and rail-road

[46] A final statement on whether it is "the largest" or "one of the largest" can only be made after the other corridors have delivered their data as well.

terminals (in total about 90 sites). An overview of the quantitative characteristics of the corridor is provided in Table 12.

Mode/ Node	Dimension	FI	NO	SE	DK	DE	AT	IT	MT	Total
Rail	network length [km]	518	169	1.462	476	3.532	127	3.053	-	9.337
Road		376	116	1.039	440	1.869	109	2.401	22	6.372
Airports	number	2	1	3	1	7	-	4	1	19
Seaports		4	1	4	1	4	-	9	2	25
RRT		5	1	7	2	16	0	13	-	44
Rail	Share of Corridor [%]	5,5%	1,8%	15,7%	5,1%	37,8%	1,4%	32,7%	n.a.	100,0%
Road		5,9%	1,8%	16,3%	6,9%	29,3%	1,7%	37,7%	0,3%	100,0%
Airports		10,5%	5,3%	15,8%	5,3%	36,8%	n.a.	21,1%	5,3%	100,0%
Seaports		16,0%	4,0%	16,0%	4,0%	16,0%	n.a.	36,0%	8,0%	100,0%
RRT		11,4%	2,3%	15,9%	4,5%	36,4%	0,0%	29,5%	n.a.	100,0%

updated in line with RRT analysis and final rail lines on 29.10.2014.

Table 12: Characteristics of ScanMed Corridor

Transport volume

In the year 2010, the latest year for which disaggregated data could be retrieved, the international freight traffic on the corridor accounts for 129.0 million tons by sea, of which 59.9 million tons are between core ports, 50.3 million tons by road and 36.0 million tons by rail.

The seaborne freight transport between all ports of the corridor countries is distinctly higher than the continental corridor flows (rail and road). The dominant relations are located in the northern part of the corridor, mainly related to Germany and Sweden, supplemented by the flows from the remaining Scandinavian countries. These volumes accumulate to 64 % of international sea freight flows.

In both ways the relations Denmark – Germany, Italy – Germany and Finland – Sweden are dominant and amount to almost 70 % of all international road freight flows between the corridor countries. The structure of flows illustrates a broader spatial distribution of important relations on the corridor. Thus, the "gravity centre" of road freight volumes is located in the southern part of the corridor and to a lesser extent in the far northern part.

The most important rail freight flows (in both ways: Sweden - Germany, Austria – Germany, Germany – Italy and Italy – Austria) amount to almost 90 % of all relevant international rail freight flows. It becomes obvious that the "gravity centre" of rail freight flows is located in Germany and Austria.

Objectives

Article 4 of the Regulation (EU) 1315/2013 describes the objectives of the trans-European transport network, which shall strengthen the social, economic and territorial cohesion of the European Union. The aim is to create a single European transport area, which is efficient and sustainable, to increase the benefits for its users and to support inclusive growth. The Member States agreed to the following list of specific objectives, which have to be met by the ScanMed Corridor by 2030 the latest.

Mode	Objective
Rail	Full electrification
	Axle load 22.5 t
	Line speed 100 km/h, minimum
	740 m freight trains
	ERMTS fully implemented
	Standard gauge 1435 mm for new lines
Road	Express road or motorway
	Intelligent transport systems (ITS) / tolling systems
	Parking areas every 100 km, minimum
	Infrastructure for alternative clean fuels
Airports	Terminal open to all operators
	Infrastructure for air traffic management, SESAR
	Infrastructure for alternative clean fuels
	Main airports connected to (high-speed) rail network
Maritime transport, Ports, MoS	Connection to rail, road, IWW (where possible)
	Infrastructure for alternative clean fuels
	Facilities for ship generated waste
	VTMIS, SafeSeaNet, e-Maritime services
Multimodal transport	All transport modes connected at freight terminals, passenger stations, airports, maritime ports
	Real time information on freight terminals, maritime ports, cargo airports
	Sufficient transhipment equipment on freight terminals
	Continuous passenger traffic through equipment and telematic applications in railway stations, coach stations, airports, maritime ports
Environmental targets	Specific target values more detailed than those mentioned in the TEN-T Regulation could be identified for specific sections of the corridor by the Member States concerned in accordance with European legislation.

Table 13: Objectives of ScanMed Corridor

In addition to these, the measures and projects agreed upon by the Member States shall be implemented by the year 2030 the latest, under the provisions made in Article 1 (4) of the Regulation (EU) 1315/2013.

Compliance analysis

On the basis of these objectives a compliance analysis was performed. The compliance analysis compares the current (infrastructure) parameter and the target value set for the year 2030. The analysis uncovered the respective deficits on single TENtec sections and nodes.

The compliance analysis with respect to the distinctive **rail** objectives reveals the following, in particular:

- While the standard track gauge is supplied on all corridor lines with the exemption of Finland, electrification is available on almost all lines.
- Interoperability constraints resulting from different electrification (15 kV 16 2/3 Hz in Sweden, Germany and Austria, 25 kV 50 Hz in Denmark and 3 kV DC in Italy on the existing lines used for freight transport, and 25 kV for HSL and new lines like the Brenner Base Tunnel) and still a few non-electrified sections in Denmark and Germany (e.g. Lübeck – Puttgarden), requiring a change of locomotives and Diesel traction. The most non-electrified lines in Germany are about to be electrified in the framework of agreed projects, “if they are part of the requirement plan”[47, 48].
- Different standards with regard to
  - train length in general and below standard parameters in particular between Stockholm and Malmö (630 m), Hallsberg and Malmö[49], on a few sections in Germany (600 m), on the Brenner line until Firenze/Ancona (600 m), and on many sections in Italy south of Firenze (400/600 m);
  - axle loads below the standard parameter (< 22.5 t), on 25% of the sections in Italy;
  - loading profile for the transport of semi-trailers ("P400") which is not achieved on the current lines in Italy south of Firenze/Bologna;
- A low rate of ETCS implementation, with the exception of Austria and Denmark[50], time horizons being under discussion and resulting into a "patchwork" of ERTMS implementation as well as detailed practical problems. The latter are caused by long realisation periods in which different ETCS levels

47 Feedback provided by BMVI by e-mail, 17.10.2014.

48 The intitial conclusion to electrify also the remaing parts of “the 550 km of sections” which are not yet electrified was deleted by RFI, by e-mail of 14.10.2014, so that there is no need for including electrification in Italian projects, obviously.

49 Feedback provided by the Örebro region by e-mail of 17.10.2014.

50 Denmark will be the first country to implement ETCS on the entire conventional railway network (until 2021).

and software releases were applied by infrastructure managers, rail industry and railway undertakings, which require a more detailed observation and monitoring, if ETCS is to supply a benefit to the rail transport market. It is recommended to focus such coordination to one entity preferably the European Coordinator for ERTMS, rather than the different Core Network - or Rail Freight Corridors.

There are significant congestion problems on the **road** network around most large cities during peak-periods and these are generally taken into account in the national and regional plans for each country. Inter-urban roads have generally less congestion problems and the motivation for measures to improve the road infrastructure is not only based on the availability of physical capacity but also to ensure e.g. the smooth flow of traffic, to increase traffic safety or to avoid sensitive populated or environmental areas. In some cases, such as the Fehmarn Belt Fixed Link, there is significant time-saving compared with the ferry alternatives or the longer route through Jutland. There are other important measures not related to road infrastructure directly, but to other issues such as regulations, technological improvements or improved vehicle capacity unitisation. Whether these issues are best addressed by the public or private sector is sometimes unclear. Should the public sector invest in or support safe parking or provision of alternative fuels? Our conclusion is that cooperation is necessary between all interested partners involved, public as well as private. It is very unlikely that the public sector will itself finance all necessary infrastructure (safe parking areas, filling stations etc) but can be active in the use of infrastructure and/or vehicle regulation in order to encourage or discourage transport choices by the infrastructure users. For private organisations, there needs to be a financial benefit both in the long- and short-term in order to get involved. This is a complicated process that will require concentrated action.

In all core **airports**, open access is basically granted. Connectivity with the TEN-T road network is ensured for all airports, whilst 6 airports have no connection to rail. Helsinki, the only airport lacking a connection among the panel of airports due to be connected to rail by 2050, will get its first rail connection in the year 2015. The way to the implementation of Single European Sky will involve ScanMed airports, although information on airports involved in the "SESAR road map 2014-2020" is not yet available.

As concerns capacity, the survey has suffered from the misleading significance of some indicators due to express "airport capacity" in TENtec, and the consequent lack of some data. Anyway, from the comparison of traffic figures with capacity indicators, a few airports appear to have reached an annual passenger traffic level above their respective potential capacity, expressed in terms of passengers/year. Projects aimed at improving capacity are existing and underway, and the foreseen outcome will allow the stakeholders to achieve compliance with the objective set in the Regulation. The opening of airport Berlin Brandenburg will constitute a substantial improvement of airport capacity on the corridor and highlight the role of the Capital region of Berlin as an urban node of the corridor at the crossroads of three of the nine corridors[51].

The core requirements of the Regulation (EU) 1315/2013 on **ports** are mainly fulfilled by the 25 ScanMed Core ports regarding maritime and hinterland transport infrastructure. However, the ports' environmental infrastructure is still developing. Consequently, already in 2014, a couple of MoS-Projects have been set up to mitigate this identified shortcoming. The I&C Technologies are on a high level. Vessel Traffic Service (VTS) and SafeSeaNet (SSN) are fully implemented; e-Maritime services have to be further developed with a focus on harmonization of IT and data exchange, especially through “single window” solutions. Also this task is covered by a MoS project already, the individual ports need to check in detail how they could fulfil the requirement.

All **rail-road terminals** are connected to rail and road by at least one rail track or one road lane so that this fundamental criterion is met. The other indicators, such as provision of information flows, can hardly be assessd without the involvement of the infrastructure managers and their customers. The question to be discussed with terminal operators is whether they provide for such information systems or whether they are willing to share this kind of information in particular “in real-time” and with whom. That should be done in the year 2015.

Multimodal Transport Market Study (MTMS)

The MTMS pursues the goal to provide a “big picture” of the present and future situation of the transport market for the ScanMed Corridor. According to this objective, a comprehensive overview including all relevant transport modes and infrastructure was presented. The basis for this general perspective is an extensive review of numerous studies, reports and forecasts investigating market sections and nodes of the corridor stemming from the existing databases and additional data provided by infrastructure managers, Members' State Ministries and other stakeholders with the help of the MS involved. This reveals a comprehensive amount of data, subsequently gathered, edited and included into a large scale view on the traffic development of the ScanMed Corridor. With this approach it was possible to identify core network areas with highest transport volume in the year 2030. With respect to rail, both passenger and freigt, these are: Mjölby – Malmö, Göteborg – Malmö, Malmö – København – Taulov, Bremen/Hamburg – Hannover – Würzburg, München – Innsbruck, Bologna – Firenze – Roma – Napoli. With respect to road these are: Lübeck – Hamburg/Bremen – Hannover, Würzburg – Nürnberg – München, Firenze – Roma.

[51] Finding supported by the intervention of the Berlin Brandenburg capital region inthe 3rd Forum meeting.

The comparison of the expected traffic volumes and network loads in the year 2030 facilitates the identification of possible capacity constraints (bottlenecks).

Our overview for capacity constraints and capacity utilization provides some valuable indication that, even after the construction of new infrastructure (Fehmarn Belt Fixed Link, Brenner Base Tunnel and their access lines), there remain some bottlenecks along the ScanMed Corridor that may impede future growth of passenger and freight transport. These can be found most notably

- In Finland, for rail: Kouvola – HaminaKotka, Luumäki – Vainikkala, Helsinki, node, Helsinki – Turku; and for road: regions of Turku and Helsinki and the section Kotka–Hamina–Vaalimaa;
- In Sweden, for rail: Stockholm and Göteborg node, Hässleholm – Lund, Trelleborg – Malmö (- København);
- In Denmark, for rail: (Malmö-) København region;
- In Germany, for rail[52]: Bremen/Hamburg - Hannover, Würzburg - Nürnberg, München area; and for road: regions of Hamburg, Hannover and München as well as the section Würzburg – Nürnberg;
- in Italy for rail - based on information provided by RFI: Verona - Ponte Gardena until the completion of the entire access lines to Brenner Base Tunnel; Firenze - Livorno/La Spezia related to the ports' traffic development; additionally there will be some constrains in the traffic of urban areas[53];
- in Malta for the connection between the port, airport and the capital city.

In Austria, no capacity problems are reported, after the infrastructure projects have been completed.

Critical Issues

Critical issues have been identified with respect to certain characteristics of the Corridor and the realisation of respective measures or projects to improve the present situation. Results of the study review, compliance analysis and multimodal transport market study were discussed with corridor stakeholders, which confirmed the findings and identified the measures to mitigate additional critical issues. The main conclusions have been arranged by mode and section of the corridor (from north to south) in the following paragraphs. The number of projects, however, and the qualification that the list of projects is indicative does not allow to present the projects in detail.

[52] According to BMVI by e-mail of 17.10.2014 the final identification of bottlenecks are subject to the Federal Infrastructure Plan investigations, which are about to be completed in 2015.

[53] Feedback from RFI, e-mail 28.11.2014

Rail

Finland is somewhat isolated from the rest of the ScanMed rail infrastructure and is therefore exempted from complying with the European rail gauge standard. Concerning this parameter, the Finnish rail network is similar to the Russian, but the respective border crossing to Russia was not in the focus of this study. The comprehensive view to the future of the Finnish railway system within Europe takes into account the ScanMed Corridor for the East-West traffic and the North Sea-Baltic Corridor for the north-south traffic, both interrelated at the node of Helsinki. Consequently, some major rail projects are located in that urban node to improve the network capacity, such as: Ring rail to Helsinki airport (under construction), improvements near Helsinki end station (new track to Pasila, improvements at Helsinki yard, city rail loop) and separation of commuter and long distance trains to their own tracks (urban rail to Espoo) as well as the port connection. These are complemented by a measure in the freight terminal Kouvola and further measures are, in particular:

- Repairs to areas with ground frost damage and soft soils along main railway lines;
- A new shortcut railway Espoo – Lohja - Salo in Helsinki - Turku section;
- Investigation of the Helsinki – Turku - Tampere triangle;
- Improvements to service levels along the railway section Kouvola – Kotka/Hamina: Several improvement measures for the railway yards as well as different railway and road sections (combined rail and road project);
- Implementation of ERMTS.

The technical parameters are basically fulfilled by the **Swedish** rail network, despite the required freight train length of 740 m and the implementation of ERTMS, as parts of ERTMS Corridor B: Stockholm – Malmö, Hallsberg – Katrineholm, Hallsberg – Mjölby. The main concerns result from current and even more ambitious future passenger and freight volumes to be transported by rail. Norwegian, Swedish, and Danish regions have created the vision of the “8 million city” linking major towns – even across borders - by high speed trains with reasonable travel times. In order to achieve this, the network lines need to be upgraded or newly built, both in the designated urban nodes of Stockholm, Göteborg and Malmö, as well as the relevant sections in between, in particular: Stockholm city line, Citybanan (commuter train tunnel under central Stockholm with two new stations), Ostlänken (new double-track line for High Speed Trains on section Linköping – Järna), Hallsberg - Åsbro - Dunsjö - Degerön (-Mjölby), upgrade to double track and grade separation on respective sections; Malmö – Jönköping: High Speed Link study; Norwegian/Swedish border – Göteborg: study; Western Sweden/Göteborg (different improvement measures including a city tunnel “West link project”); Göteborg: Central station (replacement of signal box), Olskroken (grade separation); Western Sweden: Varberg – Hamra (new double track), Hallandsås project (double track railway tunnel), Western Main Line Ängelholm –Maria station, Åstorp – Teckomotorp - Arlöv (expansion and new stations); Southern Main Line Arlöv – Lund (made of two sections with improvement works); Skåne/Småland regional railway stations renewal ("Pågatåg" network); Skåne region: different capacity enhancement measures; Fosieby – Trelleborg: Different capacity enhancement measures including construction of a double track line.

The technical parameters (axle load, operating speed for freight trains) are basically fulfilled by the **Danish** rail network, with the exception of some areas which do not fulfill the required full electrification, implementation of ERTMS and at least 740 m freight train length on all sections today (this will be changed in the next years with coming projects, see below). Interoperability on border crossing sections Malmö/København and Padborg/Hamburg is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules. The main concerns result from current and even more ambitious passenger and freight volumes that shall be transported by rail on the corridor. In order to do that the network lines need to be upgraded or newly built, both in the urban node København and the relevant lines sections connecting it with Sweden (Malmö via the Öresund fixed link) and Germany via the Great Belt and the Fehmarn Belt (København – Ringsted – Rødby – Fehmarn Belt Fixed Link - Fehmarn), involving the Fixed Link as a combined rail and road tunnel. Start and efficient completion of Danish infrastructure projects, which are about to provide additional capacity and/or reduce travel time for passengers and freight or allow a more efficient rail operation, in particular: ERTMS Level 2, Baseline 3 on the entire conventional railway network in Denmark by the end; Increase the capacity of København central station through development of Ny Ellebjerg station; Ringsted - Fehmarn: Upgrade and renew the 115 km long railway line to a new, future-proof line; New Storstrøm Bridge (primarily rail, but includes also road and bicycle lanes; new HSL rail line between København and Ringsted via Køge (up to 250 km/h for passenger trains); Speed increase Ringsted-Odense; New railway line on Western Funen Kauslunde – Odense on about 35 km; Construction of a double track line Vamdrup and Vojens; Capacity increase on the Øresund railway line to eliminate potential future bottleneck; and full attention on the completion of the Fehmarn Belt Fixed Link for road and rail by 2021;

Despite the high technical standard of the **German** rail network, some required parameters are not met along entire sections of the ScanMed in that country, e.g. electrification, operating speed, ERTMS implementation. Interoperability on border crossing sections Padborg/Hamburg is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules. The main concerns result from current and even more ambitious passenger and freight volumes that shall be transported by rail on the corridor. In order to do that the network lines need to be upgraded or newly built, both in the urban nodes and the relevant lines sections connecting the network with Denmark and Austria. Denmark is reached on two ways: via Jutland and the Fehmarn Belt (Hamburg – Lübeck – Fehmarn – Fehmarn Belt Fixed Link - København), involving the Fixed Link as a combined rail and road tunnel. Austria is reached at the Kufstein border station.

- The Fehmarn Belt Fixed Link will be in operation by the end of 2021, as the implementation for the southern access will be in two steps - electrification until 2021 and upgrading to double track until "seven years after the opening of the tunnel", thus 2028 according to the current timing. Associated with that, a decision on how to supply sufficient capacity on the Fehmarnsund crossing (isle of Fehmarn - German main land) has to be made.
- Hamburg: Multi-rails extension between Hasselbrook and Bargteheide to increase the capacity of Hamburg central station and remove bottleneck on section Lübeck - Hamburg;
- Interoperability constraints resulting from different electrification standards (15 kV 16 2/3 Hz in Sweden, Germany and Austria, 25 kV 50 Hz in Denmark and 3 kV DC in Italy on the existing lines used for freight transport) and still a few non-electrified sections in Denmark and Germany (e.g. Lübeck – Puttgarden), requiring a change of locomotives and Diesel traction;
- Capacity constraints on the rail network on the lines (Bremerhaven-) Bremen/Hamburg – Hannover as well as Fulda – Nürnberg, Ingolstadt – München, node München, München – Kufstein; even if the foreseen measures of the BVWP 2015 (German "Bundesverkehrswegeplan") for high priority improvements ("Vordringlicher Bedarf BVWP") of the railway network are realised, there will remain bottlenecks in the railway network regarding the transport volume forecasted for 2025 on the ScanMed Corridor in Germany.
- Additional capacity on rail lines linking Bremen, Hamburg and Hannover with southern parts of Germany along the corridor ("Y-Trasse", "Ost-Korridor", or alternatives); expansion of rail routes from the port of Rostock to an axle load of 25 tons; Berlin – Nürnberg covered by "Verkehrsprojekte Deutsche Einheit – VDE", in particular: VDE 8.2 Erfurt - Halle/Leipzig: New line/Upgrade; VDE 8.1 Nürnberg - Erfurt: New line/Upgrade; ABS/NBS Nürnberg - Ingolstadt - München: New line/upgrade Ingolstadt - München to be finished in 2015; competition for valuable market attractive train path between far distance high speed, regional passenger and freight trains on mixed lines in particular in Germany around the nodes of Hamburg, Bremen, Hannover, Nürnberg and München at particular times of the day resulting in respective measures in nodes of the German ScanMed corridor: Halle, Leipzig, Erfurt, Berlin, München; ABS/NBS München - Rosenheim Grenze (Kufstein): Upgrade/New line; Reach Compliance by improve technical parameter to achieve the objective set for 2030 (to be clarified, if part of a project or not): Markkleeberg – Gaschwitz - Großdeuben by increasing operating speed for freight to 100 km/h; Altenburg – Paditz; Hof – Regensburg Hbf by electrification of about 180 km of track.
- Regional projects in the Capital Region Berlin-Brandenburg, identified by the region such as the improvement of the rail connections to the terminals / freight villages and intermodal freight capacities;
- Study on the creation of an additional railway link from the northern catchment area of Hamburg Airport (Rail and Airport project)

The following issues are to be coordinated at the **German / Austrian border** crossing project:

- Timely completion of studies and works on the remaining parts of the northern access lines to the Brenner Base Tunnel in the area of Kundl/Radfeld – Kufstein – Rosenheim – München, where a joint project has been agreed upon between Germany and Austria and is currently carried out by DB Netz and ÖBB respectively;
- DE/AT border – Schaftenau: Capacity improvement for border crossing rail traffic: Unterinntalbahn - expansion second step; The existing double track line will be expanded by construction of a new double track line on the length of about 8 km to reduce the travel time and to expand the capacity (expected finalisation after 2030);

On the **Austrian** section of the ScanMed corridor, the technical parameters are basically achieved, with the exception of operating speed, which is below the standard on the present Brenner mountain line. Due to the slope, the train length (in connection with the weight) is also limited. However, Austria is made considerable progress with building the new Unterinntal railway line for High speed passenger and freight trains. Interoperability on two border crossings (Kufstein, Brenner/Brennero) is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules, which had to be modified in conjunction with the implementation of ETCS level 2 between Kufstein and Brenner. The main concerns are resulting from current and even more ambitious passenger and freight volumes that shall be transported by rail on the corridor. In order to do that the network lines have been upgraded or newly built or need to be completed as follows:

- Schaftenau – Kundl/Radfeld as part of the Unterinntalbahn - expansion second step: The existing double-track rail line will be expanded by construction of a new double-track high-speed line on a length of 19 km to reduce travel time and to expand the capacity (expected finalisation after 2030);
- Rehabilitation point switches, safeguarding of level crossings, noise protection, Rehabilitation railway stations, Park & Ride sites as parts of the investment programme 2013-2018";
- Brixlegg and Schwaz, respectively, reconstruction railway station;
- München - Verona, in particular Brenner/Brennero station: Improve interoperability by short term measures: Short term infrastructural, operational and regulatory measures to improve the quality of the service and the efficiency until the base tunnel is in operation;
- Full attention on the completion of the Brenner Base Tunnel mitigating the inherent risk elements such as financing, environmental assessment, involvement of civil society;

On the **Italian** sections of the ScanMed corridor multiple technical parameters are not achieved, with the exception of 1435 mm gauge and electrification, although provided by two different power supply systems (3kV on the conventional and 25 kV on the new high speed lines). The following could be highlighted: train length below 740 m, on the Brenner line until Firenze/Ancona (600 m), and on many sections in Italy south of Firenze (400/600 m); axle loads below the standard parameter (< 22.5 t), on 18% of the sections in Italy; loading profile for the transport of semi-trailers ("P400") which is not achieved on the current lines in Italy south of Bologna. Interoperability on the Brenner border crossing (Brenner/Brennero) is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules, which will have to be modified in conjunction with the implementation of ETCS level 2 between Kufstein and Brenner and in Italy. The network lines have been upgraded or newly built or need to be completed as follows:

- Timely completion of the studies and works on the remaining parts of the southern access lines to the Brenner Base Tunnel on the line of Fortezza – Verona and nodes of Bolzano and Verona;
- Napoli – Bari HSL: Doubling Bovino-Cervaro line (Phase 1), completion of section Napoli - Foggia - Bari: Construction of Napoli-Cancello and the completion of doubling of lines Cancello-Vitulano and Apice-Bovino;
- Messina - Catania - Palermo: several measures, including ERTM System Catania-Palermo;
- Palermo – Catania: double track on the Catania Bicocca-Catenanuova-Raddusa stretch and the enhancement allowing higher speed of Roccapalumba-Marianopoli, stretch Raddusa – Castelbuono, double track between Fiumetorto and Castelbuono);
- Napoli - Reggio Calabria: Upgrading of railway line;
- Technical and infrastructural upgrade of the following nodes: Bari, Palermo (second track of the Palermo bypass and the provision of Computer Based Railway Control System in order to develop urban and suburban railway services and enhance the connection with Punta Raisi airport), Firenze (Multistation Computer Based Railway Control System[54] Upgrading on the node and signalling on the Firenze-Empoli stretch; Railway by-pass and Belfiore HS station) Falconara/Ancona, Napoli, Foggia,
- Firenze - Roma (linea DD): Upgrade and equipped with ERTMS; a new interconnection is to be built in Borghetto;
- Node Roma: Technological upgrading of the Roma node interests the stations of Tuscolana, Casilina, the freight connection and the distancing on the Tiburtina-Ostiense stretch as well as Rome Ring north;
- Roma - Napoli (via Formia): Technological upgrade of the Roma-Napoli: The measure will consist in technological upgrading of the Roma-Napoli connection (via Formia, conventional line);

[54] The technical description provided does not allow to evaluate what the system is about and maybe part of ERTMS implementation, or not.

- Roma - Napoli AV: Upgrade of traffic control system on Roma-Napoli HS line: The measure will provide an upgrade of the traffic control system and enhance ERTMS standard to 2.3.0d;
- Napoli - Salerno: Completion of TLC on the coast line;
- Bari - Foggia: Completion of FCCM and infrastructure;
- Salerno: Salerno railway station plan: Definition and development of a new layout for the station infrastructure and equipment;
- Bari - Taranto: Second track on S.Andrea-Bitetto and technological equipment of Bari-Taranto line;
- Bologna - Ancona / Bari - Taranto: Technological upgrade, inter alia to train length 750m and P/C80 gauge;
- Bologna – Firenze and (Firenze) - Pisa - La Spezia: Upgrade to P/C80 gauge;
- Bologna - Firenze - Pisa - Livorno/La Spezia: Upgrade to train length 750m;
- Verona high-speed node: connection from north (2nd phase: Verona Porta Nuova station - Verona-Padova HS line, and the renewal of Verona Porta Vescovo station;
- Upgrading of Catania Node: Completing the Catania underground by-pass in order to develop urban and suburban railway services, including a double track line and three new urban stations;
- Roma node: Roma freight line: Development of a freight dedicated connection to the main north-south line bypassing the node, in order to allow a more effective management of rail freight traffic;
- Firenze - Roma - Napoli and Napoli - Paola: Gauge upgrade Firenze -Roma - Napoli - (Gioia Tauro);
- Bicocca - Augusta: Higher speed on Catania-Augusta;
- Firenze - Roma - Napoli - (Gioia Tauro): Reach Compliance by upgrading to min P/C 400 or P/C 80 like on connected lines: Improve technical parameter to achieve the objective set for 2030, for lines not included in other detailed projects;
- On various sections, which are to be identified by RFI in detail, the present non compliance with technical standards shall be mitigated:
  - Compliance to TSI in stations: The measure aims at improving service quality in stations with specific actions to improve accessibility, service quality and compliance to TSI,
  - Elimination of level crossings: The measure aims at improving safety on various lines in the core network through the elimination of existing level crossings,
  - Improving maximum axle weight to 22,5 tonne/axle: The project aims at improving the maximum axle weight on lines not included in other specific projects,
  - Deployment of ERTMS trackside equipment: Corridor ERTMS (phase 2) and preparation works,

- Improving maximum speed on HS "antenna" lines: The project aims at improving the maximum speed allowed on lines feeding the HS network on ScanMed Corridor,
- Increasing line speed: Implementation of the measure will allow reaching the compliance with standard of 100 km/h operating speed for freight.

In order to connect the RRT of the ScanMed corridor to international rail freight transport via Brenner/Brennero it is essential that their access and the aligned rail infrastructure provides for the loading profile P/C 400. The upgrading to that standard in Italy should therefore start from the North (Bologna/Firenze) to the South so that respective sections will become effective to the market stepwise.

If a focus on domestics transports and seaport hinterland service is agreed upon in Italy the enlargement of the loading gauge is less important since ISO containers can be transported on flat wagon already and the terminals are equipped for handling.

Road

- Full attention on the completion of the Fehmarn Belt Fixed Link for road and rail by mitigating the inherent risk elements such as financing, environmental assessment, involvement of civil society.
- One of the measures related to the previous is also the Fehmarnsund bridge. It is needed to define if the Fehmarnsund bridge shall be renovated or replaced by a new “combined” bridge or by separate bridges and to identify who has to pay. Since the current bridge is relevant for road and rail the issue is also mentioned in “rail” chapter.
- Road quality e.g. maintaining speed, safety, standard etc. for cars, trucks and buses. Clear signposting etc.
- Congestion points in terms of bottlenecks or missing links. Often in and around large cities or geographically limited size such as certain bridges or tunnels.
- Availability of alternative fuels and filling stations along the entire corridor. As the future is likely to include several alternatives at the same time it is important to include ALL forms of alternative fuels for the whole corridor. The general location of LNG fuelling stations should be cordially agreed upon.
- Information systems and ITS solutions to e.g. inform and potentially steer the traffic to/from desired routes. Can be to avoid delays or accidents further down the network, to re-route in case of big events or simply to control the traffic flows via e.g. traffic metering.
- Safe parking facilities along the route. Distances not more than 100 km between parking locations have been suggested.
- General developments of vehicle technology, emission regulations, weights and dimensions regulation etc. have a significant effect on the ScanMed Corridor as well, but the potential of a corridor approach must be evaluated first.

- Furthermore it should be stressed that ongoing projects such as SWIFTLY Green – Sweden-Italy Freight Transport and Logistics Green Corridor are important for “Greening” of the Corridor. The project shall provide concrete advice on issues such as reducing noise and air emissions as well as increased environmental efficiency by mode. The project includes examples where high-emission HGV’s are banned from certain parts of the network encouraging modal shift to less environmentally harmful transport modes as well as the use of newer and more environmentally friendly road vehicles.
- There is no common view between countries or regions on the issue of “longer and heavier trucks” (called HCT = High Capacity Transports in Scandinavia) HCT exempts parts of the road freight transport from the maximum permitted parameters defined in Directive 96/53/EEC. Regulations currently allow larger and heavier trucks in Sweden and Finland. Denmark is testing the same vehicle dimensions on a limited part of the Danish road system. Furthermore, there are pilot tests on the sections Malmö - Göteborg and Malmö - Stockholm using dual-trailers. The benefits of this solution are a better use of available capacity as well as lower emissions per transported ton and lower costs. In other parts of the corridor, there is scepticism to allow longer and heavier trucks. Germany has created field-test on selected roads for distinguished applicants which is ongoing, whereas Austria and Italy have already expressed that they will not accept such vehicles.

Finland

- Hamina: E18 Hamina bypass: The project includes a construction of a 15 km ring road for safe and smooth traffic on the north side of the city of Hamina.
- Helsinki: Ring Road III, the second phase: Ring Road III, which is part of E18, will be improved in the Lentoasemantie area and between Lahdenväylä and Porvoonväylä.
- Hamina-Vaalimaa (Russia border): E18 Hamina–Vaalimaa: The completion of the E18 highway between Hamina and Vaalimaa will provide a motorway-standard road from Turku to Vaalimaa, on the Russian border.
- Helsinki: Ring Road III, the third phase: Construction of new intersections and third lines for needed sections, improvement of existing intersections, parallel road connections as well as public transport and light traffic arrangements, implementation of the noise abatement.
- Naantali-Kaarina: E18 Naantali-Kaarina: Construction of additional line sections, new intersections and tunnel, improvement of existing intersections, parallel road network, light traffic system and traffic management system.
- Implementationof ITS projects such as Nordic way, Next-ITS and EIP++.

Sweden

- E4 Stockholm Bypass is a 21 kilometre new road (18km in tunnel) in the Western parts of Stockholm.

- E4/E18 Capacity enhancement, as a consequence of the Stockholm Bypass: Small-scale investments and ITS solutions for improved capacity and traffic management.
- E4/E20 Essingeleden-Södra länken: New access and exit ramps
- E4 Norrtull, Haga Södra-Kista: Minor improvements of existing roads and traffic management measures
- E4 Tomteboda-Haga Södra: Measures for increased capacity along existing road (E4/E20), including bridges and new ramps
- E4 Ljungby-Toftanäs: Reconstruction to motorway standard in existing alignment. The measures contribute to protect an important water reserve
- E6 Pålen-Tanumshede: A 7 kilometre new motorway and the final section of the motorway through Bohuslän. Passes a world heritage area
- E6.20 Söder/Västerleden, Sisjömotet: Construction of additional lanes on existing hard shoulders and ITS systems for increased traffic safety
- E6.20 Hisingsleden Södra delen, four lane road, interchanges and measures for traffic safety
- E6.21 Göteborgs hamn/Lundbyleden: Measures on existing road for increased road safety
- West Swedish Agreement Road, includes measures for a better and more environmental friendly road transport system in West Sweden and the Marieholm Tunnel.
- E6 intersection Flädie: Reconstruction of interchange including higher geometric standard and a new roundabout
- E6 intersection Spillepengen: A grade-separated junction in the form of a bridge over the existing roundabout so that the though-traffic bypass at an upper level
- New E6 Ring road in Trelleborg: Study on a new ring road in Trelleborg connecting E6 and the Port of Trelleborg.
- E20 Norra Länken, Värtabanan

Denmark

- Køgebugt Motorway: Expanding the motorway on this section South of København from six to eight lanes, removing a bottleneck of 14 km. Northern section due to open in 2015, Southern by 2018;
- South of Odense Motorway: Expansion from 4 to 6 lanes (current bottleneck);
- Western Funen Odense West – Middelfart: Extension from 4 to 6 lanes, technically divided into three sections;
- Western Jutland Fredericia – Kolding: Extension from 4 to 6 lanes on a stretch of 19 km. The EIA has been concluded.

Fehmarn Belt fixed link between **Denmark and Germany** (as part of the combined road and rail project, see detailed project description below);

Critical issues on the **German** sections and corresponding measures have been identified and grouped by subject and potential relevance for CEF funding[55] into five German Corridor Programmes:

1. Measures to increase road safety through additional parking areas (total investment years 2014-2020 ca. 280 m€)

2. Measures to increase road safety by removing bottleneck on cross-border sections of federal highways

3. PPP-projects, including the one on the A7 which already started in summer 2014.

4. Measures to guarantee sustainable and efficient use of existing infrastructure through invention of new technologies/ITS

5. Several measures for removing bottlenecks on and upgrading of the corridor.

On the **German/Austrian** border crossing Kiefersfelden – Kufstein on the motorway A 93 the bottleneck has to be removed by upgrading the Innbrücke Kiefersfelden.

On the A 12 Inntal Autobahn on the **Austrian** section of the Corridor one issue is critical to be completed by 2014: Volders - Hall: Rehabilitation of the carriageway surface.

According to analysis and evaluation of the **Italian** road infrastructure managers the following sections of the Italian ScanMed road networks shows particular deficits with respect to capacity, missing link or improvement of quality of service for the users:

- Firenze-Bologna: "Variante di valico" between Firenze and Bologna: The measure is a deviation of A1 motorway, 62.5 km long and with long stretches in viaduct and tunnel, running parallel to the central part of the Bologna-Florence section.
- Salerno-Reggio Calabria motorway: Completion of the motorway between Salerno and Reggio Calabria
- Bologna motorway node: Construction of a northern by-pass for the Bologna node and Bologna-Casalecchio di Reno node: Upgrade of motorway connection between Bologna and Casalecchio
- Verona-Bologna: Motorway link Campogalliano-Sassuolo: Objective of the measure is the connection between the Sassuolo industrial area and the A1 motorway by the construction of a road link.
- Roma-Napoli: Roma-Latina Motorway: Construction of a new motorway stretch between Roma and Latina (68,3km) a by-pass in Latina and the upgrade of connections to the existing infrastructure.

[55] The grouping has been made by the German BMVI.

- Napoli-Salerno: Salerno-Avellino motorway upgrading: Upgrading of the Salerno-Avellino existing road to motorway standards.
- Roma-Napoli: Benevento Caianello motorway: Upgrading to 4 lanes of the Benevento-Caianello road (SS 372 Telesina)
- Siracusa-Gela motorway: Construction of new motorway between Siracusa and Gela
- Ragusa-Catania motorway: Construction of new motorway between Ragusa and Catania
- Roma: Connection between Fiumicino Airport and A24 motorway: Preliminary and final planning of south-west quadrant exits and new parallel roads
- Roma: Upgrade of technological equipment and safety in galleries: Upgrade of technological equipment and safety in galleries
- Palermo: New Palermo ring road: Construction of a new ring road for the Palermo metropolitan area
- Palermo-Catania maintenance and upgrade: Reinforcing of structures and installations of new safety barriers
- Catania by-pass RA15: Modernisation and upgrade of by-pass
- Gioia Tauro: Enhancement of SS 682 and SS 18: Enhancement of SS 682 and SS 18 enabling a better last mile connection to the port
- Augusta: Enhancement of SS 193: Enhancement of SS 193 enabling a better last mile connection to the port
- Bari: Enhancement of Bari ring road: Enhancement of Bari ring road enabling a better connection to the port

Also **Malta** has identified projects on its TEN-T core road network aimed at increasing capacity and safety on the modal interconnection Marsaxlokk – Luqa - Valletta.[56] The project include the following: Grade separation of Route 1, Upgrading of route 6 and implementation of ITS on Maltese roads.

Airports

In general, airports of the core nodes aligned with the corridor suffer from timely completion, e.g. Berlin-Brandenburg (BER), sufficient access by rail (Helsinki) as wanted in the TEN-T corridor objectives, saturated road access at peak times and capacity enlargement plans which are disputed on a local level. Airport managers, industry representatives and residents impacted by the noise and other harmful emission of the airport and the resulting air and land traffic are discussing whether and how the capacity can be increased in a sustainable way.

For the ScanMed airports of Helsinki, Stockholm, København, Berlin, Hamburg, München and Roma, the possibility and necessity for a connection to the high-speed

[56] Feedback by Transport Malta, 31.10.2014.

railway network has to be analysed in a separate study by these airports and regional stakeholders.

It should be discussed with the airport managers whether airports as single installations would require a local, regional or national coordination (e.g. the German "Flughafenkonzept" = airport concept established in 2009 or in the framework of the Italian "Piano Nazionale degli Aeroporti" = national plan on airports), rather than or in addition to a European Corridor coordination, despite their "land" catchment areas are crossing borders (e.g. København/Malmö). However, issuing an "Airport National Plan" could lead to incoherence between the Plan and the current definition of the core network. As an example, the latest version of Italian "Piano Nazionale degli Aeroporti"[57], which provides for a cluster of 10 "strategic" airports (one per "traffic basin"), and other 26 “airports of national interest”, identifies 3 "strategic" airports that are on ScanMed corridor but not part of the core network, namely Firenze/Pisa, Bari and Catania.

Within the area of airports detailed measures and resulting projects have been identified, jointly with the stakeholders concerned.

Seaports

Most of the ScanMed core ports are equipped with access to rail, road and inland waterway network, unless the geographical and climate structure does not provide any inland waterways for freight transport, such as Italian and Maltese Ports.

In general, most of the ScanMed core ports are connected with railway access to the hinterland (except, understandably, Maltese ports of Marsaxlokk and Valletta). However, the number of railway tracks connecting the core ports with the hinterland does not represent the real infrastructure capacity. Even bigger ports such as the Port of Hamburg with an extensive number of tracks leading out of the port need additional attention and efforts to extend the capacity of the rail hinterland network towards the south of the ScanMed Corridor until 2030, making sure that the ports can fulfil their role in the TEN-T core network to the utmost extent (see also ‘critical issue’ railway infrastructure).

Specific problems have been identified on the seaside access to the ports in the Northern Baltic Sea to be equipped with additional icebreaking capacities to maintain navigation throughout the year (e.g. HaminaKotka, Helsinki, Turku/Naantali, Stockholm).

[57] Released by Italian Government on 30.09.2014.

The Regulation (EU) 1315/2013 and other EC guidelines on sustainability, energy efficiency and CO2 reduction require publicly accessible Liquefied Natural Gas (LNG) refuelling points for maritime (and IWW) transport to be provided by all the maritime core ports by 2030. There seems to be “sufficient” time to achieving this objective but nevertheless the starting needs to be observed.

Operators of ferry lines are currently challenged by IMO conventions requiring lower emission vessels (scrubbers, LNG) and are dealing with the implementation deadlines given for the respective area (Baltic, North Sea, Mediterranean) - an issue which is not directly linked to the corridor approach since it targets at sea areas.

A first glance on the ScanMed ports indicates a wide range of frequencies of regular weekly freight and passenger ferry connections between Finland and Sweden (Turku/ Naantali and Stockholm), Denmark and Norway (København – Oslo), Southern Sweden/Germany (Malmö/Trelleborg/Göteborg to Lübeck-Travemünde / Rostock) as well as between Italian and Maltese ports (Taranto to Valletta and Palermo to Valletta).

While the numbers of ferry connections (short sea routes) are set by the market’s demand and supply structure, the surrounding conditions on port infrastructure and hinterland access, administration, regulations and information systems play an additional role. The status of the current analysis, however, does not yet allow for specific comments on “critical issues” on the MoS conditions of the ScanMed Corridor.

Reform of the Italian Port system is ongoing. It aims at increasing traffic for Italian key ports, in particular for those that will be selected as “hubs” for international transport on the land side of the Corridor, and for deep sea traffic to/from Far East. This definition of “hub” does not fully correspond with the expert use of a “hub” which is part of a “hub-and-spoke” concept. In the case of maritime transport in the “hub” port transhipment between mother and feeder vessels takes place. The characteristic of a “hub” is thus high performance on quayside handlings but not necessarily a large exchange with the hinterland at all. Only a few ports in Europe are or will be “hubs” in the global shipping industry. Italy should therefore critically assess whether all their ScanMed ports, even those in short distance, shall become “hub” ports.

Within the area of seaports, critical issues, measures and resulting projects have been identified, jointly with the stakeholders concerned and included in the List of Project.

Rail-Road Terminals

With respect to rail-road terminals, critical issues are generally rail and road access as well as handling and intermediate storage capacity. However, recently completed enlargement programmes, which were initiated along the corridor by the Brenner Action Plan of 2003 and updated in the “Action Plan Brenner 2009” have resulted in sufficient capacity for the current traffic demand. Good practices applied were double sided, electrified rail access, e.g. in Hamburg-Billwerder and München-Riem, the replacement of old equipment by modern Rail Mounted Gantry Cranes e.g. in Stockholm-Arsta or Rostock to name but a few from recent completion.

In Germany[58] the „Entwicklungskonzept 2025 für den Kombinierten Verkehr (KV)“ (Development concept 2025 for the intermodal transport in Germany) highlighted the future capacity needs per location area (not single terminals) and suggested a continuation of the successful financial support of the infrastructure construction.

According to the Development Concept 2025, the growth of the intermodal market volume requires an increase of handling capacity in several terminal areas while leaving the decision on the exact terminal and improvement measure to the private sector.

Although some terminal projects could be identified already, deeper analysis on all 44 terminals should be performed only at a later stage when the respective stakeholders are involved in the process notably 2015.

<u>Multimodal Dimension</u>

The TEN-T-Regulations defines, in Article 3 (n), “multimodal transport” as “the carriage of passengers or freight, or both, using two or more modes of transport” as part of a single journey. The TENtec Glossary defines “multimodal platform” is a virtual layer in which TENtec sections or nodes of different modes are connected with each other. Despite these definitions we have used the term to categorize critical issues and measures which are involving more than one mode, practically.

Road, Rail and Sea: Finland Nationwide: Renewal of road, sea and rail traffic control systems: The project of renewing the control systems comprises ICT system projects related to developing the road, sea and rail traffic control systems, as well as equipment and service procurements.

Multimodal passenger traffic: Helsinki: Long distance commuting: trip chains, smart transport, urban development of rail terminal areas (HHT)

Seaport and MoS:

- Ports of Naantali, Turku, Helsinki and HaminaKotka: Joint project of the Finnish ScanMed ports including e.g. improvements of the maritime access as well as

[58] Entwicklungskonzept KV 2025 in Deutschland als Entscheidungshilfe für die Bewilligungsbehörden, Aktenzeichen Z14/SEV/288.3/1154/UI32;UI32/3141.4/1, Abschlussbericht, Hannover, Frankfurt am Main, November 2012.

LNG-infrastructure and services, development of the intermodality and e-Freight

- Turku/Naantali - Stockholm: Pre-identified project: study and potential services for further port interconnections, serving the Ports of Stockholm and the Finnish ports;[59]
- Trelleborg - Malmö - Göteborg - NO border: Pre-identified project: Works, multimodal platforms and port hinterland connections: Several ongoing projects and planned studies on this section;[60]

København, Lübeck, La Spezia, Palermo, Gioia Tauro and Augusta: Planning and Implementation of a Logistics Platform or freight village to reach compliance with Regulation (EU) 1315/2013 objective set for 2030

Rail and Airport:

- Göteborg-Landvetter Airport connection, new double track via Landvetter airport (Mölnlycke-Bollebygd)
- Hamburg Airport: Study on the creation of a railway link from the northern catchment area of Hamburg Airport. Technical feasibility study as well as cost-benefit analysis
- Airport Catania Fontanarossa: Railway connection and new station;
- Roma Fiumicino: New metro link between Rome and the airport, upgrading of the rail link , completion of Northern Ring and accessibility to Roma Fiumicino airport;

Rail and Port:

- Göteborg Port line (upgrade to double track) and new Marieholm bridge project;
- Hamburg: New Bridge Kattwyk, converted train station Waltershof 2nd stage, construction of a two-pronged connection between Vorstellgruppe Altenwerder East and New Railroad Bridge Kattwyk, four new tracks Bf Hohe Schaar including 2-track connection of the new railway bridge Kattwyk according to two axes concept, construction of a parking area for locomotives, track doubling Nordkurve Kornweide;
- Lübeck: Expansion of the railway connection to and from the terminals in Lübeck;
- Taranto: Upgrade of railway connections and infrastructure in the Port of Taranto;
- Napoli: Upgrade of Napoli port railway connection
- Gioia Tauro: Upgrading rail link and rail facilities at Gioia Tauro seaport;
- Bari, Palermo, Augusta: Construction of new railway connections to the ports
- Livorno: New station on Darsena Toscana and connection to Tyrrhenian line RACCORDO Project - Rail Access from Coast to Corridor

[59] Feedback by Ports of Stockholm by e-mail of 28.11.2014.
[60] Feedback by Swedish Transport Administration by e-mail of 27.11.2014.

Rail and Road:

- Kouvola-Kotka/Hamina: Improvement of service level on railway section
- Øresund Bridge: According to the prognosis there will be some expected challenges for the capacity on the Øresund Bridge in 2035, which will depend on the economic trends in the market. Therefore investigation studies are required to derive measures and their timing.
- Fehmarn Belt Fixed Link realises a fixed, close, and direct connection between Scandinavia and continental Europe. The duration of a train journey between Hamburg and København will be cut short from about four and a half to less than three hours (2:40). In the future, freight trains will be able to avoid the 160 km longer detour via the Great Belt. This will create a strong transport corridor between the Øresund region in Denmark/Sweden and Hamburg in Germany.
- Hamburg: Renovation and redesign of road and rail connections of the container terminal Burchardkai (CTB).

Rail and RRT:

- Stockholm Nord (Rosersberg), rail connection to RRT
- New public siding in Bari Lamasinata Freight village
- Improving the capacity of RRT Verona Quadrante Europa and the connection with the rail network

Road and Port:

- København: Establishing a tunnel from Nordhavnsvej to Nordhavn, connecting container terminal, cruise terminal and future ro-ro terminal;
- Augusta, Bari and Gioia Tauro: Enhancement (ring) road enabling a better last mile connection to the port

List of Projects

The long list of projects concluded from the analysis of documents, reports, studies, national development plans, the compliance analysis and the identification of critical issues has been checked and completed by the Member States and stakeholders after the 4th Corridor Forum meeting. Information received in due time (by 28.11.2014) and with respect to the required data fields, have been included by the Contractor Consortium into the list. Contractor consortium checked it against the characterisation criteria which made the projects to become “critical issues” and whether it is among the “pre-identified sections and projects”, and updated the list accordingly.

Now it is up to the Member States to finally validate the list with respect to integrating the projects into the work plan.

The European Coordinator may add a prioritisation on those projects which require his coordination.

As presented in the table below, the current project list includes 394 projects and measures related to the ScanMed corridor.

Country	Rail	Rail + other	Road	Road + other	Sea-port	Sea-port + MoS	MoS	Air-port	RRT	Other	Total
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Table 14: Number of projects by mode and country (“Diverse” = multi-country projects)

Overview of the work plan (KombiConsult)

The work plan is the focal output of the 1st year activity. All elements of the work plan have been elaborated by the contractors and have been discussed among the stakeholders participating in the Corridor Forum meetings prior to the work plan's submission by the European Coordinator for the approval by the Member States.

The following diagram (Figure 17) illustrates the components of the work plan.

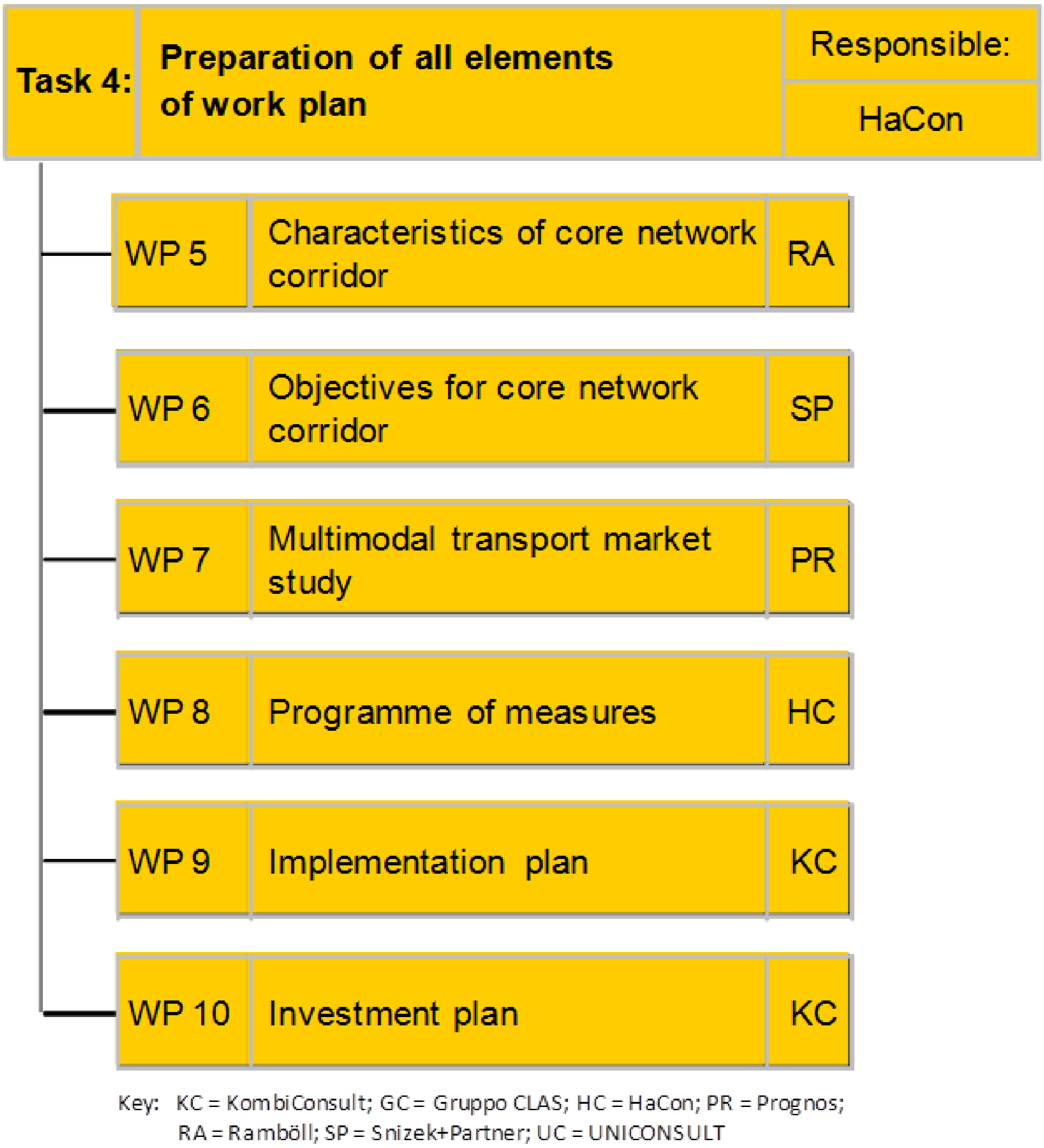


Figure 17: Preparation of all elements of the work plan

Given the timing of the activities and the focus on the TENtec analysis in the first months, the work gained momentum after the 1st Corridor Forum meeting. In order to respect the logic relation between the work packages, we would have changed the sequence of the chapters in this report towards the numbering of the work packages. The objectives of the core network corridor should be presented first, after that the characteristics of the core network corridor should be described and a compliance analysis presented which compares the current status of the parameters with the objectives defined in the respective Regulations (EU) 1315/2013 and 1316/2013. However the following sequence of chapters was provided by the Commission to be used for all nine CNC.

4.1 Characteristics of the Corridor (Ramböll)

4.1.1 Methodology (Ramböll)

The technical parameters of the infrastructure are very different and dependant on mode of transport. For railways, there are clearly defined and measurable technical parameters such as nominal track gauge or deployment of ERTMS. The compliance analysis of the data collected in WP 3 relating to the TENtec Information System compared to the requirements of the TEN-T Regulation is relevant, as is an analysis of the current respectively anticipated future infrastructure needs. For road transport, the objectives are less clearly defined in terms of measurable fulfilment. Objectives such as "providing sufficient parking areas with an appropriate level of safety" are somewhat unclear and the word sufficient is ambiguous and can be interpreted differently.

Therefore the methodology used is a general methodology suitable for most, but not all, objectives. The objectives not easily defined or measurable are therefore analysed in text form.

This first element of the work plan provided an overview of the existing multimodal infrastructure on the corridor, the degree of fulfilment of the TEN-T core network corridor requirements and its bottlenecks and missing links. Specific considerations were undertaken with respect to intermodal nodes and the deployment of traffic management systems. In order to prepare this element of the work plan the consortium proceeded as described in the following steps:

- (1) Analysis of the compliance of the infrastructure with Regulation requirements
- (2) Identification of bottlenecks and missing links
- (3) Analysis of intermodal nodes and their connections within the corridor
- (4) Analysis of deployment of traffic management systems.

The parameters characterising the infrastructure and their data have been completed in work package 3 by means of the TENtec Information System and the back-up tables of the contractor consortium. After entering the target values given in the Regulation (for details of the objectives see Chapter 5.4) the deviation analysis was performed by section for rail and road infrastructure and by node (airport, port, RRT).

According to the Regulation (EU) 1315/2013, Art. 3 the term "bottleneck" is defined as "a physical, technical or functional barrier which leads to a system break affecting the continuity of long-distance or cross-border flows and which can be surmounted by creating new infrastructure or substantially upgrading existing infrastructure that could bring significant improvements which will solve the bottleneck constraints." However, an exact definition for "missing link" is not included in the Regulation. This term could simply be interpreted as a missing piece of infrastructure in the trans-European network, or a substantial break / interruption of a certain characteristic along the corridor, e.g. the change of double track to single track. With the exception of the Fehmarn Belt Fixed Link none of the Corridor's infrastructures fulfils the first interpretation. Since the other option is very similar to the definition of "bottlenecks" in practice we have not distinguished between "bottlenecks" and "missing links" in the following analysis.

Since in particular the definition of capacity constraints is not widely accepted across modes, the capacity data and the traffic data are not available at the necessary level of detail along all sections of the corridor, the consortium has reviewed studies and documents, national infrastructure investment programmes and other sources quoted in the respective technical chapter and highlighted existing constraints or "critical issues".

Also for the nodes, meaning ports, airports and rail-road terminals, the compliance analysis was performed in a similar way as in Step 1 for the modes by comparing the given parameters with the target value of the regulation. Thus the analysis shows the infrastructure characteristics, their performance and the compliance with the future requirements.

Finally, the deployment of traffic management systems was analysed on the basis of the data included in TENtec Information System or the back-up tables of the contractor consortium. The targeted traffic management systems were defined in the Regulation and set as "objectives of the core network corridor" therefore.

4.1.2 Rail (HaCon)

In the year 2014, the rail network analysed for the ScanMed corridor has a length of more than 9300 km (see Table 15).

Compared to the 3rd Progress Report the table was updated by adding the distance Kouvola – FI/RU border, a better value for the SE/DK border crossing, the proposed and analysed lines in Germany (about 400 km) - although they were finally not accepted by Germany, 36.5 km for the new Unterinntal rail line creating now two parallel double track lines for that section of the corridor, and 205 km of the 2nd line (HSL) Roma - Napoli in Italy. The indicated rail length does not include the comprehensive lines asked to be included in the Corridor alignment.

Country	network length [km]	Share [%]
FI	518	5,5%
NO	169	1,8%
SE	1.462	15,6%
DK	476	5,1%
DE	3.532	37,7%
AT	164	1,7%
IT	3.053	32,6%
MT	-	n.a.
Total	9.374	100,0%

Table 15: Rail network length along ScanMed Corridor

The priorities and infrastructure requirements in terms of railway transport for which the following analysis was made are set out in the following articles of the regulation:

(1) Priorities for railway infrastructure development (Reg. 1315/2013, Art. 13):

- Migrating to 1435 mm nominal track gauge,
- Deployment of ERTMS,
- Enhancing interoperability;

(2) Infrastructure requirements for railway transport (Reg. 1315/2013, Art. 39):

- Full electrification of line tracks,
- For freight lines: 22,5 t axle load, 100 km/h line speed and 740 m train length,
- Full deployment of ERTMS,
- Nominal track gauge 1435 mm (isolated networks - the Finish rail network in our case - are exempted).

The sections with remarkable deviations for the main parameters regarding the requirements are shown below (Table 16 to Table 19). The percentage is calculated on the whole length of these TENtec sections, which have been specified by the EC as the basis for the TENtec system before the year 2014. Within this corridor study it was not allowed to change the definition of these sections.

Possible problems of simultaneous definitions of very short (e.g. Sweden: Fosieby – Lockarp [near Malmö] 1.8 km) and very long sections (e.g. Sweden: Mjölby – Malmö 356 km, e.g. Italy: Verona – Fortezza 184 km) have already been discussed with the EC. On long sections, the parameters can change frequently. Hence, real deviations may be limited to a (very) short part of these sections or are slightly below the minimum requirement (e.g. 95 km/h instead of 100 km/h), what does not affect the overall line performance. E.g. the Swedish section Ängelholm – Göteborg (207 km) today has some short single track areas (Varberg, Hallandsås)[61], which are not displayed in Table 22 because this line predominantly is a double track line and the TENtec system expects only one value for the whole section. This problem can only be solved by changing the TENtec section definitions. Therefore the percentage should have been calculated on the real distance where the requirement is not in compliance (e.g. Finland: Single track Karjaa – Kirkkonummi instead of Karjaa – Huopalahti, see also Table 22). But such proceeding must be postponed for lack of time on subsequent studies.

Requirement: track gauge 1435 mm

As concerns the track gauge, all rail lines along the ScanMed Corridor feature the standard track gauge of 1435 mm, with the exception of Finland, which provides for a track gauge of 1524 mm due to its connection with the same gauge on Russian territory. The Finnish rail network is thus "isolated" and can be exempted from the requirement of realising 1435 mm.

Requirement: full electrification

In Finland, Norway, Sweden, Austria and Italy, all corridor lines are equipped with full electrification, meanwhile in Denmark, the stretch between Ringsted and Rødby (length 119,3 km – part of the northern access to Fehmarn Belt Fixed Link) is not electrified. In Germany, the stretch between Puttgarden and Bad Schwartau (length 83,6 km – part of the southern access to Fehmarn Belt Fixed Link) is not electrified either. Both bottlenecks will be removed in the framework of the new railway connection Hamburg – København via the Fehmarn Belt Fixed Link. In Germany a second stretch between Hof and Regensburg (length 179.3 km – part of the connection Leipzig - München via Hof/Regensburg) is not electrified, too.

Nevertheless, regarding the corridor's total network length of about 9,372 km, only a very small share of 4.1% does not fulfil this requirement currently.

Detailed figures are shown in Table 16.

[61] Feedback provided by Department for Regional Development Region Skåne, e-mail, 08.10.2014.

Corridor:	Scandinavian-Mediterranean					
Parameter:	No electrification				HC	04.12.2014
TENtec Technical Data Railways - Deviations for the main parameters			Length of section	No electrific.	Length of section (percentage)	remarks
country	Section Name		[m]		[%]	
FI	sum:		0		***0,0%***	
FI	network Corridor Scan-Med:		518.000		*100,0%*	
NO	sum:		0		***0,0%***	
NO	network Corridor Scan-Med:		168.850		*100,0%*	(Oslo - Kornsjö)
SE	sum:		0		***0,0%***	
SE	network Corridor Scan-Med:		1.462.000		*100,0%*	
DK	Ringsted	Rödby	119.300	x	*25,1%*	Electrification planned by 2021
DK	sum:		*119.300*		***25,1%***	
DK	network Corridor Scan-Med:		475.500		*100,0%*	
DE	Puttgarden	Bad Schwartau-Waldhalle	83.600	x	*2,4%*	
DE	Hof	Regensburg Hbf	179.300	x	*5,1%*	
DE	sum:		*262.900*		*7,4%*	
DE	network Corridor Scan-Med:		3.532.000		*100,0%*	
AT	sum:		0		***0,0%***	
AT	network Corridor Scan-Med:		163.132		*100,0%*	
IT	sum:		0		***0,0%***	
IT	network Corridor Scan-Med:		3.052.600		*100,0%*	
	sum Corridor Scan-Med (No electrification):		*382.200*		***4,1%***	
	sum Corridor Scan-Med:		*9.372.082*		***100,0%***	
	No TENtec sections defined					

Table 16: Deviations in terms of electrification along ScanMed Corridor

Requirement: axle load 22.5 t

With the exception of some parts in southern Italy, all lines on the corridor network allow an axle load of 22.5 t - and on some sections even more (25 t), e.g. Berlin - Rostock[62][63]. Regarding the whole corridor with a network length of about 9,372 km, only a minor share of about 6.0% does not fulfil this requirement. However, for Italy, the length of 558.5 km corresponds to about 18.3 % of the corridor network part of Italy.

The sections which do not fulfil this requirement are listed in detail in Table 17:

[62] Feedback provided by BMVI e-mail, 17.10.2014.

[63] The Stredax Data base (http://stredax.dbnetze.com/ISRViewer/public_html_de/svg/index.html) displays 22.5 t for the line Berlin - Rostock (Data recall 20.10.2014).

Corridor:		Scandinavian-Mediterranean				
Parameter:		Max. Axle Load < 22,5 t			HC	30.10.2014
TENtec Technical Data Railways - Deviations for the main parameters			Length of section	A.L. <22,5 t	Length of section (percentage)	remarks
	Section Name		[m]		[%]	
FI	sum:		0		***0,0%***	
FI	network Corridor Scan-Med:		518.000		*100,0%*	
NO	sum:		0		***0,0%***	
NO	network Corridor Scan-Med:		168.850		*100,0%*	(Oslo - Kornsjö)
SE	sum:		0		***0,0%***	
SE	network Corridor Scan-Med:		1.462.000		*100,0%*	
DK	sum:		0		***0,0%***	
DK	network Corridor Scan-Med:		475.500		*100,0%*	
DE	sum:		0		***0,0%***	
DE	network Corridor Scan-Med:		3.532.000		*100,0%*	
AT	sum:		0		***0,0%***	
AT	network Corridor Scan-Med:		163.132		*100,0%*	
IT	Settebagni	Nuovo Salario	6.302	x	*0,2%*	
IT	Nuovo Salario	Roma Tiburtina	5.257	x	*0,2%*	
IT	Roma Casilina	Campoleone	29.243	x	*1,0%*	
IT	Campoleone	Priverno	51.891	x	*1,7%*	
IT	Priverno	Formia	43.032	x	*1,4%*	
IT	Formia	Minturno	10.055	x	*0,3%*	
IT	Minturno	Villa Literno	41.870	x	*1,4%*	
IT	Villa Literno	Pozzuoli	20.991	x	*0,7%*	
IT	Pozzuoli	Napoli Campi Flegrei	6.109	x	*0,2%*	
IT	Napoli Campi Flegrei	Napoli Piazza Garibaldi	8.523	x	*0,3%*	
IT	Acerra	Cancello	7.338	x	*0,2%*	
IT	Cancello	Caserta	11.787	x	*0,4%*	
IT	Caserta	Vitulano Foglianise	52.855	x	*1,7%*	
IT	Vitulano Foglianese	Apice S.Arcangelo B.	19.123	x	*0,6%*	
IT	Apice S.Arcangelo B.	Orsara	45.529	x	*1,5%*	
IT	Orsara	Cervaro	34.081	x	*1,1%*	
IT	Cervaro	Foggia	7.923	x	*0,3%*	
IT	Bivio Enna	Bicocca	81.154	x	*2,7%*	
IT	Fiumetorto	Castelbuono	32.215	x	*1,1%*	
IT	Fiumetorto	Termini Imerese	6.804	x	*0,2%*	
IT	Termini Imerese	Palermo	36.415	x	*1,2%*	
IT	sum:		*558.497*		***18,3%***	*1
IT	network Corridor Scan-Med:		3.052.600		*100,0%*	
	sum Corridor Scan-Med (Max. Axle Load < 22,5 t):		*558.497*		***6,0%***	
	sum Corridor Scan-Med:		*9.372.082*		***100,0%***	
	No TENtec sections defined					
*1	without sections with unknown parameters					

Table 17: Deviations in terms of axle load along ScanMed Corridor

Requirement: operating speed 100 km/h for freight

In Sweden and Denmark, all corridor lines fulfil this requirement, as in Germany only two small parts of 2.1 km and 5.2 km (sections within or near stations) on the link Leipzig - Hof allow only 50 km/h instead of the required speed of 100 km/h for freight. The same applies for Finland with small sections e.g. inside the city of Helsinki.[64] In Austria the section Innsbruck - Brenner (total length 36.4 km) allows only 80 km/h instead of required 100 km/h due to the mountain rail operation. In Italy, there is a wider bundle of sections with a length of 604 km in total which does not allow a speed of 100 km/h for freight – see the following overview (Table 18) in detail. Thereof, sections of about 258 km in total allow 95 km/h for freight and about 117 km in total which allow 90 km/h for freight.

Regarding the total corridor length of 9,372 km, only a share of 7.39% (684 km) does not fulfil this requirement in the strict sense – but more than half of this part allows 90 - 95 km/h and is thus very close to the required 100 km/h.

The speed restrictions recorded for the Italian sections are related to relative short parts of the sections, in particular close to the urban node and not to the whole section. The prevalent speed is more than 100 km/h[65] and the parts of the section where it is slightly below 100 km/h does not affect the overall line performance.[66] Nevertheless, following the definition of the TENtec information the minimum value for a certain section was to be included.

[64] Feedback provided by Finnish Transport Agency through Ramböll Finland by e-mail of 29.10.2014 identifies the following sections in addition: Turku – Naantali (speed limit 50 km/h); Turku – Port of Turku (speed limit 40 km/h) and Kerava – Vuosaari (speed limit 80 km/h).

[65] Feedback provided by RFI by e-mail of 04.07.2014.

[66] Feedback provided by RFI by e-mail of 14.10.2014.

Corridor:		**Scandinavian-Mediterranean**				
Parameter:		**Max. operating speed < 100 km/h**			HC	30.10.2014
TENtec Technical Data Railways - Deviations for the main parameters			Length of section	Max. operating speed	Length of section (percentage)	remarks
	Section Name		[m]	[km/h]	[%]	
FI	Juurikorpi	Kotka	18.000	80	*3,5%*	
FI	Pasila	Helsinki	3.000	80	*0,6%*	
FI	sum:		*21.000*		***4,1%***	
FI	network Corridor Scan-Med:		518.000		*100,0%*	
NO	Vestby	Hølen	6.550	80	*3,9%*	
NO	Hølen	Kambo	8.370	80	*5,0%*	
NO	sum:		14.920		***8,8%***	
NO	network Corridor Scan-Med:		168.850		*100,0%*	(Oslo - Kornsjö)
SE	sum:		0		***0,0%***	
SE	network Corridor Scan-Med:		1.462.000		*100,0%*	
DK					*0,0%*	
DK	sum:		*0*		***0,0%***	
DK	network Corridor Scan-Med:		475.500		*100,0%*	
DE	Markkleeberg-Gaschwitz	Großdeuben	2.100	50	*0,1%*	
DE	Altenburg	Paditz	5.200	50	*0,1%*	
DE	sum:		*7.300*		*0,2%*	
DE	network Corridor Scan-Med:		3.532.000		*100,0%*	
AT	Innsbruck Hbf	Anschluss Umfahrung Innsbruck	4.300	80	*2,6%*	
AT	Anschluss Umfahrung Innsbruck	Brenner	32.100	80	*19,7%*	
AT	sum:		*36.400*		***22,3%***	
AT	network Corridor Scan-Med:		163.132		*100,0%*	
IT	Fortezza	Brennero (C)	40.771	75	*1,3%*	
IT	Verona Porta Nuova	Fortezza	184.726	95	*6,1%*	
IT	PM Tavernelle	Bologna Centrale	14.820	60	*0,5%*	
IT	Firenze Rifredi	Firenze Cascine	2.505	95	*0,1%*	
IT	Valdarno Nord Junction	PM Rovezzano	39.585	90	*1,3%*	
IT	Arezzo Nord Junction	Valdarno Nord Junction	34.827	95	*1,1%*	
IT	PM Rovezzano	Pontassieve	11.950	90	*0,4%*	
IT	Pontassieve	Figline	20.101	90	*0,7%*	
IT	Montevarchi	Arezzo Junction	34.827	95	*1,1%*	
IT	Napoli Campi Flegrei	Napoli Piazza Garibaldi	8.523	75	*0,3%*	
IT	Caserta	Vitulano Foglianise	52.855	80	*1,7%*	
IT	Apice S.Arcangelo B.	Orsara	45.529	90	*1,5%*	
IT	Bivio Enna	Bicocca	81.154	75	*2,7%*	
IT	Fiumetorto	Castelbuono	32.215	75	*1,1%*	
IT	sum:		*604.388*		***19,8%***	
IT	network Corridor Scan-Med:		3.052.600		*100,0%*	
	sum Corridor Scan-Med (Vmax < 100 km/h):		*684.008*		***7,3%***	
	sum Corridor Scan-Med:		*9.372.082*		***100,0%***	
	No TENtec sections defined					

Table 18: Deviations in terms of operating speed along ScanMed Corridor

Requirement: 740 m train length

Regulation (EU) 1315/2013 requires a value of the permitted freight train length of 740 m (wagon incl. locomotive(s)) to be achieved on the core network by 2030. The allowed length for freight trains is determined by infrastructure parameters, operating speed and especially in Germany sometimes also by the timetable of the train path – therefore specific and single values for a respective section of the infrastructure are published only in some cases in the network statement. In many cases, they are subject to a detailed path request of an authorized applicant ("railway undertaking") at the respective infrastructure manager. Also the RailNet Europe (RNE) brochures on RNE corridors contain the following remark (fine-print) for the published train parameters (length and weight):

"The displayed path/train parameters may differ in reality, as all calculated figures are average figures based on standard trains. The displayed train length comprises traction unit(s) on some networks; on others, it doesn`t. Please consult the IM´s Network statement in any case!"

With the exception of Italy, all networks allow a train length of 700 m or more regarding specific braking and/or operating conditions. In Italy, the train length for freight is much more limited – in general to mostly 600 m or below on some parts, especially in Southern Italy. Due to the steep grades of the ramps on the present Brenner line there are limited operation conditions, especially for the gross weight for freight trains and double traction is required (up-hill).

"*Train length for the German corridor network is in general 740 m; restrictions due to timetabling and the operational situation can partially influence the actually possible train length*" (DB Netz AG, July 2014).

A differentiated picture results from an overall analysis of the corridor, based on the network statements of the respective IM's, as can be seen in the country specific results in Table 19:

Corridor:		Scandinavian-Mediterranean		
Parameter:		Max. train length	HC	17.10.2014
TENtec Technical Data Railways - Deviations for the main parameters				
country	**Max. train length (Source: Network Statement)**		**remarks**	
FI	700 / 750 / 925 / 1100 m			
NO	700 m / 850 m		Brake operating conditions P, Brake operating conditions G	
SE	730 m / 880 m		Brake group P/R, Brake group G	
DK	600 m / 835 m		Braking system P, max. 120 km/h, Braking system P; max. 100 km/h	
DE	740 m / 835 m		Maschen - Padborg	
AT	700 m / 650 m		"V3 -Betriebsvorschrift ÖBB, 12/2009", train length without locomotive(s), Kufstein - Brenner: 650 m (ÖBB, H. Hotz, E-Mail 08.07.2014)	
IT	different values, mostly 600 m		All.1_Caratteristiche_linee	

Table 19: Deviations in terms of train length along ScanMed Corridor

Requirement: full deployment of ERTMS

The current status of deployment of ERTMS was analysed by means of the following sources:

- ERMTS Deployment Plans of the respective countries – which are dated from 2006/2007 (DE, IT, SE, FI), 2008 (AT) and 2009 (DK) and therefore more or less not up-to-date;
- current Network Statements of the respective IM's;
- website of the ERTMS User's group;
- published ERTMS projects funded by the EC (INEA);
- website of the UNIFE/ERTMS projects.

The results are documented in detailed working tables which have been send to the Advisor to the European Coordinator for ERTMS, too.

For Denmark, the actual signalling programme's objective is to replace all signalling on the entire Banedanmark railway network with ERTMS (Level 2, Baseline 3) before the end of 2021. The roll-out plan allots the implementation for the ScanMed Corridor between 2018 and 2020[67].

[67] Brochure of Banedanmark, November 2012

For Norway, a first test track is now equipped with ERTMS Level 2 system (Östfoldbanen Eastern line) and by 2030, more than 4000 km of railway will be fully upgraded[68].

In Sweden, pilot facilities are in operation. The Swedish ERTMS project includes a complete replacement of the ATC signal system by ERTMS. The implementation plan covers first the Stockholm-Malmö line (planning will start in 2014) and thereafter gradually the Bothnia line, Adalen line, Västerdalen line, West Coast Line and finally the Haparanda line (2017 - 2035)[69].

Finland is planning to equip the railway lines Helsinki – Kerava – Lahti, Lahti – Kouvola and Kouvola – HaminaKotka with ETCS Level 2 between 2019 and 2025.[70] According to the Network Statement 2014/2015, also the lines Pasila – Kirrkonummi (near Helsinki) and Kouvola – Luumäki – Vainikkala (Border FI/RU) are planned to go into operation by 2025.

In Germany, only the former pilot line Berlin - Jüterbog - Halle/Leipzig is equipped with ERTMS. The deployment of ERTMS Corridor A (Rhine-Alpine Corridor) and completion of initiated ERTMS projects are prioritized due to technical, operational and financial reasons. The successive implementation of one ERTMS Corridor after another should prevent the risk of misinvestment e.g. caused by system updates for harmonisation with neighbour countries and for the compatibility with power units. According to the German Ministry of Transport it is still envisaged that the most important TEN-T corridors will be equipped with ERTMS until 2030. Currently, the new investment plan for the federal infrastructure until 2030 is under progress and will be finalised by 2015/2016.

"ERTMS is included in all infrastructure projects of DB Netze ("Bedarfsplanprojekte"). But there is at the moment no active deployment plan including timelines. With exception of the VDE 8.2 project (Erfurt – Leipzig/Halle), which is baseline 2.30d, all other lines will be equipped with ETCS level 1 LS ("Limited supervision") or level 2, baseline 3.0".[71]

The Austrian part of ScanMed Corridor from Kufstein to Brennersee will be fully equipped with ERTMS (Level 2) by 2015[72]. That leaves a gap of a few kilometres between the Austrian lines, which are equipped with ETCS Level 2 and the Italian lines (equipped with SCM system), which remains controlled by “PZB”, Austria’s current train control system.[73] The impact on operations should be analysed very carefully by the infrastructure companies, safety authorities and users. The new line in the Lower

[68] Norway's ERTMS plans are on track – Source: European Railway Review, Issue 1, 2014
[69] TRAFIKVERKET, Sweden's largest infrastructure investments – March 2014
[70] ERTMS Deployment Plan Finland 2006/2007
[71] Meeting DB Netz AG / HaCon, July 2014.
[72] "Status of ETCS in Austria", European Railway Review, Volume 20, issue 2, 2014, p. 29 - 31
[73] The ERTMS map, however, does not show this issue due to the scale of the map.

Inn Valley ("Unterinntal", between Wörgl and Innsbruck) and the conventional line running in parallel are fully equipped with ETCS Level 2 and PZB in parallel. They have been in operation since December 2013. For freight trains of the majority of railway undertakings, which were not able to implement the locomotives-side equipment in due time, an agreement was reached that allows the parallel use of the traditional system until June 2015. The ERTMS version installed trackside means a fourth system for locomotives operating between München and Verona, next to the German, Austrian and Italian standard train control systems and the locomotives need to be equipped and certified in their respective networks and countries. Leasing companies and manufacturers had difficulties to guarantee the timely completion and in any case it will become very expensive with only small or no improvement as regards safety and interoperability.[74]

In Italy, the new HS lines Bologna - Firenze and Roma - Napoli are fully equipped with ERTMS (see Table 20). In addition some other smaller pilot lines in South Italy and the important link (Brenner/Brennero –) Franzensfeste/Fortezza - Verona was planned to be equipped with ERTMS by 2020[75] until the project was cancelled in June 2014[76]. Details about the Italian ERTMS sections are shown in Table 21.

The current status for ERTMS implementation on the corridor displays a patchwork rather than a consistent network (see Figure 18, map on the basis of TENtec sections). The agreed projects will change the situation especially in Scandinavia with its distinct short- and mid-term projects agreed, but in Germany only in a long term horizon. The ScanMed Corridor's ERTMS deployment is also part of RFC 3 and in particular of ERTMS Corridor B, where coordination of the implementation plan shall take place. Already in the 3rd Forum meeting the European Commission was requested to assign the necessary coordination to one entity, most likely the European Coordinator for ERTMS.

The example of the “Unterinntal” demonstrated that the coordination shall involve not only the infrastructure mangers, authorisation bodies (“National Safety Authorities - NSA”), but also the locomotive manufacturers, leasing companies and railway undertakings. Any ERTMS implementation should be accompanied by a migration strategy and business case.

[74] Land Tirol, Round Table Unterinntal, November 2013.
[75] According to RFI information provided by G. Costagli, e-mail 28.11.2014, it is 2018.
[76] Feedback from RFI on the project list where the project was included but is cancelled, now.

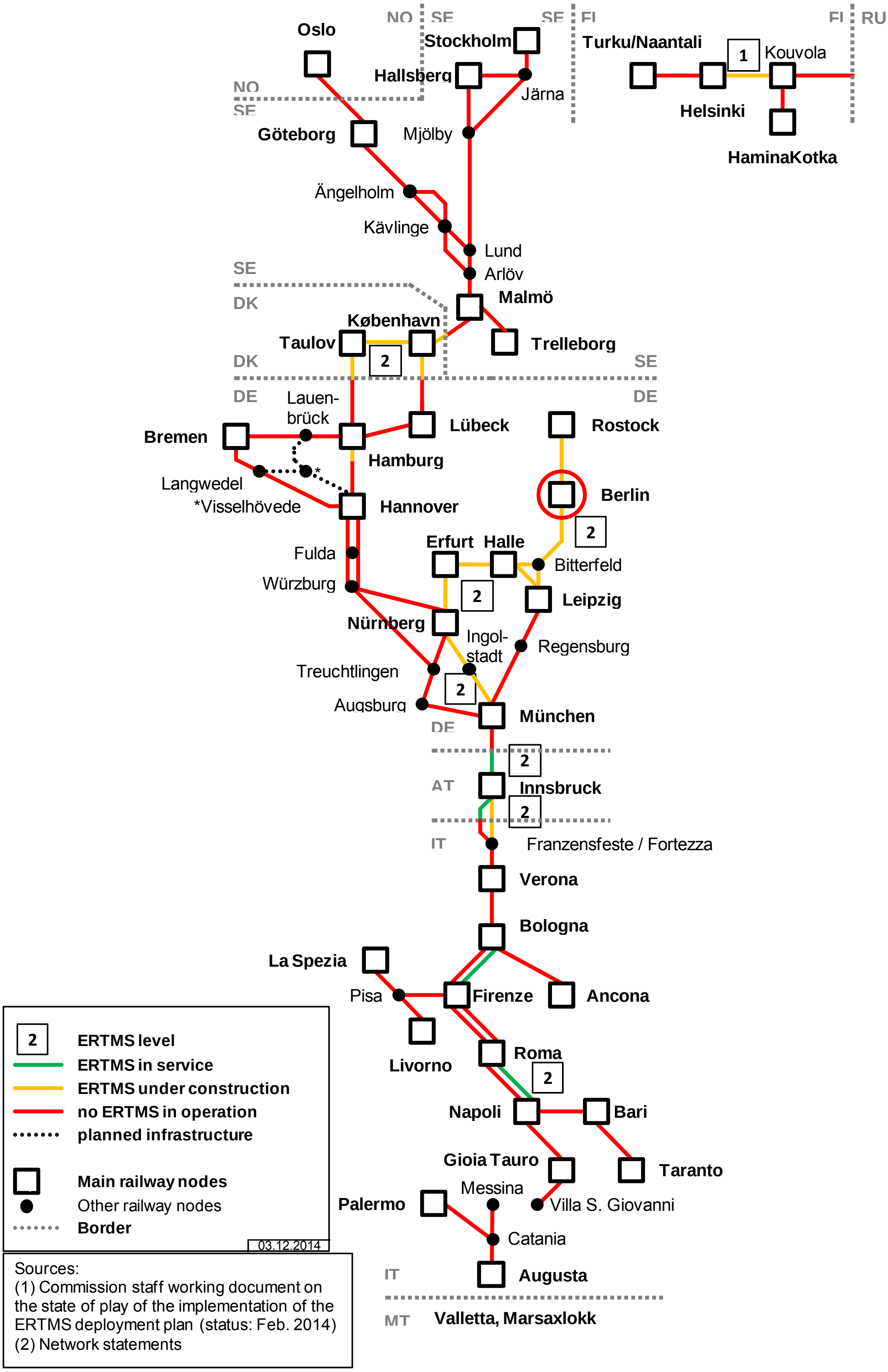


Figure 18: Status of ERTMS deployment along ScanMed Corridor

ERTMS Deployment Plan *1				Corridor:	SCAN-MED	03.12.2014
Member State	Line			Level	Status *3	remarks
AT	Kufstein		Brenner	2	Under Construction	*4
DE	Berlin		Jüterbog	2	(In Service)	*5
DE	Jüterbog		Halle/Leipzig	2	(In Service)	*5
DE	Nürnberg	Ingolstadt	München	2	Under Construction	
DE	Nürnberg	Erfurt	Halle/Leipzig	2	Under Construction	
DE	Rostock		Berlin	2	Under Construction	
FI	Kerava		Lahti	1	Under Construction	
IT	Brenner	Verona	Bologna	2	Under Construction	*8 *9
IT	Bologna		Firenze	2	In Service	*6
IT	Roma		Napoli	2	In Service	*7
*1	**Source: European Commission: Commission Staff Working Document on the state of play of the implementation of the ERTMS Deployment Plan, Brussels, 14.2.2014, SWD(2014) 48 final, Annex 2, p. 29 - 31 *2**					
*2	"corridor B (Stockholm-Napoli) should be equipped by 2020, apart from the Austrian section which is ready; Germany has announced a delay of 10 years (2030)" (*1, page 5)					
*3	*1, Annex 2: Deployment as of 01/07/13, Source: ERA					
*4	Wörgl - Baumkirchen - Anschluss Umfahrung Innsbruck in service since 09.12.2012 (www.oebb.at)					
*5	Former ETCS Pilot line, 200 km/h with "LZB" in operation					
*6	In service since December 2009 (www.ertms.net, 17.03.2014)					
*7	In service since December 2005 (www.ertms.net, 17.03.2014)					
*8	RFI-comment: G.Costagli, email 10.10.2014, "Brenner - Verona is not under construction jet"					
*9	RFI-comment: G.Costagli, email 28.11.2014, "Verona - Bologna is not under construction jet"					

Table 20: Deployment plan in terms of ERTMS along ScanMed Corridor

TEN-T	ERTMS projects						16.10.2014
of which ScanMed							
Project	User	Supplier	ERTMS Level	Line Type	Order Date	In Service Date	Total Track Length (km)
Bologna - Florence	RFI / FS	Alstom	Level 2		2004	2009	160
Bologna - Passante	RFI	Alstom	Level 2	VHSL	2011		32
Gricignano-Naples	RFI	Alstom / Ansaldo STS	Level 2		2008	2009	38
Milan - Bologna	RFI	Ansaldo STS	Level 2		2007		364
Novara-Milan	RFI	Ansaldo STS	Level 2		2004		80
Rome - Gricignano	RFI	Alstom / Ansaldo STS	Level 2		2001		368
Turin - Novara	RFI	Ansaldo STS	Level 2		2004	2009	170

Source:	http://www.ertms.net/?page_id=55

Table 21: Deployment plan in terms of ETCS for Italy

Analysis of number of tracks

There is no requirement for only double-track lines in the regulation. Nevertheless, based on the collected TENtec infrastructure data an analysis about lines/sections which are only single track was executed.

Considerable parts of single track are in Finland (257 km – 49,6% of the corridor network) and Norway (107 km – 63,6% of the corridor network).

Notable parts of single track are found in Sweden (432 km – 29,6% of the corridor network) and Italy (364 km – 11,9% of the corridor network), but in Italy these are with one exception located on the island of Sicily. Denmark currently has 100 km of the network which does not have double track (21,0% of the Danish corridor network). However, in the coming years most of these sections will become double track. E.g. in Sweden single track sections are located at the West Coast Line in Varberg and in the Hallandsås region. At the single track sections Hallsberg – Degerön, Varberg, Hallandsås and Ängelholm – Helsingborg (Maria) "work is in progress".[77]

A smaller part of single track still exists in Germany (182 km – 5,2% of the corridor network). Most is allotted to the links Puttgarden - Bad Schwartau (82 km), which will be upgraded as part of the "Fehmarn Belt Hinterland-Connection", and Rotenburg - Verden (26 km) – the other sections are mainly part of freight bypasses in the area of big nodes and the connection of the seaport of Rostock.

In Austria there are no single track sections on the corridor.

Whether sections of single track need to be identified as bottlenecks depends on the existing or expected demand for rail services. In Norway in general the majority of the network is single track due to the limited traffic demand. This fact can also be assumed for Finland and Sicily, but needs to be proven based on the results of the analysis of the respective market studies.

The results – sections/lines of single track - are displayed in detail in Table 22 and Table 23.

[77] Feedback provided by Regeringskansliet Sweden, M. Fransson, e-mail 17.10.2104.

Corridor:	Scandinavian-Mediterranean					
Parameter:	Nr. of tracks				HC	30.10.2014
TENtec Technical Data Railways - Deviations for the main parameters			Length of section	Nr. of tracks	Length of section (percentage)	remarks
	Section Name		[m]	[-]	[%]	
FI	Luumaeki	Vainikkala (Border FI/RU)	33.000	1	*6,4%*	
FI	Juurikorpi	Kotka	18.000	1	*3,5%*	
FI	Juurikorpi	Hamina	19.000	1	*3,7%*	
FI	Karjaa	Huopalahti	80.000	1	*15,4%*	
FI	Karjaa	Turku	107.000	1	*20,7%*	
FI	sum:		*257.000*		***49,6%***	
FI	network Corridor Scan-Med:		518.000		*100,0%*	
NO	Sandbukta	Moss	3.160	1	*1,9%*	
NO	Moss	Dilling	5.180	1	*3,1%*	
NO	Dilling	Rygge	3.940	1	*2,3%*	
NO	Haug	Råde	3.000	1	*1,8%*	
NO	Råde	Onsøy	9.500	1	*5,6%*	
NO	Onsøy	Fredrikstad	7.750	1	*4,6%*	
NO	Fredrikstad	Lisleby	3.490	1	*2,1%*	
NO	Lisleby	Greåker	6.280	1	*3,7%*	
NO	Greåker	Sarpsborg	5.440	1	*3,2%*	
NO	Sarpsborg	Berg	21.460	1	*12,7%*	
NO	Berg	Halden	5.710	1	*3,4%*	
NO	Halden	Tistedal	4.490	1	*2,7%*	
NO	Tistedal	Aspedammen	8.990	1	*5,3%*	
NO	Aspedammen	Kornsjø	19.000	1	*11,3%*	
NO	sum:		*107.390*		***63,6%***	
NO	network Corridor Scan-Med:		168.850		*100,0%*	(Oslo - Kornsjö)
SE	Hallsberg	Mjölby	97.000	1	*6,6%*	*2
SE	Järna	Åby	107.000	1	*7,3%*	
SE	Trelleborg	Lockarp	24.000	1	*1,6%*	
SE	Öxnered	Skalebol	29.800	1	*2,0%*	
SE	Skalebol	Kornsjø	68.800	1	*4,7%*	
SE	Aengelholm	Helsingborg	28.500	1	*1,9%*	
SE	Aengelholm	Arlov	77.000	1	*5,3%*	
SE	sum:		*432.100*		***29,6%***	
SE	network Corridor Scan-Med:		1.462.000		*100,0%*	
DK	Padborg	Tinglev	14.400	1	*3,0%*	
DK	Vojens	Vamdrup	20.400	1	*4,3%*	Double track line: work in progress 2014/2015
DK	Vordingborg	Nykobing F	28.800	1	*6,1%*	Double track line: work in progress 2015 - 2021
Dk	Nykobing F	Rødby	36.300	1	*7,6%*	Double track line: work in progress 2015 - 2021
DK	sum:		*99.900*		***21,0%***	
DK	network Corridor Scan-Med:		475.500		*100,0%*	

Table 22: Deviations in terms of single track along the corridor (1/2)

Corridor:	Scandinavian-Mediterranean					
Parameter:	Nr. of tracks				HC	30.10.2014
TENtec Technical Data Railways - Deviations for the main parameters			Length of section	Nr. of tracks	Length of section (percentage)	remarks
	Section Name		[m]	[-]	[%]	
DE	Flensburg-Friedensweg	Flensburg-Weiche	5.500	1	*0,2%*	Flensburg passenger traffic line
DE	Hamburg-Eidelstedt	Hamburg-Horn	15.500	1	*0,4%*	Hamburg freight traffic bypass
DE	Hamburg-Wandsbek	Hamburg-Horn	1.400	1	*0,0%*	Hamburg freight traffic bypass
DE	Puttgarden	Bad Schwartau	82.300	1	*2,3%*	
DE	Bremen-Utbremen	Bremen Rbf	5.600	1	*0,2%*	
DE	Rotenburg	Verden (Aller)	25.500	1	*0,7%*	
DE	Hannover-Wülfel	Hannover-Waldheim	2.900	1	*0,1%*	
DE	Rostock-Seehafen	Kavelstorf	17.800	1	*0,5%*	
DE	Rostock Hbf	Kavelstorf	9.200	1	*0,3%*	
DE	Berlin-Blankenburg	Berlin-Karow West	1.700	1	*0,0%*	
DE	Birkengrund Süd	Genshagener Heide Ost	1.800	1	*0,1%*	
DE	Leipzig Messe	Leipzig-Mockau	1.500	1	*0,0%*	
DE	Regensburg-Hafenbrücke	Regensburg-Ost	1.600	1	*0,0%*	
DE	München-Daglfing	München-Trudering	2.900	1	*0,1%*	
DE	München-Moosach	Mün. Friedenheimer Brücke	7.000	1	*0,2%*	
DE	sum:		*182.200*		***5,2%***	
DE	network Corridor Scan-Med:		3.532.000		*100,0%*	
AT	sum:		0		***0,0%***	
AT	network Corridor Scan-Med:		163.132		*100,0%*	
IT	Caserta	Vitulano Foglianise	52.855	1	*1,7%*	
IT	Apice S.Arcangelo B.	Orsara	45.529	1	*1,5%*	
IT	Orsara	Cervaro	34.081	1	*1,1%*	
IT	Cervaro	Foggia	7.923	1	*0,3%*	
IT	Giampilieri	Fiumefreddo	41.400	1	*1,4%*	
IT	Bicocca	Targia	68.800	1	*2,3%*	
IT	Bivio Enna	Bicocca	81.154	1	*2,7%*	
IT	Fiumetorto	Castelbuono	32.215	1	*1,1%*	
IT	sum:		*363.957*		***11,9%***	*1
IT	network Corridor Scan-Med:		3.052.600		*100,0%*	
	sum Corridor Scan-Med (Single track line):		*1.442.547*		***15,4%***	
	sum Corridor Scan-Med:		*9.372.082*		***100,0%***	
	No TENtec sections defined				added TENtec section (May 2014)	
*1	without sections with unknown parameters					
*2	Hallsberg - Mjölby = TENtec section; single track line only Hallsberg - Degerön (approx. 48 km)					

Table 23: Deviations in terms of single track along the corridor (2/2)

Analysis of Interoperability along the corridor

Corresponding to Article 13 of the Regulation (EU) 1315/2013, priorities for the railway infrastructure development are to meet the infrastructure requirements (Article 39) and enhance interoperability. Interoperability of the rail systems is regulated in the interoperability directive (Directive 2008/57/EC) and its annexes and related documents in detail. A detailed analysis will be made in the context of the RFC 3[78] so that we could focus on a few major items

On the ScanMed Corridor there are three different voltages for power supply (3 kV in IT, 15 kV in AT/DE/SE/NO and 25 kV in DK), as for signalling there are five different conventional systems (plus ETCS) used on the corridor (see Table 24).

Today, interoperability is achieved by the RU's by using multisystem locomotives for power supply and signalling. Modern multisystem locomotives on the corridor are for example equipped for traction services from Sweden via Denmark and Germany to Austria (e.g. Traxx F 140 AC2). This requires respective additional equipment which is reflected in higher investment and operation cost. It is usually expected that full deployment of a standardised ERTMS/ETCS along the corridor is supposed to reduce the efforts for multisystem locomotives in future. Actual experiences of RU’s are different: additional efforts during the migration phase and the multiplication of systems if the machines are also used outside the narrow corridor lines where conventional systems are still in place and the machines have to be pre prepared for. It is thus recommended to include the locomotive manufacturers, leasing companies and RU in the selection of ERTMS versions and to harmonise the implementation plan across network sections relevant for the market or deployment area of locomotives (corridor or network).

TEN-T	SCAN-MED	Main operation parameters along the corridor		08.05.2014
country	Track gauge	Voltage	Signalling	Axle Load
FI	1524 mm	25 kV	ATP-VR/RHK	22,5 t
NO	1435 mm	15 kV	ATC/EBICAB	22,5 t
SE	1435 mm	15 kV	ATC/EBICAB	22,5 t
DK	1435 mm	25 kV	ZUB123	22,5 t
DE	1435 mm	15 kV	PZB/LZB	22,5 t
AT	1435 mm	15 kV	PZB/LZB/ETCS	22,5 t
IT	1435 mm	3 kV	ACC1/BACC2	22,5 t
Source:	Network statements, RNE			

Table 24: Main railway operation parameters along ScanMed Corridor

[78] Presentation of the interoperability working group in the meeting of the working group leaders of the Brenner Corridor Platform in June 2014.

Analysis of loading gauge for intermodal services

There is no specific requirement in the regulation, but intermodal transport is one of the backbones of rail freight traffic in the ScanMed Corridor and may disproportionately grow in future. Thus the availability of an intermodal loading gauge in line with the market demand (at least P/C400 allowing basically the transport of 4 m high semi-trailers in pocket wagon) is an important prerequisite for competitive rail freight services.

This is the case on the main part of the corridor from Scandinavia to Bologna and also on the link from Bologna to Livorno. South of Bologna there are various restrictions in the RFI network, as can be seen in a more detailed overview in the following map[79] (Figure 19).

Figure 19: Overview of loading gauge for intermodal services in Italy

[79] RFI – December 2013

Main rail border crossings

The Regulation (EU) 1315/2013 stipulates to focus on "cross-border" issues and indeed some rail border crossings are still an issue impeding seamless and cost efficient rail operation on international services compared to road operation. On the other hand, the ScanMed corridor hosts also one of the most efficient border crossing between Austria and Germany which is passed without stop.

The relevant rail border crossings and the respective change of parameters are displayed in Table 25.

Main findings of the analysis of border crossing sections:

- Due to the isolation of the Finnish rail network form the other ScanMed railways the track gauge is not a problem. The Finnish rail network is connected to the Russian one instead.
- Between Norway and Sweden, the "maximum permitted train length" is changing, both values being far below the target value of 740 m.
- Between Sweden and Denmark (Öresund Fixed Link) as well as Denmark and Germany the electric power supply systems change which is predominantly compensated by multisystem locomotives. E.g. the RU´s DB Schenker Rail Scandinavia, Hectorrail and TXLogistik have approximately 50 2-system-locomotives for services between Sweden and Germany available. Nevertheless sporadic locomotive changes at the border (Padborg) may occur even today.
- The German/Austrian border is historically not problematic due to the harmonised infrastructure and operation conditions.
- On the present Austrian/Italian border crossing at Brenner pass the electric supply, train length as well as signalling systems vary. The problems have been predominantly mitigated by supplying multi-system locomotives. Other operational constraints remain existing (e.g. different train end signals, change of locomotive driver, need for second driver in Italy due to legal requirements).

TEN-T	SCAN-MED	Border stations				03.12.2014
country	Border station	Track gauge	Voltage	Signalling	Train length	Axle Load
FI	(ferry)	(1524 mm)	(25 kV)	(ATP-VR/RHK)	-	22,5 t
SE	(ferry)	(1435 mm)	(15 kV)	(ATC/EBICAB)	-	22,5 t
NO	**Kornsjø**	1435 mm	15 kV	ATC/EBICAB	580 m	22,5 t
SE	(Ed)	1435 mm	15 kV	ATC/EBICAB	630 m	22,5 t
SE	**Malmö**	1435 mm	15 kV	ATC/EBICAB	630 m	22,5 t
DK	(København)	1435 mm	25 kV	ZUB123	735 m	22,5 t
DK	**Padborg**	1435 mm	25 kV	ZUB123	835 m	22,5 t
DE	(Flensburg)	1435 mm	15 kV	PZB/LZB	835 m	22,5 t
DE	(Kiefersfelden)	1435 mm	15 kV	PZB/LZB	540 m	22,5 t
AT	**Kufstein**	1435 mm	15 kV	PZB/LZB/ETCS	540 m	22,5 t
AT	(Brennersee)	1435 mm	15 kV	PZB/LZB/ETCS	540 m	22,5 t
IT	**Brenner**	1435 mm	3 kV	ACC1/BACC2	600 m	22,5 t
Source:	Network statements, RNE					

Table 25: Parameters of rail border crossings anlong ScanMed Corridor[80]

Bottlenecks and missing links

Bottlenecks and missing links with respect to rail are described in the “critical issues” Chapter 4.3.

Conclusion

The compliance analysis with respect to the distinctive rail objectives reveals the following, in particular:

- While the standard track gauge is supplied on all corridor lines with the exemption of Finland, electrification is available on almost all lines. The most

[80] Feedback provided by Regeringskansliet Sweden, M. Fransson, e-mail 17.10.2014: “In SE the allowed train length in border station SE/DK is 750 meter (according to RNE C01)”.

non-electrified lines in Germany are about to be electrified in the framework of agreed projects, “if they are part of the requirement plan”[81, 82];

- Interoperability constraints resulting from different electrifications (15 kV 16 2/3 Hz in Sweden, Germany and Austria, 25 kV 50 Hz in Denmark and 3 kV DC in Italy on the existing lines used for freight transport) and still a few non-electrified sections in Denmark and Germany (e.g. Lübeck – Puttgarden), requiring a change of locomotives and Diesel traction;
- Different standards with regard to
  - train length in general and below standard parameters in particular between Stockholm and Malmö (630 m), Hallsberg and Malmö[83], on a few sections in Germany (600 m), on the Brenner line until Firenze/Ancona (600 m), and on many sections in Italy south of Firenze (400/600 m);
  - axle loads below the standard parameter (< 22.5 t), on 25% of the sections in Italy;
  - loading profile for the transport of semi-trailers ("P400") which is not achieved on the current lines in Italy south of Bologna;
- A "patchwork" of ERTMS implementation and practical problems caused by long realisation periods in which different levels and software releases were applied by infrastructure managers, rail industry and railway undertakings, which require a more detailed observation and monitoring by the European Coordinator for ERTMS.

4.1.3 Road (Ramböll)

The road transport network for the entire corridor is approximately 6,370 km in total. The longest networks on the corridor are in Italy with ~2,400 km, Germany with ~1,900 km and Sweden with ~1,100 km. (see Table 26 and Figure 20).

[81] Feedback provided by BMVI by e-mail, 17.10.2014.
[82] The intitial conclusion to electrify also the remaing parts of “the 550 km of sections” which are not yet electrified was deleted by RFI, by e-mail of 14.10.2014, so that there is no need for including electrification in Italian projects, obviously.
[83] Feedback provided by the Örebro region by e-mail of 17.10.2014.

Country	***Distance on corridor (km)***	***Proportion of corridor length %***
Finland	376	5,9%
Sweden	1039	16,3%
Denmark	440	6,9%
Germany	1869	29,3%
Austria	109	1,7%
Italy	2401	37,7%
Malta	22	0,3%
Norway	116	1,8%
Total for Corridor	**6372**	**100,0%**

Table 26: Overview of the road network distance of ScanMed Corridor

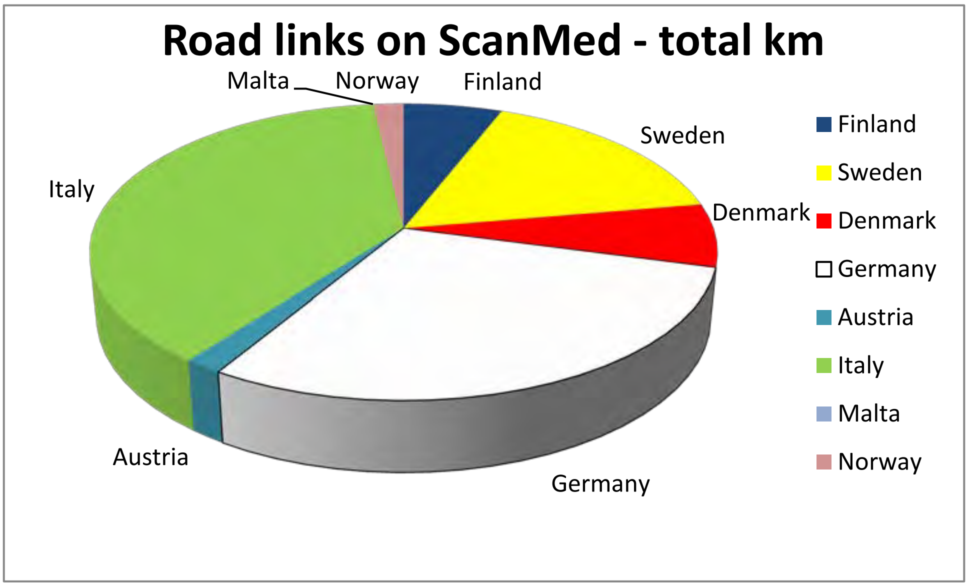


Figure 20: Proportion of distance on the ScanMed road network between countries

The road transport system and requirements differ greatly from those for rail transport. While rail transport is characterised mainly by technical specifications and standards, road transport is based more on operational issues where legal regulations and cooperation between organisations are the driving factors. Therefore, the approach in this chapter differs from that of rail transport.

The priorities and infrastructure requirements in terms of road transport for which the following analysis was made are set out in the following articles of the Regulation (EU) 1315/2013:

- Minimum road standard (Article 18):
  - Express road or motorway;
- Parking areas (Article 39):
  - Provide sufficient parking areas at least every 100 km with appropriate level of safety;

- Traffic management (Article 18):
  - Provide intelligent transport system (ITS),
  - Provide tolling systems compatible with other systems;
- Alternative fuels (Article 39):
  - Ensure availability of infrastructure, to the sufficient necessary.

Requirement: express road or motorway

In terms of the requirement for express road or motorway, the existing network already has coverage of 99.0% of this standard, measured in km. The remaining 1% are in Finland on sections that are either in rural areas with relatively low traffic volumes or known to the Finnish planning authorities and planned for improvement as well as in Italy to link the port of Ancona. An overview of sections which do not comply with this requirement is given in Table 27.

Corridor:		Scandinavian-Mediterranean					
Parameter:		Not Express road or Motorway			RM		12.11.2014
TENtec Technical Data Roads - Deviations for the main parameters				Length of section	Not Express road or motorway	Length of section (percentage)	remarks
	Section name			[km]		[%]	
FI	Hamina/East	Vaalimaa/Border FI/RUS		37.19	x	9.9%	
FI	Hamina/West	Hamina/East		5.38	x	1.4%	
FI	Naantali	Raisio J. E8/E18X		9.78	x	2.6%	
FI	sum:			52.35		13.9%	
FI	network Corridor Scan-Med:			376		100.0%	
IT	Ancona Sud	Porto di Ancona		10.7	x	0.4%	
IT	sum:			10.7		0.4%	
IT	network Corridor Scan-Med:			2401		100.0%	
MT	Marsaxlokk	Valletta		22	x	100.0%	
MT	sum:			22		100.0%	
MT	network Corridor Scan-Med:			22		100.0%	
	sum Corridor Scan-Med (Not Motorway):			85.1		1.3%	
	sum Corridor Scan-Med:			6372.0		100.0%	

Table 27: ScanMed road sections not of express road or motorway standard

The number of lanes is not a requirement, but can be seen as a capacity standard. Along the entire corridor, about 98% of the total distance is equipped with at least two lanes. It should also be observed that TENtec links are sometimes very long and a lower standard on shorter sections of the TENtec links might over-exaggerate the measure so that the actual part of the road network is higher than 98%. The remaining 2% is in Scandinavia (see Table 28). Here, there are planned infrastructure measures to improve many of these sections, although some sections in Finland do not require such a high standard as the traffic volumes are low. The total distance along the corridor with three or more lanes is about 30% of the entire length of the network. There are very few sections of this dimension outside Germany and Italy.

Corridor:		Scandinavian-Mediterranean				
Parameter:		Number of lanes			RM	12.11.2014
TENtec Technical Data Roads - Deviations for the main parameters			Length of section	Lanes < 2	Length of section (percentage)	remarks
	Section name		[km]		[%]	
FI	Forsby J. E18/6	Loviisa/North	13.85	x	3.7%	1)
FI	Hamina/East	Vaalimaa/Border FI/RUS	37.19	x	9.9%	
FI	Hamina/West	Hamina/East	5.38	x	1.4%	
FI	Loviisa/North	Petajasuo	36.2	x	9.6%	1)
FI	Naantali	Raisio J. E8/E18X	9.78	x	2.6%	
FI	sum:		102.4		27.2%	
FI	network Corridor Scan-Med:		376		100.0%	
SE	Ljungby S	Lagan N	30	x	2.9%	
SE	sum:		30		2.9%	
SE	network Corridor Scan-Med:		1039		100.0%	
MT	Marsaxlokk	Valletta	13	x	59.1%	
MT	sum:		13		59.1%	
MT	network Corridor Scan-Med:		22		100.0%	
	sum Corridor Scan-Med (Lanes < 2):		145,4		2.3%	
	sum Corridor Scan-Med:		6372.0		100.0%	
1) According to Finnish Transport Agency (e-mail of 18.11.2014), in the meantime these sections were upgraded and provide the respective standard of at least two lanes per direction.						

Table 28: ScanMed road sections with less than two lanes per direction

Requirement: safe parking/rest areas

Safe parking and rest areas are very broadly defined in the regulation simply stating that appropriate levels of safety and security are needed. Whether or not this means rest/parking areas close to motorway junctions is unclear. Development of rest areas, in line with needs of society, of the market and of the environment, could also mean designated parking areas to avoid parking in unsuitable areas, as in the case of Sweden. Safe parking and rest areas have different priorities within the corridor depending on perceived problems and the level of the problem today.

Safe parking, defined as fenced and lit areas, have been tested in Sweden without economical or functional success, as there was little willingness by the truck drivers to pay. Instead, parking in "non-safe" parking areas or areas not designated for truck parking was preferred.

The Swedish Transport Administration maintains an annual informative map showing the location of all official rest areas in Sweden, listed by county and on the map (Figure 21). Furthermore the list is maintained showing what facilities are available at each rest area (handicap-suitable toilet, information board, restaurant, coffee shop, petrol station, and playground).

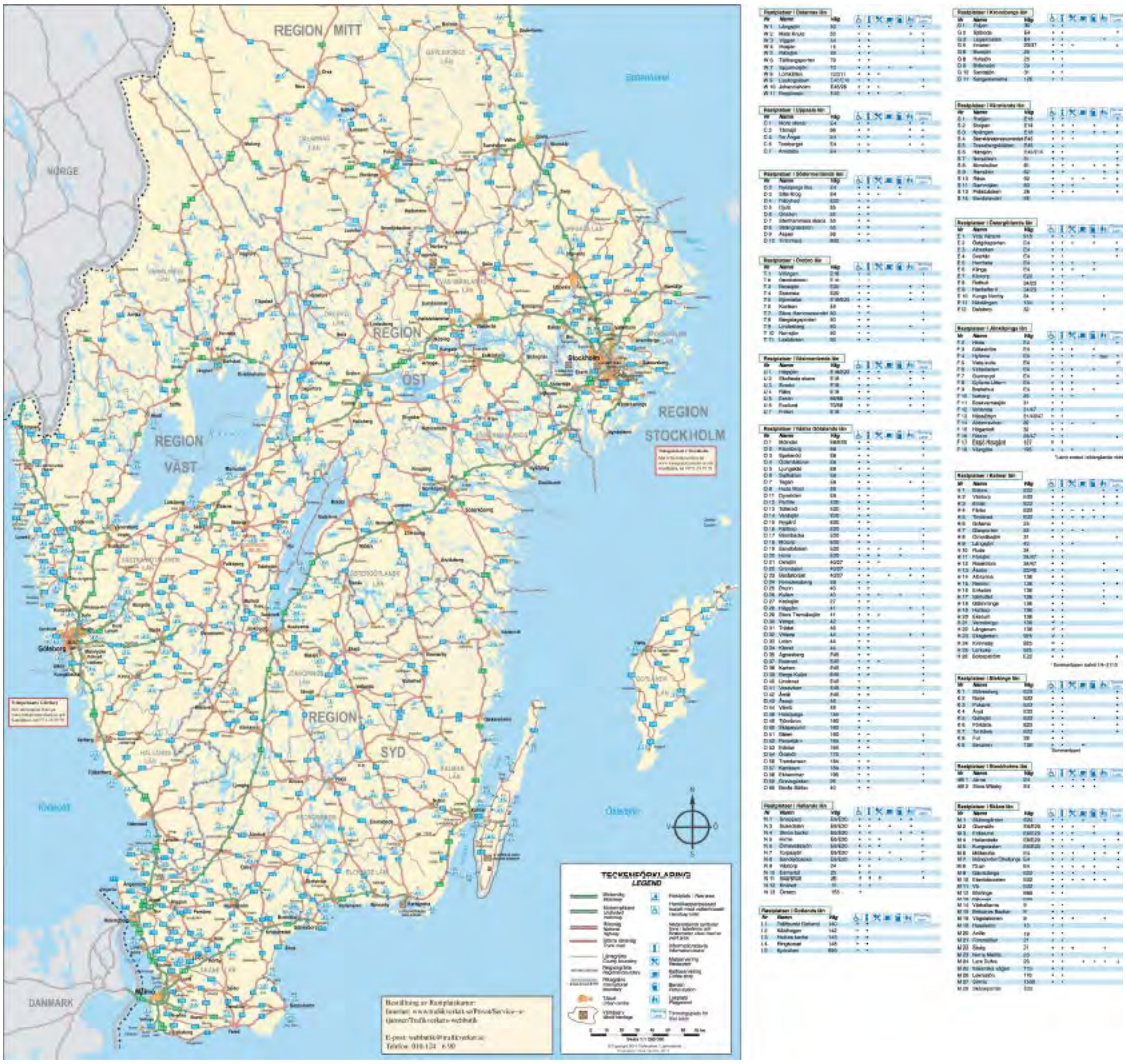


Figure 21: Locations and basic facilities of rest areas in Sweden[84]

In Germany, a programme for the enlargement of capacity of safe parking areas along the federal motorways is in place. Projects on the sections of ScanMed Corridor have been included and financed. The programme is part of the project list (Annex 3).

Also in Denmark there are extensive plans for new safe parking areas such as the “Kongsted safe parking area”.[85]

The Swedish, Danish and German initiatives are commendable and a good start, even if there is some way to go before long-term responsibility is guaranteed along the entire corridor. It is also unclear what role EU and Member States have in developing standardised safe parking spaces.

84 http://publikationswebbutik.vv.se/upload/7262/2014_029_rastplatskartan_2014.pdf

85 http://inea.ec.europa.eu/en/ten-t/ten-t_projects/ten-t_projects_by_country/denmark/2012-dk-91165-p.htm

Mapping of major parking and rest areas is possible to evaluate fulfilment of the requirement of parking possibilities at least every 100 km. Today there are parking areas throughout the corridor but these are not coordinated between countries. Aside from the Swedish and the German initiatives there is also the LABEL project which produced a detailed classification for parking areas, where 5 different levels of security[86] and 5 levels of service[87] have been defined.

The LABEL project also includes information on a large number of parking areas, with lists of facilities and locations[88]. Most of the parking areas are uncertified or self-assessed parking areas.

However, the requirement of "appropriate level of safety" is too vague to assess compliance of the requirement.

Requirement: traffic management systems

As stated in “Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport”, there are several articles that are directly relevant to this study and the development of a single standard along the corridor including some of the difficulties with coordination:

- "In some Member States national applications of these technologies are already being deployed in the road transport sector. However, such deployment remains fragmented and uncoordinated and cannot provide geographical continuity of ITS services throughout the Union and at its external borders.
- To ensure a coordinated and effective deployment of ITS within the Union as a whole, specifications, including, where appropriate, standards, defining further detailed provisions and procedures should be introduced. Before adopting any specifications, the Commission should assess their compliance with certain defined principles set out in Annex II. Priority should be given in the first instance to the four main areas[89] of ITS development and deployment. Within those four areas, priority actions should be established for the development and use of specifications and standards. During further implementation of ITS the existing ITS infrastructure deployed by a particular Member State should be

[86] http://truckparkinglabel.eu/assets/docs/LABEL%20security%20criteria%20and%20levels%2018102010%20RLE1.pdf

[87] http://truckparkinglabel.eu/assets/docs/LABEL%20service%20criteria%20and%20levels%2018102010%20RLE1.pdf

[88] https://www.iru.org/transpark-app

[89] Priority areas according to Directive 2010/40/EU, Article 2 (1):

1. Optimal use of road, traffic and travel data,
2. Continuity of traffic and freight management ITS services,
3. ITS road safety and security applications,
4. Linking the vehicle with the transport infrastructure.

taken into account in terms of technological progress and financial efforts made."[90]

Although much work has been, and is still being, carried out at the EU and national level, the actual requirements are still unclear and the details undefined. Existing plans and agreements are mostly based on the need for refined regulation, cooperation between organisations and technical development rather than infrastructural development.

Information systems and ITS solutions to e.g. inform and potentially steer the traffic to/from desired routes can be to avoid delays or accidents further down the network, to re-route traffic in case of large events or simply to control the traffic flows via e.g. traffic metering. What is actually meant, in definable terms, is not clear from the regulation as well as the Member State's national or regional ITS plans.

It is desirable to have compatible systems covering all countries and also information systems that provide information irrespective of country borders. This can be information regarding congestion, road works or diversions ahead and suggested alternative solutions. Furthermore, compatible information systems between ports and terminals can facilitate transport solutions in intermodal transport chains.

It is unclear what role EU and Member States would have, as ITS development is basically business driven. EasyGo is a good practice business driven solution for tolling systems. One transponder is sufficient for tolling charges in Norway, bridge charges in Denmark, Sweden and Norway, and ferry lines between Denmark and Germany. At the corridor level, a similar system could be introduced to include all road user charges, tolls etc.

As with all these traffic management and information systems, there is a desire to coordinate between regions/countries, but if these are controlled by the private sector there is increased risk for incompatible systems and no long-term guarantee. On the other hand, regulations to promote common technical solutions might hinder development of alternative business models.

Germany has a programme for the further implementation of traffic management systems along the federal motorways. Projects on the sections of the ScanMed Corridor on this issue have been included in the project list. The plans for implementation in Germany include the following types of ITS:

- Network influence: with the help of dynamic direction signs and integrated information on traffic jams or additional or substitutive variable direction signs;

[90] Preamble of Directive 2010/40/EU, paragraphs 6 and 7.

- Section influence for the control of maximum permitted speed and activation of temporary overtaking bans (for heavy lorries), blocking of lanes, notification of hazardous situations;
- Allow temporary use of the hard shoulder;
- Nodal influence by means of variable allocation of lanes or access control.

Within this field the significance of the "NEXT-ITS – North European Cross-border ITS[91] work should be noted. This will significantly affect ITS in the northern part of the ScanMed Corridor (Denmark, Finland, Germany, Sweden) as follows:

- NEXT-ITS contributes to the delivery of continuous Real-Time Traffic Information and Road Safety Related Traffic Information on the Nordic section of the Scandinavian-Mediterranean Corridor, in accordance with the EU ITS Directive 2010/40/EU, focussing in particular to its Priority Actions (b) and (c).
- The aim of the NEXT-ITS project is to establish the organizational and technical framework required to offer seamless, harmonized and interoperable ITS services in a corridor with increased presence of Heavy Goods Vehicles and limited possibilities to alternative routes.
- NEXT-ITS will improve the quality of services through higher quality of data. This is achieved through improved data management in Traffic Centres and adding new and innovative ways to acquire extra and complementary data.
- NEXT-ITS will extend the coverage of ITS services offered along the corridor (filling the current gaps in service provision), especially to cover sections with particular needs, i.e. critical spot, urban interfaces etc.
- In order to increase reliability and efficiency of the ITS travel information, road weather monitoring facilities will be upgraded and extended along the corridor.
- NEXT-ITS will also provide additional channels to deliver services to users, taking into account latest trends and users behaviours, i.e.: development of app-based and extended internet services to include mobile users.

Requirement: alternative fuels

The definition of alternative fuels in Article 3 of Regulation (EU) 1315/2013 includes several alternatives. It is reasonable that several alternatives can find their markets. Alternative fuels and filling stations are not a bottleneck in the same way as the other issues, however lack of filling stations with the appropriate type of fuel will restrict the possibility for vehicles to use the whole corridor and can therefore be identified as a bottleneck in the system. Even worse could be gaps in the filling station networks causing unattached sections of the corridor.

[91] http://inea.ec.europa.eu/en/ten-t/ten-t_projects/ten-t_projects_by_country/multi_country/2013-eu-50004-p.htm

There are several initiatives developing the use of, and infrastructure for, different alternatives. No clear definition is made as to the specific type of fuels, the minimum distances between filling stations of each type of fuel or technology standard. The IMO regulation on sulphur emissions in Baltic-North Sea has resulted in developments of LNG-terminals in ports. This might possibly boost the potential of using LNG/BLG for road vehicles.

Regarding electric charging points for road vehicles, there is a Danish initiative to build seven electric charging stations by mid December 2014 along the corridor. The red dots in Figure 22 mark two charging stations, one for each direction, except at Farø, where there's only one charging station because it can be accessed from both directions.

According to the website chargemap.com there are over 6,000 charging points within the countries covered by the corridor. The largest number is in Germany and Norway, as can be seen in the table.

Country	Number of electric charger points
Norway	1416
Sweden	401
Finland	139
Denmark	274
Germany	2695
Austria	586
Italy	661
Malta	74 [92]
sum	6203

Table 29: Electric charger points in ScanMed countries

[92] According to Transport Malta, e-mail of 14.11.2014.

Figure 22: New elctric charging stations for road vehicles in Denmark

Other fuels of interest are e.g. Hydrogen and Liquefied Petroleum Gas (LPG). LPG filling stations can be found on e.g. the webpage for myLPG.EU[93]. A summary of filling stations in operation or being planned by country can be seen below.

[93] http://www.mylpg.eu/stations/

Country	Number of LPG stations
Norway	158
Sweden	34
Finland	-
Denmark	5
Germany	7018
Austria	49
Italy	2434
Malta	3
sum	9701

Table 30: LPG filling stations in ScanMed countries

From the H2 Stations webpage[94] is can be seen that these are a large number of filling stations offering Hydrogen within the corridor. To-date these are mainly in Germany and Austria as can be seen in the figure below.

Country	Number of Hydrogen stations
Norway	6
Sweden	2
Finland	2
Denmark	11
Germany	50
Austria	3
Italy	8
Malta	-
sum	82

Table 31: Hydrogen filling stations in ScanMed countries

[94] http://www.netinform.net/H2/H2Stations/H2Stations.aspx?Continent=EU&StationID=-1

Figure 23: Hydrogen Filling Stations (Green=in operation, yellow=planned, grey=out of operation)

It is unclear what role EU and Member States would have, apart from economic incentives (e.g. tax benefits for alternative fuels) and regulations like the Euroclass system for heavy vehicles or restrictions in urban areas (level of emission for driving in some German cities). However, these are very general measures and not specific for particular corridors. The use of toll-systems on the corridor could potentially be used for promoting vehicles of different classifications, e.g. via reduced fees. On the other hand, if the main goal is for congestion regulation or financing (e.g. Öresund Fixed Link) then the measure could be counterproductive.

Analysis: bottlenecks and missing links in road transport

The requirements are barely measurable with regard to the objectives. Partly because of vague definitions of the requirements in the Regulations (EU) 1315/2013 and 1316/2013, but also since general developments have significant effect on corridor transport movements. For example European policies and regulations on emission, weights and dimensions are of importance in this context. Furthermore, the roles of EU and Member States can differ from the private sector.

Congestion:

The requirement of road standards does not regard demand and therefore fulfilment of requirements does not necessarily comply with objectives. In some sections of the corridor the demand is close to the maximum capacity during certain time-periods. Thus the “continuity of long-distance or cross-border flows [is] 'affected'”, which can therefore be regarded as bottlenecks following the definition of Article 3 (q) of Regulation (EU) 1315/2013.

Congestion is widespread in many regions along the corridor. Most of the more serious congestion problems occur in and around the large cities and metropolitan areas as can be seen in Figure 24 and Figure 25 which have been extracted from the JRC Scientific and Policy report “Measuring road congestion”, from 2012[95]. In these areas there is often a mixture of local commuting traffic and long-distance traffic causing delays to all road users in the form of bottlenecks. Most of the infrastructure improvements in the national plans are allocated to relieve urban congestion which is a fundamental part of the transportation system.

Furthermore, roads in rural areas may have standards lower than the minimum requirements and traffic volumes under the capacity limit. However, these roads also play a vital role in the transportation network especially for interurban and cross-border journeys. These are often not considered as bottlenecks but can add significantly to improved traffic safety and the good flow of traffic. The second figure below shows relatively little road congestion on the inter-urban road network along the Scandinavian-Mediterranean Corridor.

The Multimodal Transport Market Study highlights future road traffic congestion in Germany. Large traffic volumes also occur in Italy and although Scandinavia has lower traffic levels, and generally lower congestion levels, there is the growing need to improve the road infrastructure in all countries.

Vaalimaa is the busiest heavy road vehicle border-crossing point between Finland and Russia. The average daily traffic on the E18 between Hamina and Vaalimaa border

[95] https://ec.europa.eu/jrc/sites/default/files/congestion_report_final.pdf

station is about 6,000 vehicles and over half cross the border. About 30 percent of the traffic is heavy vehicles, which means that annually over 300,000 trucks cross the border. As customs clearance requires significant time, queues of trucks on the road are very common at the border and have caused queues of up to 30 kilometres at peak periods. The E18 roadway is narrow and the junctions are congested, along with significant light traffic on the stretch Virojoki–Vaalimaa.

To solve the problem, the Finnish Transport Agency has decided to develop the transport system at the Vaalimaa border crossing point. The most important part of the development project is to construct a new parking area for the trucks. Due to the economic situation, the cross-border traffic, together with the truck queues, has decreased and the construction of the new parking area has been postponed to 2015. In November 2014 new interactive booking systems for passenger and heavy traffic will be put into operation, which will reduce the queuing time.

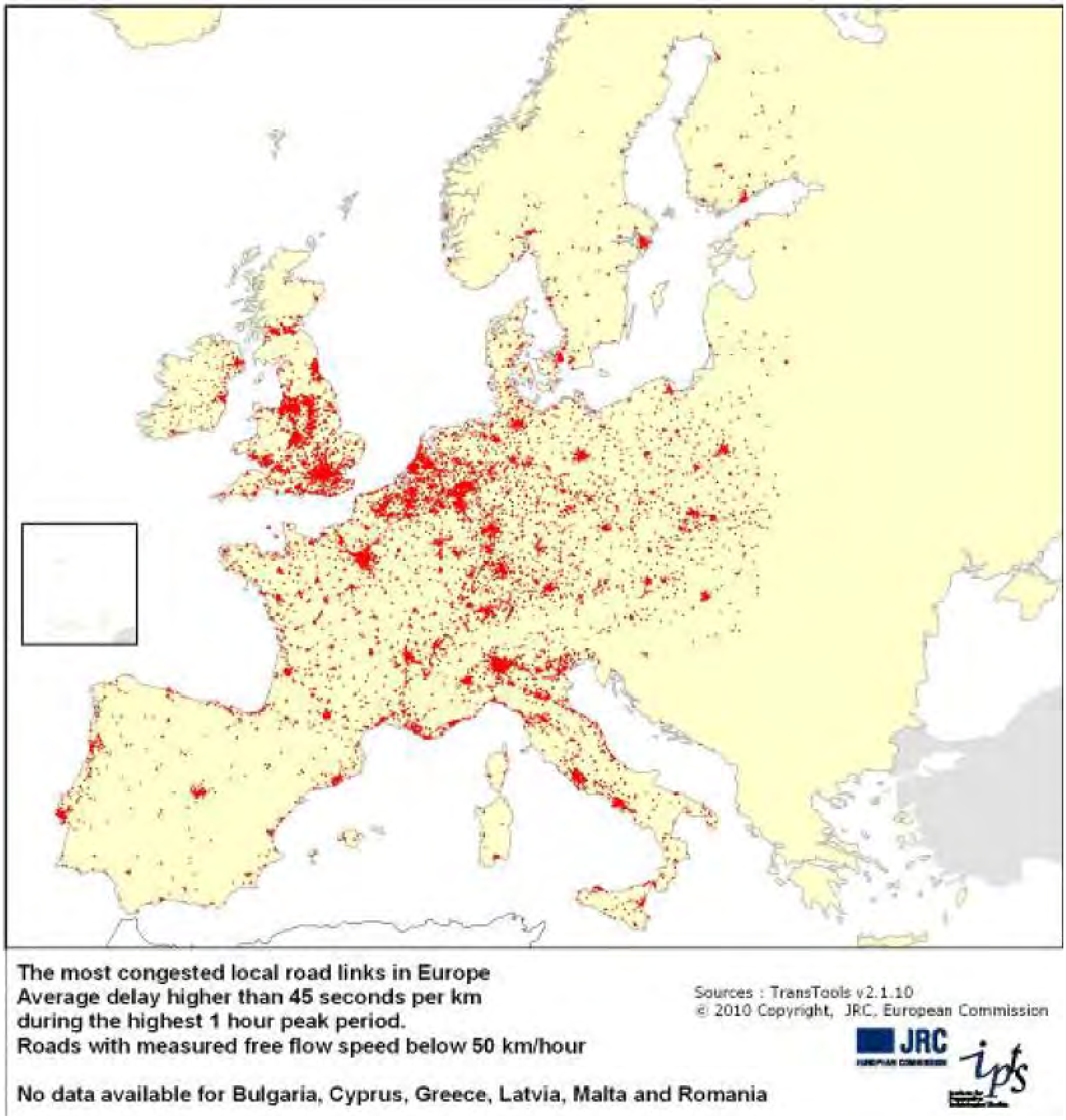


Figure 24: Congestion on local road links in Europe

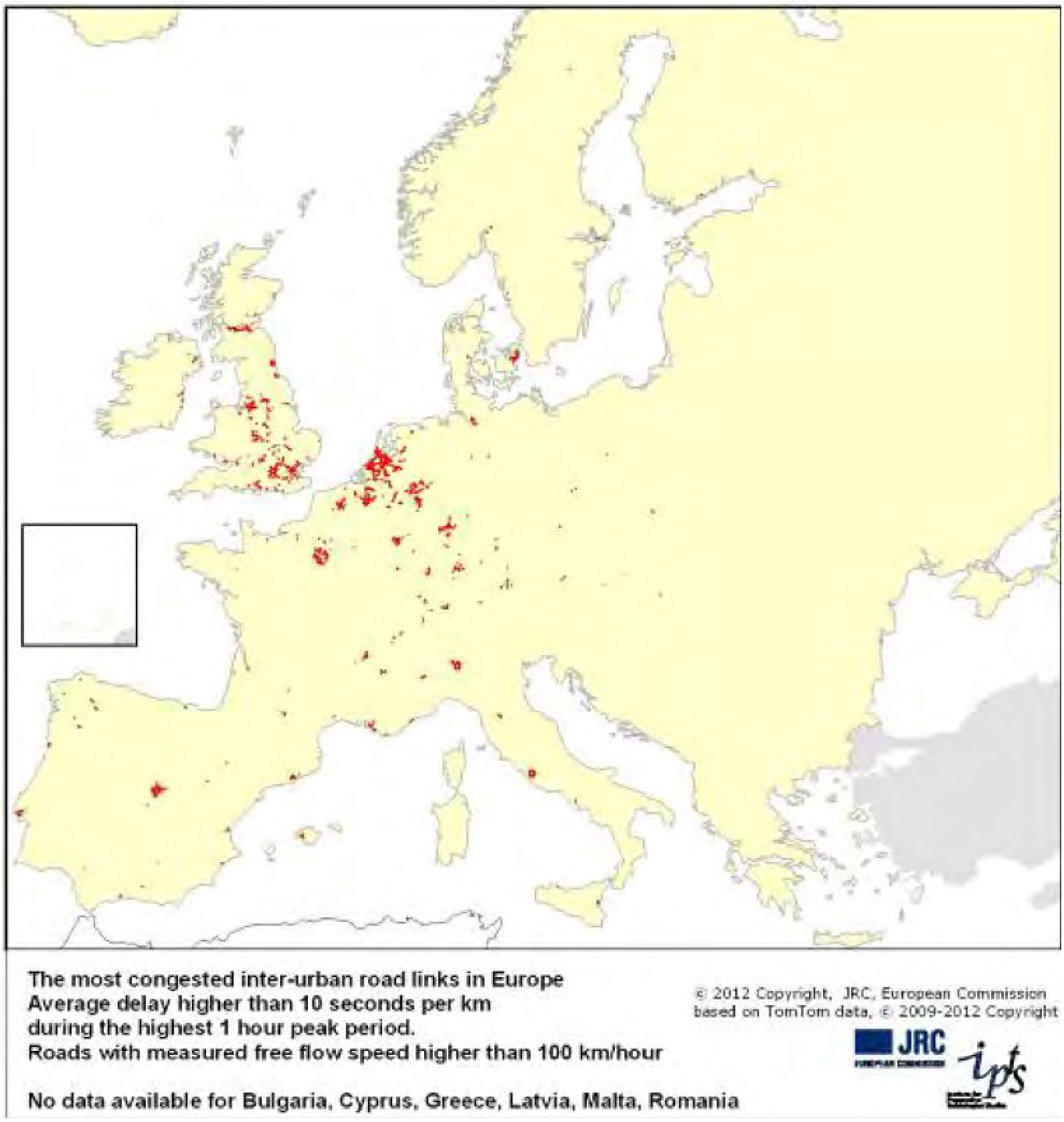


Figure 25: Congestion on inter-urban road links in Europe

ITS:

Different technological solutions for toll and road charging can help or hinder effective transport solutions. However, it is doubtful if this issue can be classed as a bottleneck. Despite this, there are a number of significant ITS developments pioneered byvarious Transport Agencies. The investigation and mapping of such systems is however not included within this study.

Missing links:

In terms of road infrastructure, the Fehmarn Belt Fixed Link can be seen as a missing link, although there are alternative road and ferry solutions. The Fehmarn Belt Fixed Link reduces travel times rather than add necessary capacity on the road network. For road transport other issues can be considered as missing links, such as "missing filling stations" i.e. the inability to fill the "right" type of fuel along the corridor. This unlike many of the other requirements for road transport is a physical bottleneck.

Analysis: tolling systems

If looking at the situation with toll roads or roads with user-charges, there are various activities in place. In Scandinavia there are no general user charges but there are charges on specific road sections. The Svinesund bridge between Norway and Sweden, congestion charges in Göteborg and Stockholm, Öresund bridge charges and in the future also the Fehmarn Belt Fixed Link are all examples in the North. In Germany there are distance-dependent road charges on motorways and some qualified roads for trucks exceeding 12 tons. Austria has centrally (via ASFINAG) implemented a time-dependent road toll on motorways for all vehicles not more than 3.5 tons total permissible weight and a distance-dependent toll for heavy trucks and busses which is complemented in section depending toll for specific roads (e.g. the Brenner-Maut on our corridor), whilst in Italy there are many sections of motorways with various road charges throughout the network. Finland does not have any toll roads. Ferry links are not really charges as such but are a cost to the user. Data collection regarding the actual fees for the toll roads or user charges is a data field in the TENtec system and was considered a relevant data item for collection. However, more detailed analysis showed that the fees were dependent on many criteria such as EURO class, size, age of the vehicles. As this type of data is lacking it was not felt to be relevant to estimate a "typical" or "average" fee per link. After discussion with the Commission it was agreed not to collect this data.

Even without a detailed analysis it can be stated that there are several different measures for economic regulation of road usage applied in the corridor. Some systems are based on vehicle classifications and distance travelled e.g. MAUT, others are vehicle based such as Eurovignette or location-based toll systems. If these systems are not coordinated they can lead to obstacles for efficient use of road infrastructure across the corridor.

Conclusion

There are significant congestion problems on the road network around most large cities during peak-periods and these are generally taken into account in the national and regional plans for each country. Inter-urban roads have generally less congestion problems and the motivation for measures to improve the road infrastructure is not only based on the availability of physical capacity but also to ensure e.g. the smooth flow of traffic, to increase traffic safety or to avoid sensitive populated or environmental areas (e.g. Ljungby-Toftanäs). In some cases, such as the Fehmarn Belt Fixed Link there is significant time-saving compared with the ferry alternatives or the longer route through Denmark. There are other important measures not related to road infrastructure directly, but to other issues such as regulations, technological improvements or improved vehicle capacity utilisation. Whether or not these issues are best addressed by the public or private sector is sometimes unclear. Should the public sector invest in or support safe parking or traffic management systems? Our conclusion is that cooperation is necessary between all interested partners involved, public as well as private. It is very unlikely that the public sector will themselves finance all necessary infrastructures (safe parking areas, filling stations etc) but can be active in the use of infrastructure and/or vehicle regulation in order to encourage or discourage transport choices by the infrastructure users. For private organisations, there needs to be a financial benefit both in the long- and short-term in order to get involved. This is a complicated process that will require concentrated action.

4.1.4 Airports (Gruppo CLAS)

The ScanMed core network corridor consists of 19 airports. A total traffic of 238 million passengers (2013) and 2,280 million tons of freight was managed by these airports (see Table 32).

For Berlin, its planned and currently built airport Berlin Brandenburg (BER) is defined as the core airport in the Regulation (EU). Since it is not yet in service no traffic data could be obtained. The reported traffic figures include current traffic of the two existing Berlin airports (Tegel - TXL, and Schönefeld - SXF), that will be replaced by the core network airport of Berlin Brandenburg - BER, when it will start operations.

The airport expressing the largest traffic is München "Franz Josef Strauß" (38 million in 2013), followed by Roma-Fiumicino (36 million), by Berlin airport system (26 million overall) and by a cluster of three Nordic country capitals (Oslo, Stockholm, København) with more than 20 million each.

Leipzig/Halle, an air express courier hub, is by far the biggest freight traffic airport, representing 38% of the total corridor throughput (2013). København has about 360,000 tons of freight traffic in 2013. München, Roma, Helsinki and Stockholm are the only other airports with freight traffic higher than 100,000 tons/year.

		Passenger traffic (pax per year)	Freight traffic (tons per year)
Country	**Airport (code)**	**2013**	**2013**
FI	Helsinki-Vantaa (HEL)	15.279.043	189.055
FI	Turku (TKU)	324.667	5.342
NO	Oslo-Gardermoen (OSL)	22.957.000	NA
SE	Stockholm-Arlanda (ARN)	20.700.000	170.000
SE	Göteborg-Landvetter (GOT)	5.004.093	58.409
SE	Malmö Airport (MMX)	2.120.000	31.160
DK	København-Kastrup (CPH)	24.067.030	360.990
DE	Berlin Brandenburg (BER)	NA	NA
DE	Berlin-Tegel (TXL) and -Schönefeld (SXF)	26.319.144	40.699
DE	Bremen (BRE)	2.612.627	567
DE	Hamburg Airport (HAM)	13.502.533	28.289
DE	Hannover-Langenhagen (HAJ)	5.234.909	14.665
DE	Leipzig/Halle, Schkeuditz (LEJ)	2.234.231	878.023
DE	Nürnberg (NUE)	3.309.629	7.392
DE	München "Franz Josef Strauß" (MUC)	38.689.954	284.520
IT	Bologna "Guglielmo Marconi" (BLQ)	6.193.783	44.150
IT	Roma-Fiumicino (FCO)	36.166.345	141.911
IT	Napoli-Capodichino (NAP)	5.444.422	7.514
IT	Palermo-Punta Raisi (PMO)	4.349.672	1.533
MT	Malta-Luqa (MLA)	4.031.500	16.038
	TOTAL	**238.540.582**	**2.280.257**

Table 32: Passenger and freight traffic volumes of ScanMed airports

The characteristics of the core airports of the ScanMed Corridor were elaborated in the following working steps:

- Selection of core airports,
- Description of the corridor's requirements and priorities,
- Assignment of selected infrastructure parameters.

This process enables the examination of the compliance/deviation of current infrastructure parameters with the requirements set out in the Regulation. This approach shall highlight the major deficits from the TEN-T Core Network standards targeted for 2030/2050 respectively.

Moreover, the analysis gives an overview of the main physical and performance parameters of the core airports.

The document base for such work and for further analyses is the Regulation (EU) 1315/2013, Section 5 - Air transport infrastructure.

Following articles of the above regulation shall represent the base for the description of the characteristics of the core ScanMed airports as per:

- Article 25 - Transport infrastructure requirements,
- Article 26 - Priorities for air transport infrastructure development.

Whereas Article 25 contains "core" standards and requirements, Article 26 sets up the priorities for the development of the air transport infrastructure by promoting projects of common interest. The objectives are described in detail in Chapter 5.4.4 of the present report.

Thus, according to the content of Articles 25 and 26, the following four objectives have to be fulfilled by the airports by the year 2030:

- OBJ_1 Open access to terminals (Art. 25),
- OBJ_2 Implementation of SESAR - Single European Sky (Art. 25),
- OBJ_3 Increasing airport capacity (Art. 26),
- OBJ_4 Improving multimodal interconnections (Art. 26).

Several infrastructure parameters are relevant to gather the compliance of each airport with such objectives. Four infrastructure parameters have been identified for three different airport infrastructure categories in order to describe and evaluate priorities and "core" requirements, as depicted in Figure 26.

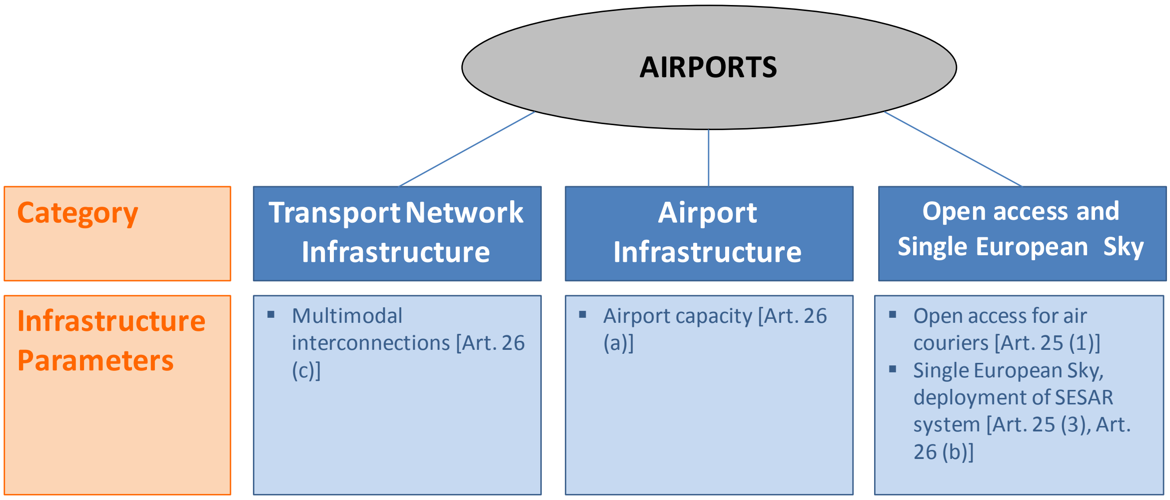


Figure 26: Infrastructure Parameters on Airports

The parameters clustered in the figure above have five corresponding TENtec indicators, which are:

- 17. Open access for air couriers (OBJ_1),
- 16. Single European Sky, deployment of SESAR system (OBJ_2),
- 3. Capacity (expressed in planes per day) (OBJ_3),
- 9. Passenger capacity (persons per year) (OBJ_3),
- 6. Connection with rail (OBJ_4).

The derived infrastructure parameters have been analysed for the 19 core airports pertinent to the ScanMed Corridor, identified and located per country as follows:

- Finland (2: Helsinki-Vantaa, Turku),
- Sweden (3: Stockholm-Arlanda, Göteborg-Landvetter, Malmö Airport),
- Norway (1: Oslo-Gardermoen),
- Denmark (1: København-Kastrup),
- Germany (7: Berlin Brandenburg BER, Bremen, Hamburg, Hannover-Langenhagen, Leipzig/Halle, Nürnberg, München "Franz Josef Strauß"),
- Italy (4: Bologna "G. Marconi", Roma-Fiumicino, Napoli-Capodichino, Palermo-Punta Raisi) and
- Malta (1: Malta-Luqa).

The data on the status of the different parameters at the 19 ScanMed core airports were collected from studies, public internet sources such as airports' and air transport authorities' websites and annual reports, as well as air transport knowledge databases to integrate the most actual data and information.

The availability of figures for each indicator was satisfactory and complete except for indicators "3. Capacity (planes per day)" and "9. Passenger capacity (persons per year)". Those indicators appear to be odd in common statistics and very few databases (e.g. www.azworldairports.com) and airport annual reports express these in a transparent way.[96]

The figures were summarized and documented in the following Table 33.

[96] Some figures on passenger capacity have been integrated and/or amended by competent Ministries or Authorities, as feedbacks to the report, i.e.: Danish Ministry of Transport amended figure on current passenger capacity of CPH (as per e-mail of 08.10.2014), Swedish Ministry of Transport on ARN (e-mail of 17.10.2014), ENAC on BLQ (e-mail of 09.10.2014).

	Airport (code)	Open access for air couriers	Deploy-ment of SESAR system	Capacity		Connection with rail
				Planes per day	Persons p.a.	
FI	Helsinki-Vantaa (HEL)	YES	NA	1.200	17.000.000	NO
FI	Turku (TKU)	YES	NA	300	NA	NO
NO	Oslo-Gardermoen (OSL)	YES	NA	NA	23.000.000	YES
SE	Stockholm-Arlanda (ARN)	YES	NA	1.968	24.000.000	YES
SE	Gøteborg-Landvetter (GOT)	YES	NA	816	6.000.000	NO
SE	Malmö Airport (MMX)	YES	NA	816	4.000.000	NO
DK	København-Kastrup (CPH)	YES	NA	1.992	24.000.000	YES
DE	Berlin Brandenburg (BER)	YES	NA	NA	30.000.000	YES
DE	Bremen (BRE)	YES	NA	363	NA	NO
DE	Hamburg Airport (HAM)	YES	NA	816	15.000.000	YES
DE	Hannover-Langenhagen (HAJ)	YES	NA	680	4.500.000	YES
DE	Leipzig/Halle, Schkeuditz (LEJ)	YES	NA	320	4.500.000	YES
DE	Nürnberg (NUE)	YES	NA	480	4.000.000	YES
DE	München "Franz Josef Strauß" (MUC)	YES	NA	NA	50.000.000	YES
IT	Bologna "Guglielmo Marconi" (BLQ)	YES	NA	480	7.000.000	NO
IT	Roma-Fiumicino (FCO)	YES	NA	1.440	35.000.000	YES
IT	Napoli-Capodichino (NAP)	YES	NA	480	6.300.000	NO
IT	Palermo-Punta Raisi (PMO)	YES	NA	448	5.300.000	YES
MT	Malta-Luqa (MLA)	YES	NA	345	5.000.000	NO

Table 33: Requirements on ScanMed airports

The table indicates the current compliance of the 19 ScanMed airports with the Regulation (EU) 1315/2013 objectives for the year 2030. Summarizing the results, the following statement can be made:

Concerning the deployment of SESAR, the "road map" on 2014-2020 large-scale production and implementation of the new air traffic management infrastructure was scanned; information on airports involved in the road map are not yet available.

Concerning airport infrastructure and multimodal connections:

- Open access is basically granted at all airports analysed.
- All airports are connected to the TEN-T road network.
- 11 out of 19 airports are connected to rail. Lack of rail connections is reported in Finland (2 out of 2), Sweden (2 out of 3), German (Bremen, that has only a metro connection) and Italy (2 out of 4). Malta-Luqa is not connected due to the non-existence of a railway network in the country.
- The ScanMed airports of Helsinki, Stockholm, København, Berlin, Hamburg. München and Roma are highlighted in the Regulation to be “connected” to the TEN-T rail network by 2050 (see also Chapter 5.4.4). This objective is already fulfilled for the respective airports except for Helsinki, that will be connected to the rail network in 2015.

- For other airports than those mentioned in the previous point the connection to the rail network is not recommended as a goal by the Regulation. Thus the lack of a rail connection in Göteborg-Landvetter, Malmö, Turku, Bologna and Napoli could not be intended as a minus for those airports. They fulfil sufficiently the demand for accessibility of (a lower number of) passengers by other transport services than rail, and with road connections. However, some of those airports are making efforts to ensure a rail connection, such as Göteborg-Landvetter, which will be connected to the rail network beyond 2025[97], Bologna, connected by a people-mover to the rail station in 2017[98].
- If potential traffic demand exists, the above mentioned main airports should also be “integrated” into the high-speed railway network, wherever possible. The pre-condition of traffic demand and the way such “integration” is to be realized (e.g. by an own HSL-station in the airport, or by a shuttle-train to another HSL-station, or other) is an issue that needs to be analysed in detail in a separate study for the respective airports.

Figure 27 shows graphically the status of multimodal connections in the core airports.

Airports of the core nodes aligned with the corridor are suffering from timely completion, e.g. Berlin Brandenburg (BER), and saturated road access at peak times and capacity enlargement plans which are disputed on a local level. Roma-Fiumicino will be benefiting from major construction works to improve accessibility and alleviate road congestion on the motorway connecting Rome to the airport. Among those projects, a new metro line is foreseen to be opened in 2019, and new by-pass roads ("complanari") that will be built at both sides of the motorway by 2025.

[97] Feedback provided by the Swedish Ministry of Transport, as a feedback on the 3rd Progress Report, by e-mail of 17.10.2014.
[98] Feedback provided by ENAC, as a feedback on 3rd Progress Report, by e-mail of 09.10.2014.

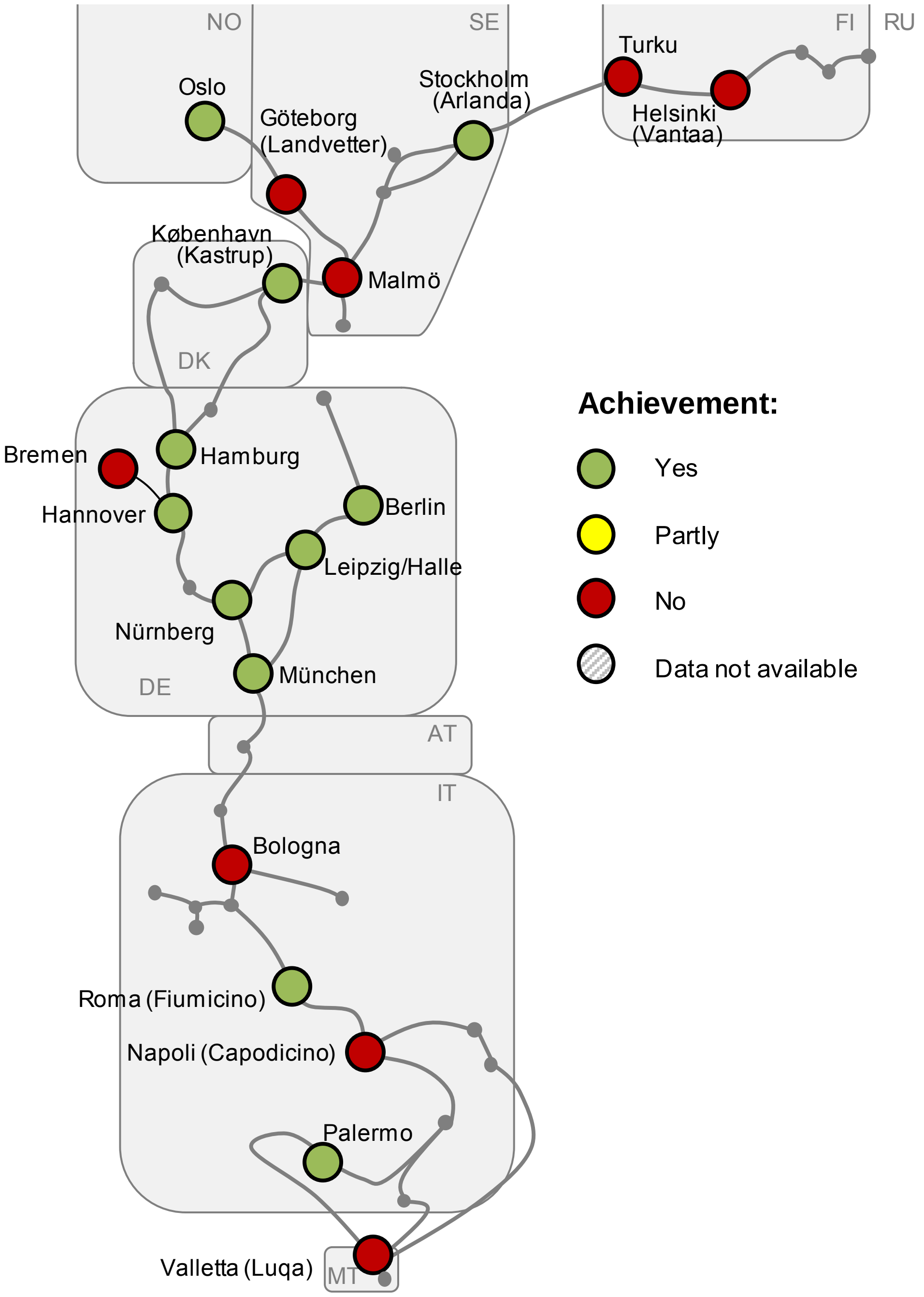


Figure 27: Multimodal connections in ScanMed airports

Concerning Airport capacity:

- The comparison between capacity data and current traffic shows that almost all core airports exploit their capacity (movements vs. planes per day) at a <50% rate. Exceptions are Hamburg (52%) and Roma-Fiumicino (57%).
- According to the available data, several airports appear to have reached annual passenger traffic volumes above the potential capacity, expressed in terms of

passengers. Such airports are Oslo, København, Hannover and Roma-Fiumicino.

- As concerns the previous statement, it has to be remarked that the indicator of potential passenger capacity is not univoquely available in databases and airport statistics. In some cases, the current capacity is self-stated by airports and responsible authorities as the current passenger level, with the purpose to enlighten the goal of capacity expanding projects. This is the case of København airport, which foresees a capacity of 40 million passengers in 2030, as a result of the implementation of the "Expanding CPH Strategy".[99]

Airports are shown according to their capacity in the cartograms of Figure 28, which allow a further clustering of airports of ScanMed Corridor:

- seven airports have capacity of over 15 million passengers per year;
- nine airports have capacity lower than 15 million passengers per year;
- only three airports have capacity of over 1200 planes per day, four between 801 and 1200;
- four airports have capacity lower than 400 planes per day;
- data on plane capacity per year are not available for Oslo, Berlin Brandenburg, München;
- data on passenger capacity per year are not available for Bremen, Berlin Brandenburg and Turku.

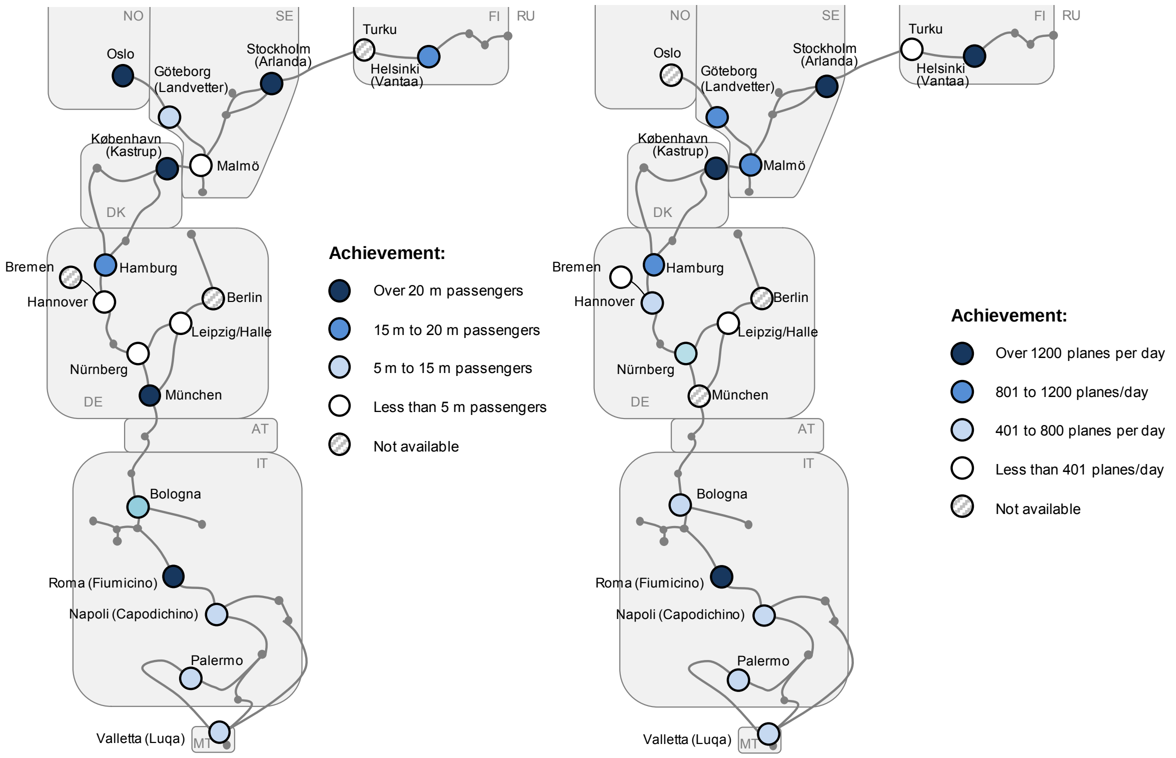


Figure 28: Capacity in ScanMed airports: passenger/year (left) and planes/year (right)

[99] http://www.cph.dk/en/about-cph/profile/expanding-cph/

According to the information gathered in the survey, the current network of core airports in ScanMed appears to fulfil - at different degrees - the objectives set in Regulation (EU) 1315/2013, Section 5 - Air transport infrastructure, already today.

Conclusion

The open access is basically granted in all core airports. The connection with TEN-T road network is ensured for all airports, whilst eight airports have no access to railway network. Helsinki is the only airport lacking a connection among the panel of airports due to be connected to rail by 2050, according to the Regulation. The gap will be filled by the new rail connection, in operation in 2015. The way to the implementation of Single European Sky will involve ScanMed airports, although information on airports involved in the "SESAR road map 2014-2020" are not yet available.

As concerns capacity, the survey has suffered from the misleading significance of some indicators due to express "airport capacity" in TENtec, and the consequent lack of some data. Anyway, from the comparison of traffic figures with capacity indicators, a few airports appear to have reached annual passenger traffic volumes above the potential capacity, expressed in terms of passengers/year. Projects aimed at improving capacity are existing and underway, and the foreseen outcome will allow the stakeholders to achieve compliance with the objective set in the Regulation. The opening of Berlin Brandenburg (BER) airport will constitute a substantial improvement of airport capacity on the corridor.

4.1.5 Ports (Uniconsult)

At first, ScanMed port parameters which were collected by the consultants according to the given structure of the TENtec Information System, are shown in Table 34. In contrast to the derived and - later on - described twelve infrastructure parameters as per the Regulation (EU) 1315/2013, these parameters should be additionally collected and documented.

The table contains data on cargo and passenger volumes - as far as they were publicly available - and indicate the infrastructure accessibility from the sea (maximum draught) as well as the “intermodal port competence” on the land site (transshipment facilities).

The given port data confirm the infrastructure requirements set for identified 25 TEN-T core seaports, as all ports offer a comprehensive accessibility via sea, have a certain relevance because of the handled passenger or cargo volumes and offer transshipment facilities, unless geographical reasons or space limitations do not allow so (Augusta, Maltese Ports).

Country	Port	Maximum Draught (m) - natural or dredged	Passenger traffic flow (pax per year)	Freight traffic flow (tons per year)	Maritime Chamber Lock (width/ length)	Transshipm. facilities for intermodal rail/ road transport
FI	Helsinki	11	11.556.525	10.537.957	No	Yes
	Kotka	max. 15,3	1.366	14.009.655	No	Yes
	Hamina	12		see Kotka	No	Yes
	Naantali	15,3	143.011	7.046.689	No	Yes
	Turku	10	2.916.312	2.612.732	No	Yes
SE	Stockholm	11,4	9.400.000	5.000.000	No	Yes
	Göteborg	21	1.692.000	38.900.000	No	Yes
	Malmö	13,5	67.000*	8.740.000*	No	Yes
	Trelleborg	7,6	1.617.563	9.965.669	No	Yes
NO	Oslo	11			No	Yes
DK	København	12	1.897.000*	5.877.000*	No	No
DE	Bremen	10,7	0	12.595.000	12,50m x 225m	Yes
	Hamburg	15,1	555.000	138.500.000	No	Yes
	Lübeck	9,5	490.000	23.100.000	No	Yes
	Rostock	max. 13	2.400.000	21.360.000	No	Yes
IT	Livorno	13	2.557.826	27.952.887	No	Yes
	La Spezia	15 (dredging 15,5)	213.900	15.546.312	No	Yes
	Ancona	14	1.174.054	6.974.533	No	Yes
	Bari	14,3			No	Yes
	Taranto	23			No	Yes
	Gioia Tauro	12,50 - 18		28.209.000	No	Yes
	Napoli	13,2			No	Yes
	Palermo	12	1.632.320	6.506.558	No	Yes
	Augusta	19,8		29.937.000	No	No
MT	Marsaxlokk	15	0		No	No
	Valletta	13,4			No	No
Note:	Data refer to the year 2013; Status as of 14.05.2014; updated after the 3rd Forum meeting. * Data provided by CMP, the joint port authority.					

Table 34: Analysis of TENtec parameters for ScanMed ports

Please note: Because of the limitations set by the EC's TENtec Information System, the parameter "Maximum Draught" shall indicate the maximum possible draught per port, even if it is not valid for the complete port but just for specific port terminals only.

The characteristics of the core ports of the ScanMed Corridor were elaborated by following working steps. As the first and major working step, an examination of the compliance/deviation of current infrastructure parameters with the requirements set out in the corresponding EU Regulation was carried out. This approach shall highlight the major deficits from the TEN-T Core Network standards.

In a second step, further analyses on bottlenecks, constraints or barriers to the use of corridor-related port infrastructure was addressed. For this, appropriate data and information have been gathered where available and relevant. The ports, transport ministries and local authorities have reported current and likely future infrastructure bottlenecks and missing links. They partly gave an insight into the state of implementation of intelligent traffic management systems and operational, regulatory, administrative or technological barriers to the use of corridor-related infrastructure.

The base for the first working step is the Regulation (EU) 1315/2013, Section 4 - Maritime transport infrastructure and Motorways of the Sea (MoS).

The following articles of the above mentioned regulation shall represent the base for the description of the characteristics of the ScanMed core ports as per:

- Article 21 - Motorways of the sea,
- Article 22 - Transport infrastructure requirements,
- Article 23 - Priorities for maritime infrastructure development.

Whereas Articles 21 and 22 contain definitions and the core requirements, Article 23 defines priorities for the development of the maritime infrastructure and the requirements placed upon it.

Based on the Regulation, twelve infrastructure parameters have been identified for three different infrastructure categories in order to describe and evaluate core requirements (see Table 35). The definition of the port quality parameters follows the articles of the Regulation (EU) 1315/2013 but shall not consider the detailed day to day port operations and capacity limitation needs.

			Regulation (EU) No. 1315/2013		**Other Regulations *or* Directives concerned**
			"Core" requirments as per Article 21 and 22	**Priority as per Article 23**	
Transport Network Infrastructure	**Sea canal**		Article 22 (1) (c)	Article 23 (a)	-
	Hinterland connection	*Rail*	Article 22 (1) (a)	Article 23 (a)	-
		Road	Article 22 (1) (a)		
		Inland Waterway	Article 22 (1) (a)	Article 23 (a), (b)	
Port and Logistics Infrastructure	**Non-discriminatory access to terminal(s)**		Article 22 (1) (b)	-	-
	Logistic platforms or freight villages (FV)		Article 21 (1) (b)	Article 23 (a)	
	Environmental compatibility	*Port Reception Facilities (waste + residues)*	Article 22 (2)	Article 23 (a)	Directive 2000/59/EC
		LNG bunkering facilities	Article 22 (2)	Article 23 (d)	Directive 2013/0012 (COD)
		Onshore power supply (OPS)	Article 22 (2)		
I&C Technologies	**VTMIS**	**Vessel Traffic Service (VTS)**	Article 22 (3)	Article 23 (c)	Directive 2002/59/EU
		SafeSeaNet (SSN)	Article 22 (3)		
	e-Maritime services		Article 22 (3)		Directive 2010/65/EU

Table 35: Regulation objectives on ports and Motorways of the Sea

The first category "Transport Network Infrastructure" includes the parameters for the accessibility by sea (Sea canal) and for the hinterland connection (Rail, Road, Inland

Waterway). The second category "Port & Logistics Infrastructure" includes the parameters of non-discriminatory access to terminals, the existence of logistic platforms or freight villages, and parameters of the environmental compatibility of ports (Port Reception Facilities, LNG bunkering facilities, Onshore Power Supply). The third category "I&C Technologies" comprises the parameters Vessel Traffic Service, SafeSeaNet and e-Maritime services. These parameters are illustrated in Figure 29.

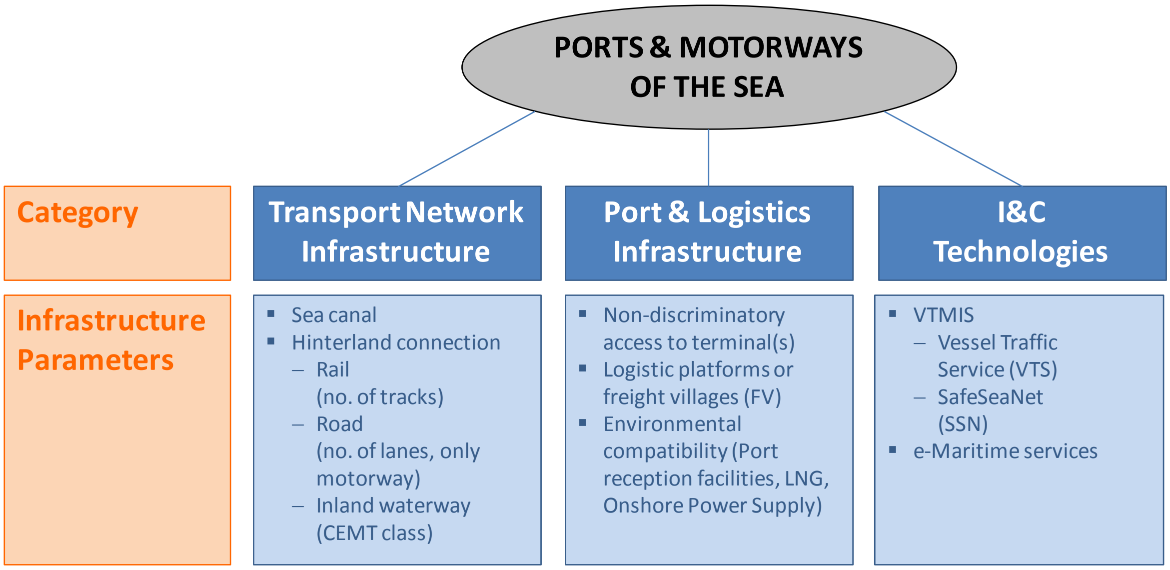


Figure 29: Infrastructure Parameters on Ports and Motorways of the Sea

The infrastructure parameters have been analysed for the 25 core ports of the ScanMed Corridor:

- Finland (4): HaminaKotka, Helsinki, Turku, Naantali;
- Sweden (4): Stockholm, Göteborg, Malmö, Trelleborg;
- Norway (1): Oslo;
- Denmark (1): København;
- Germany (4): Rostock, Lübeck, Hamburg, Bremen;
- Italy (9): La Spezia, Livorno, Ancona, Napoli, Bari, Taranto, Gioia Tauro, Palermo, Augusta;
- Malta (2): Valetta, Marsaxlokk.

Transport Network Infrastructure

Concerning the fulfilment of the core requirements of transport network infrastructure, including hinterland connections, the key findings are:

- All ports have seaward transport connection, even though some ports suffer from the limited accessibility due to maximum draught which is behind the parameter required by the current and most likely used vessel classes.

Specifically, this applies for the Elbe River (Port of Hamburg), the Weser River (Port of Bremen) and the sea canal leading towards the Port of Rostock.

- All ports except Maltese ports have access to the national and European rail network. Existing constraints derive from specific bottlenecks in the port's hinterland (e.g. capacity constraints or missing links) as well as from technological barriers.
- All 25 ports have access to the national and European road network. Due to increased truck and passenger traffic several port regions suffer from heavy congestion problems. A lack of road capacity and links has been identified for many ports.
- Hamburg, Lübeck and Bremen in Germany as well as Stockholm and Göteborg provide access to inland waterway infrastructure for cargo transport.

The detailed findings for each parameter are outlined below (see Table 36).

	Port	Sea canals or inland waterway (minumum CEMT class VI) providing access to open sea	Rail connection (no. of tracks)	Road connection (no. of lanes, only motorway)	Inland waterway connection (CEMT class)
FI	**Helsinki**	Yes	Yes (8)	Yes (18)	No
	HaminaKotka	Yes	Yes (5)	Yes (8)	partially via Saimaa Canal
	Naantali	Yes	Yes (2)	Yes (4)	No
	Turku	Yes	Yes (3)	Yes (12)	No
SE	**Stockholm**	Yes	Yes (2)	Yes (28)	Yes (Va)
	Göteborg	Yes	Yes (3)	Yes (22)	Yes (IV)
	Malmö	Yes	Yes (4)	Yes (4)	No
	Trelleborg	Yes	Yes (1)	Yes (4)	No
NO	**Oslo**	Yes	Yes (6)	Yes (18)	No
DK	**Kobenhavn**	Yes	No (0)	Yes (15)	No
DE	**Hamburg**	Yes	Yes (12)	Yes (24)	Yes (VIb, Vb, IV)
	Bremen	Yes	Yes (10)	Yes (18)	Yes (VIb, Vb, IV)
	Lübeck	Yes	Yes (7)	Yes (6)	Yes (IV)
	Rostock	Yes	Yes (8)	Yes (4)	No
IT	**Livorno**	Yes	Yes (4)	Yes (4)	No
	La Spezia	Yes	Yes (2)	Yes (4)	No
	Ancona	Yes	Yes (3)	Yes (8)	No
	Bari	Yes	Yes (8)	Yes (8)	No
	Taranto	Yes	Yes (5)	Yes (8)	No
	Gioia Tauro	Yes	Yes (5)	Yes (8)	No
	Napoli	Yes	Yes (5)	Yes (20)	No
	Palermo	Yes	Yes (5)	Yes (16)	No
	Augusta	Yes	Yes (2)	Yes (4)	No
MT	**Marsaxlokk**	Yes	No (0)	Yes (0)	No
	Valletta	Yes	No (0)	Yes (0)	No

Table 36: Compliance analysis of ScanMed ports - Transport Network Infrastructure

a) Sea Canal or inland waterway providing access to open sea

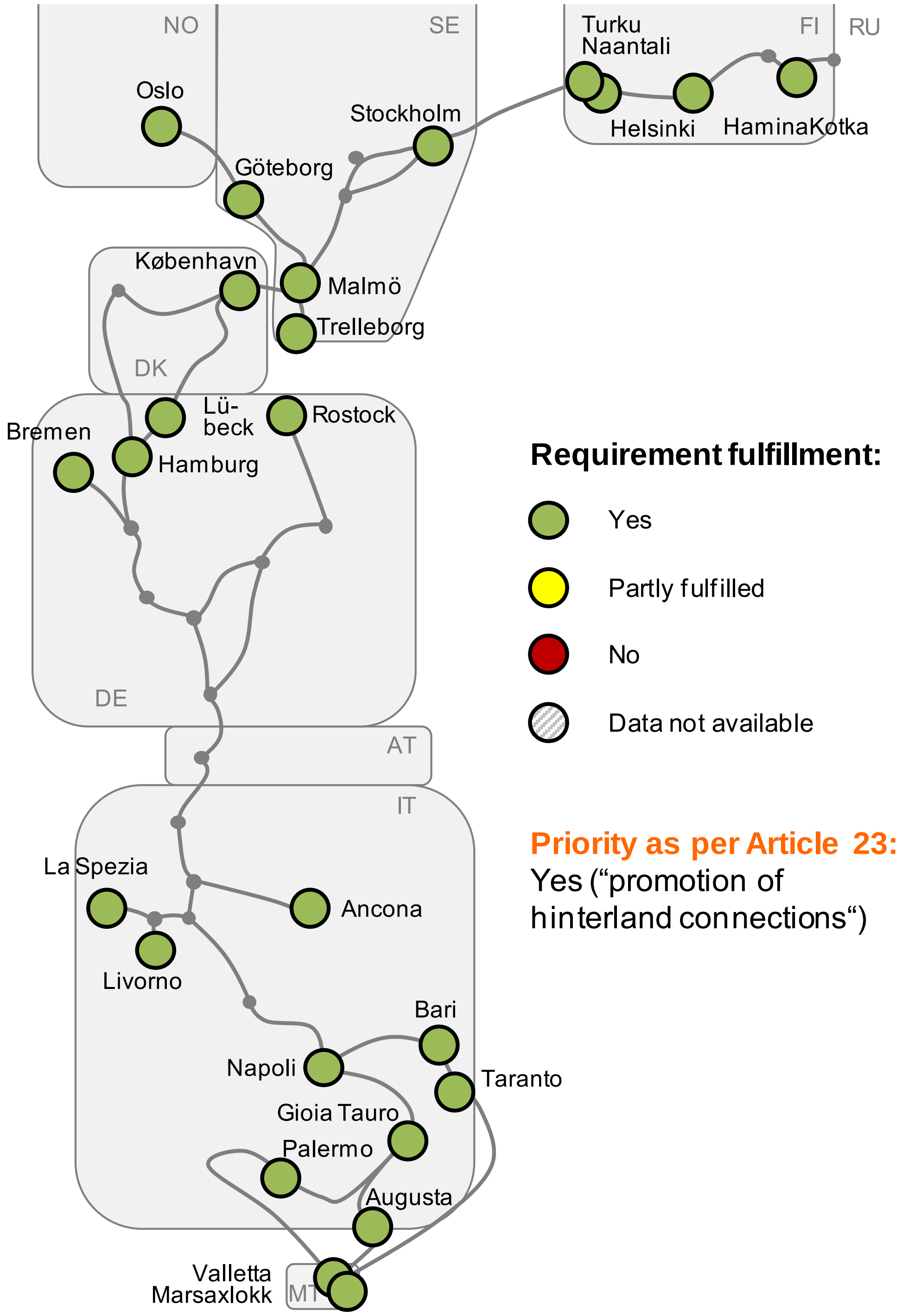


Figure 30: Analysis of requirement "Sea canal and inland waterway" for ScanMed ports

The core requirement for the ports' accessibility by sea is defined in Article 22 (1) (c), Regulation (EU) No. 1315/2013 which says that *"Member States shall ensure that sea canals, port fairways and estuaries connect two seas, or provide access from the sea to maritime ports and correspond at least to inland waterway class VI."*

The main findings of the compliance/deviation analysis for this requirement, also visualised in Figure 30, are:

- All 25 ports fulfil the basic requirement.
- The legal requirement is too "broad" in order to identify existing bottlenecks, constraints or barriers to the use of sea canals, though.

Thus, further findings are:

- Due to limited draughts in the sea canal or port fairways, some ports already have serious problems to allow access to ships with greater draughts.
- In particular, the German ports of Hamburg and Bremen struggle with limited accessibility of ships with maximum draught of 13 m or more. The deepening of the Elbe River in Hamburg is still being approved by the Federal Administrative Court. Even if it will be completed according to the current planning (draught of 13.5 m independent of tides, 14.5 dependent of tides), it will not be sufficient to allow unrestricted access to the latest generation of container vessels. A fully loaded ship of the Triple-E class, for example, has a maximum draught of 15.5 m. In 2013, the legal proceedings for the deepening of the Weser River were suspended due to several appeals brought before the Federal Administrative Court. A list of questions has been submitted to the European Court of Justice which is expected to clarify whether the deepening of the Weser River is consistent with the EU Water Framework Directive.
- In the Port of Rostock, the sea canal in the Baltic Sea leading towards the port is also limited to 14.50 m ship's draught which impedes, for example, the access of big bulk carriers needed for the planned expansion of iron ore imports. However, plans exist to increase the sea canal water depth to 16.50 m.
- Limited accessibility exists for the Port of Helsinki leading to the requirement to deepen the Vuosaari Harbour Fairway and improvement of the sea basin.

b) Hinterland connection: Rail connection

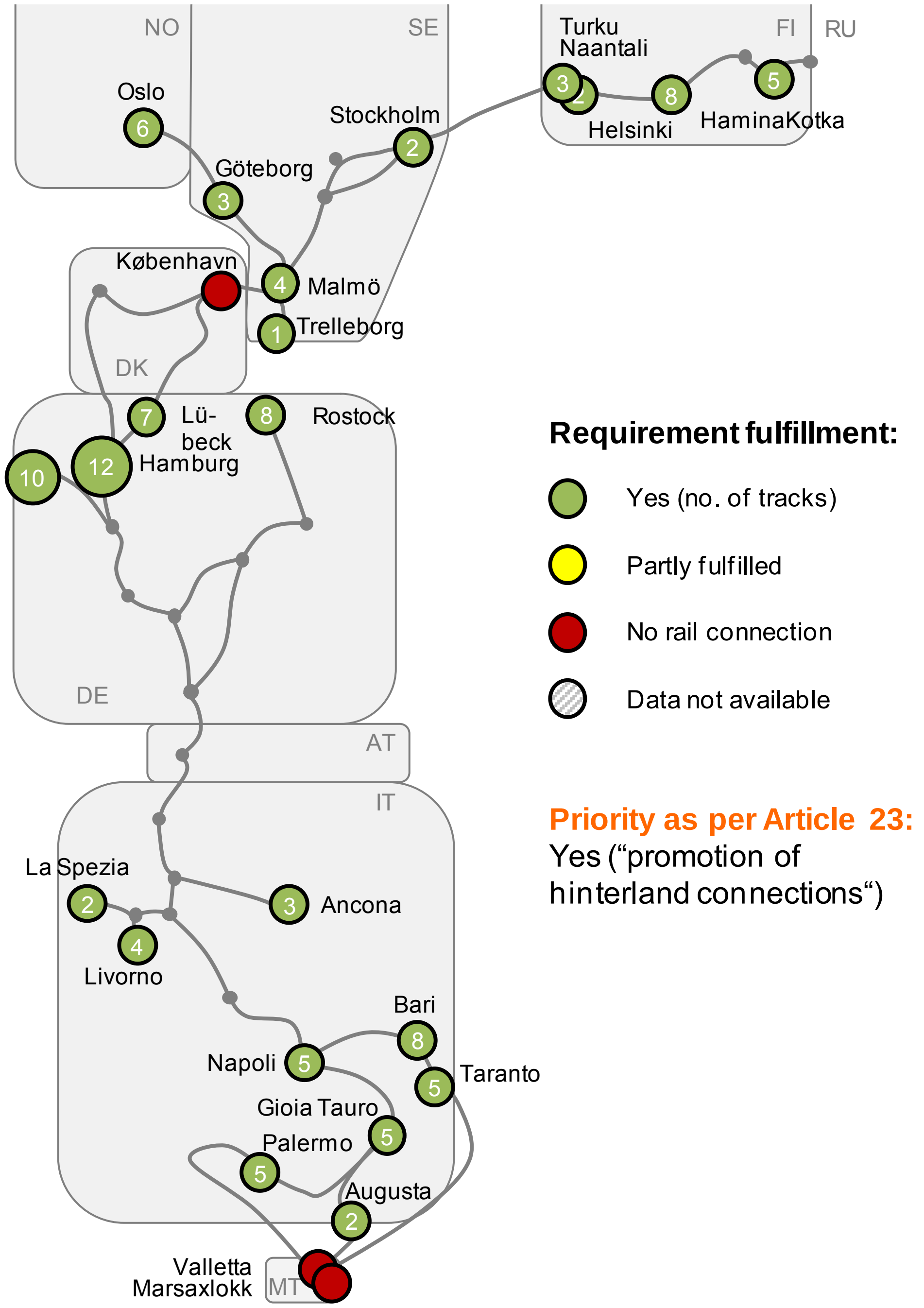


Figure 31: Analysis of requirement “Rail (no. of tracks)” for ScanMed ports

The core requirement for the ports’ hinterland connection by rail is defined in Article 22 (1) (a), Regulation (EU) No. 1315/2013 which says that “Member States shall ensure that maritime ports are connected with railway lines [...] except where physical constraints prevent such connection." For Maltese ports such a connections is not required since Malta has no rail network at all.[100]

The main findings of the compliance/deviation analysis for this requirement are:

- All except Maltese ports have rail connection to their national railway network (see Figure 31). For Copenhagen Malmö Port, rail connection is only available on the Malmö side.
- 6 of 7 countries with railway network have standard-gauge of 1'435 mm whereas Finland has broad gauge of 1'524 mm.

Although most ports have direct access to the railway, there are several bottlenecks and constraints which have been reported by the ports. In particular, these are:

- Bottlenecks on the Helsinki-Turku line (Finland): In terms of the Scandinavian-Mediterranean Corridor, the worst bottleneck in Finland is the Helsinki-Turku rail connection. The current system is a single-track railway whose profile and terrain is such that it cannot be improved to correspond to the criteria set for a core network corridor. The track is not only slow but also highly susceptible to disruptions. The only way to bring this connection up to the level required is through the construction of a completely new line, the planning of which is already underway. It is possible for this to be realised in accordance with the objectives set for the development of the core network corridors, that is, by 2030. The new rail infrastructure would have a double track, and its profile and terrain base would make it possible to construct a rail connection that meets the criteria set for a core network corridor. It would notably improve the hinterland connections to the ports within the core network (Turku, Naantali, Helsinki).
- Bottlenecks between the Port of HaminaKotka and Kouvola logistics terminal (Finland): The railway between Kouvola and HaminaKotka is part of the Vainikkala – Kouvola – HaminaKotka transport route and has the heaviest traffic volumes in Finland. Bottlenecks affecting, in particular, the paper industry and traffic to and from Russia include the lack of a railway line to the port. This line should bear an axle weight of 250 kN and a train length of 1,100 metres. Deficiencies in safety equipment are resulting in the underutilisation of the existing rail capacity on the Kotolahti railway yard.
- Missing railway link to Port of Kapellskär (Ports of Stockholm, Sweden): Although only the Port of Stockholm is a designated TEN-T core port located on the ScanMed Corridor, the nearby located Port of Kapellskär and Port of Nynäshamn could be regarded as one unit when facing the port's capacity issues and eliminating bottlenecks in the port and its hinterland. All three ports are managed by the same Port Authority. Especially the Port of Kapellskär could be a good alternative linking Finland and Sweden on the ScanMed Corridor. It has sufficient handling capacity and is very well connected to the

[100] E-Mail of Transport Malata of 31.10.2014.

road via European highway E18. A missing link, however, is a railway connection to this port.[101]

- Port of Rostock (Germany): The rail connection for passengers to the cruise terminal in Warnemünde is realised via the station "Rostock-Warnemünde" in 60 m walking distance. From there train connections (S-Bahn and supraregional) are offered, while the ferry terminal is not served by train any longer although the port reserves the space for the tracks.[102] Plans exist to link the seaport to the railway node Kavelsdorf enabling direct access to the main railway line Rostock-Berlin.
- The railway sections in the surroundings of the port of Hamburg are highly utilized by passenger and freight trains. Two main bottlenecks are located in the stations Hamburg-Harburg and Wilhelmsburg with many capacity restricting level junctions for passenger and freight trains. To improve the connection of the port of Hamburg especially to the north (Lübeck-Fehmarn Belt Fixed Link-København) it is necessary to replace the level junctions in Wilhelmsburg by a flying junction. Additional capacity for traffic from the port to the south can be provided by modifications of the track layout in the station Hamburg-Harburg. Currently, there are studies ongoing concerning measures along Wilhelmsburger Reichsstraße and the multi-rail extension between Hasselbrook and Bargteheide for separation of passenger and freight trains as well as increasing the capacity of Hamburg central station.
- Rail access to Port of Livorno goes via the Livorno Calambrone as well as via Pisa Centrale station and represents a bottleneck which needs infrastructure investments for by-passing the railway stations.
- The core railway line La-Spezia-Firenze-Bologna giving access to the Port of La Spezia is suffering from existing limitations on the loading gauge in primary sections.
- "Last mile" bottleneck at the Port of Ancona (Italy): Although the Port of Ancona is well connected to the main railways line of the Adriatic coast, some minor bottlenecks have been identified when accessing the port. In order to resolve the problems the rail infrastructure manager (RFI) has planned some projects such as extension of the shunting track and a new control system for the station of Ancona.

[101] Letter of the Port of Stockholm of 27.06.2014.
[102] Letter of the Port of Rostock of 24.06.2014.

c) Hinterland connection: Road connection

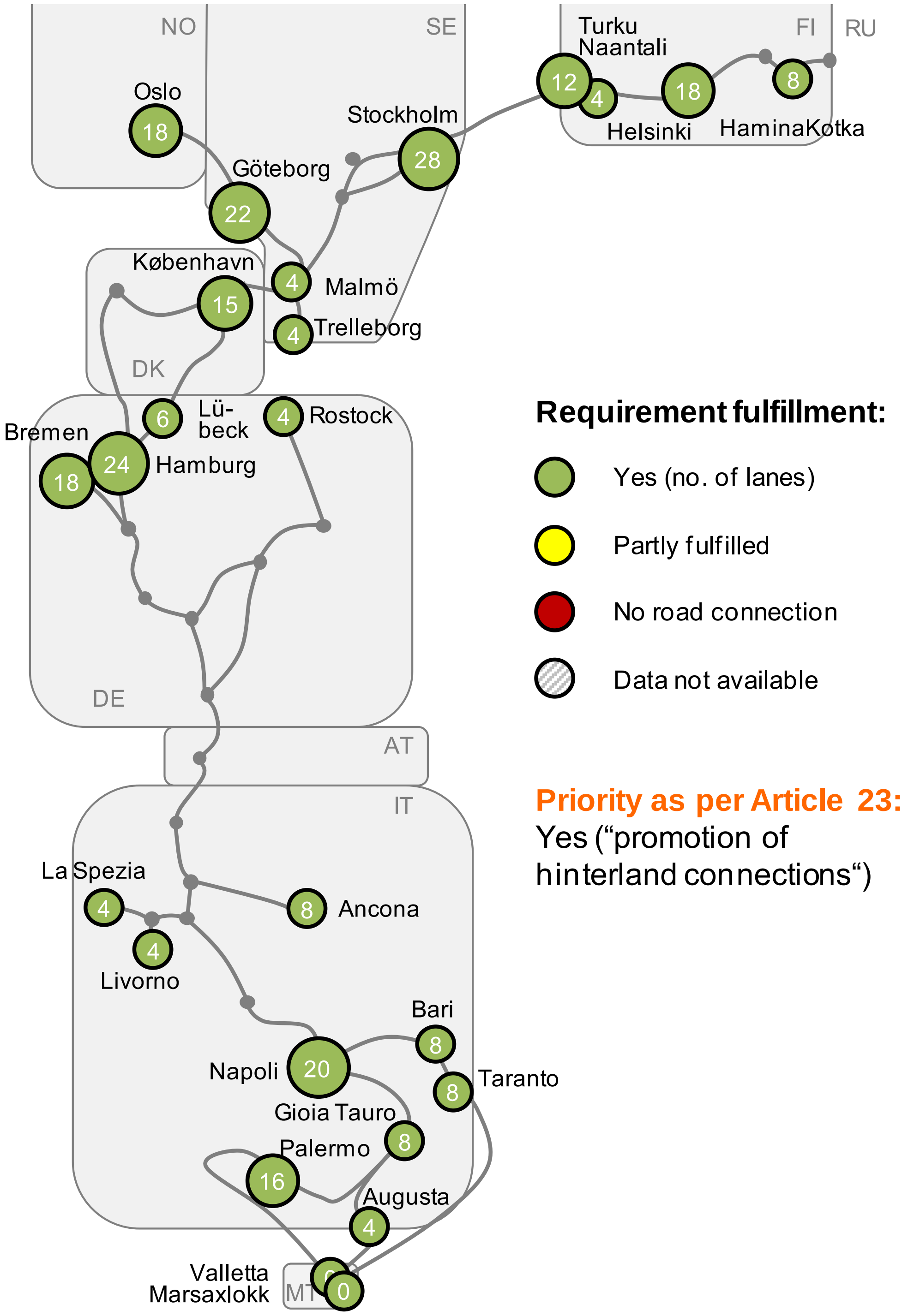


Figure 32: Analysis of requirement "Road (no. of lanes, only motorway)" for ScanMed ports

The core requirement for the ports' hinterland connection by road is defined in the same article as for the requirement of railway connections. Accordingly, it says that "*Member States shall ensure that maritime ports are connected with [...] roads [...] except where physical constraints prevent such connection.*"

The main findings of the compliance/deviation analysis for this requirement are:

- All ports have road connections. All except Maltese ports have access to European motorways connecting the respective countries to the European mainland (e.g. Finland can also be reached by road via Poland, the Baltic States and Russia).
- According to their central location within national motorway networks and within the ScanMed Corridor, respectively, the number of motorway lanes leading to/from the ports' regions ranges between 4 in some Scandinavian and Italian ports and even up to 20 in Napoli, 24 in Hamburg or 28 in Stockholm.[103]

Even though road connection is ubiquitous in all countries and port regions, there are various problems regarding capacity constraints. There is no doubt that increased cargo transport via sea has also increased significantly the ports' hinterland traffic. Thus, many port regions in Europe struggle with serious congestion problems caused both by increased truck traffic and by private car transport. The main road bottlenecks in the ports' hinterland were reported explicitly from following ScanMed ports:

- Road bottlenecks between the Port of HaminaKotka and the Kouvola logistics terminal (Finland): Highway 15 from Kotka to Kouvola (41 km) is the most important south-north bound route in the Kymenlaakso region. For industry, it is a key transport route and connection to the Port of HaminaKotka. Here, the worst bottlenecks include the Hyväntuulentie section of Highway 15 and the Merituulentie section of Road 335, which constitute the main connection from the Hietanen and Mussalo harbours of the HaminaKotka port to Route E18.
- Bottlenecks on the Turku Ring Road (Finland): The interchanges on the Turku Ring Road, leading to the ports of Turku and Naantali, are the most problematic section of the road connection. The Raisio interchange (E8/E18) functions least well. Approximately 50,000 cars pass through the interchange per day and it is a nodal point for road connections to the ports. The interchanges also have safety deficiencies. With traffic volumes on the rise, these problems will increase markedly and the interchanges and two-lane sections of the road will become increasingly congested. This will prevent the smooth and safe flow of traffic and hinder industrial haulage in particular.
- Road congestion in Stockholm (Sweden): The container terminal in Frihamnen in Port of Stockholm generates a significant number of truck movements per day leading to heavy road load on the main highway E20 and motorway E4 in the east and north of Stockholm. The new Stockholm Norvik Port for containers and rolling stock is planned near the Port of Nynäshamn, 60 km south of Stockholm. It is expected to be opened in 2018 and will have excellent hinterland connections by road and by the construction of a new railway linking Norvik Port to the national railway system.

[103] In TENtec information system each lane of both directions is counted. For example, 4 lanes correspond to one motorway with 2 lanes in each direction.

- Bottlenecks between southern Scandinavia (Sweden/Denmark) and European mainland: Taking into account the foreseen expansion of traffics between Scandinavia and the European mainland on the 2030 horizon (+190% in total), the capacity of transport links via Fehmarn and Jutland will not be sufficient to handle the entire cargo volumes. The volumes will increase both on the sea links and the land links which is why both modes are needed to cope. Sea transport still offers a great potential and significant gains compared to land-side transport via fixed links such as the new Fehmarn Belt. There are e.g. environmental gains due to shorter travel distances and thus, less fuel consumption and less pollution. There are also safety gains because truck drivers can use the Ro/Ro-ferry crossing as rest time.
- Congestion problems in the Port of Hamburg (Germany): Due to the extremely high traffic volumes crossing the Elbe River and city of Hamburg the motorway A7 is totally congested. On workdays more than 150,000 vehicles use the A7 in Hamburg which is much higher than the technical limit of the 6 lane motorway. In 2014, the extension works have begun which is why the capacity is even lower for the next years. This regularly leads to traffic jams on the motorway and on the terminals, causing time losses and financial damage for shipping and forwarding companies. Furthermore, the link between the motorways A 7 and A 1 suffers from congestion too. The construction of a new link (A 26) will remove this bottleneck in the future.
- Congestion problems between Port of Lübeck, Hamburg and the southern hinterland (Germany): Ongoing construction and extension works on the Motorway A1 regularly cause traffic jams between Lübeck and Hamburg.
- Bottlenecks in the Port of Ancona (Italy): Concerning the road accessibility, the lack of a dedicated link to the A14 Motorway represents the main port bottleneck, with negative effects on the urban traffic (pollution and road congestion). The motorway link project has been awarded to a company that will build it as project financing. However, there is currently no clear timetable for the start of the works.
- Congestion problems on busy sections of the TEN-T core road network linking the Port of Marsaxlokk to Airport (Luqa) and the Port of Valletta. Certain section of this intermodal link handle between 70,000 and 110,000 vehicles annual average daily traffic. Traffic bottlenecks which result from road capacity constraints regularly causes in delays and time losses to freight and passenger transport accessing port areas and resulting in financial damage for shipping and forwarding companies and other sectors of the economy. Road infrastructure plans to upgrade road infrastructure and remove traffic bottlenecks are at an advanced stage.[104]

[104] Feedback Transport Malta of 31.10.2014.

d) Hinterland connection: Inland Waterway connection

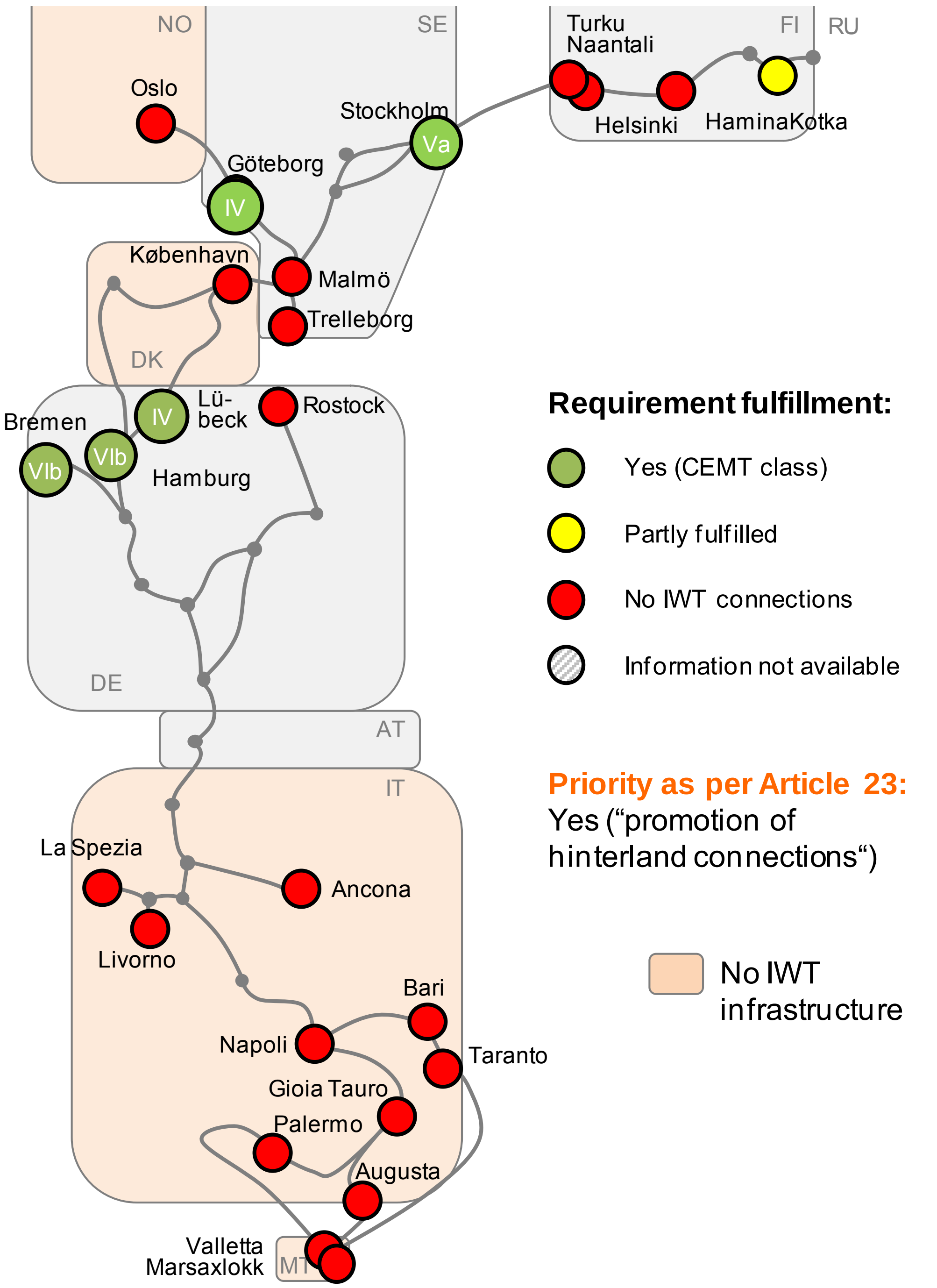


Figure 33: Analysis of requirement "Inland Waterways (CEMT class)" for ScanMed ports

The core requirement for the ports' hinterland connection by inland waterway is defined in the same article as for the requirement of railway and road connections. Accordingly, it says that "Member States shall ensure that maritime ports are connected with [...] where possible, inland waterways of the comprehensive network, except where physical constraints prevent such connection."

The main findings of the compliance/deviation analysis for this requirement are:

- 5 out of 25 Scan Med seaports have access to national inland waterway infrastructure, 2 in Sweden and 3 in Germany. Sweden's inland waterway infrastructure to Lake Vänern via Trollhätte Kanal/ Göta Alv to reach Karlstad, Otterbäcken, Kristinehamn as well as Mälaren Lake have substantial cargo volumes. Göteborg and Stockholm will improve the access and utilisation of the IWT infrastructure for cargo transport by achieving CEMAT Class IV respectively CEMAT Class Va as of November 2014.
- 3 of 8 concerned countries do not have IWT infrastructure because of geomorphologic / climate reasons.
- From HaminaKotka there is cargo transport to the Saimaa inland waterways via Saimaa canal which is also used for tourist and private use.

Port & Logistics Infrastructure

Concerning the fulfilment of the core requirements regarding the port and logistics infrastructure the key findings are:

- All ports offer non-discriminatory access to their terminals.
- The concept of "freight villages" is widespread, especially in Italy and partly in Germany and is being extended to other European countries, too. Some ports are offering the functionalities of a "freight village" in their own territory, while in other regions "freight villages" have been planned outside of the traditional port or city area where sufficient space for the settlement of warehouses and transhipment facilities is possible.
- All 25 ports are equipped with sufficient reception facilities for waste and residues disposal. However, more extensive service will be needed in the future because of upcoming stricter IMO regulation concerning ship waste water and receipt of scrubber sludge.
- LNG bunkering facilities and Onshore Power Supply are mainly available or are planned within the North and Baltic Sea Region in contrast to the Mediterranean Region where respective deployment plans are currently less developed.

The detailed findings for each parameter are outlined in Table 37.

	Ports	Non-discrimi natory access	Logistic platforms or freight villages (FV) outside, but associated with port	Reception facilities for ship generated waste	LNG bunkering facilities	Onshore power supply (OPS)
FI	Helsinki	Yes	Logistics areas, e.g. next to Vuosaari Harbour	Yes (add. facilities are planned)	No (planned by 2015)	Yes
	HaminaKotka	Yes	Logistics areas around the port, many full-service logistics and industrial enterprises	Yes (add. facilities are planned)	No (planned by 2016)	Yes
	Naantali	Yes	LogiCity project (planned)	Yes (add. facilities are planned)	No (planned)	No
	Turku	Yes	Full service distribution centre around the port	Yes (add. facilities are planned)	No (planned by 2015)	No (only low voltage)
SE	Stockholm	Yes	No "central" FV, several logistic areas	Yes	Yes	Yes (only low voltage for ferries)
	Gothenburg	Yes	New logistics area planned	Yes	No (planned by 2015)	Yes
	Malmö	Yes	Yes, Municipality own 25 000 m² for logistics	Yes	No	No
	Trelleborg	Yes	Only within the port (Logistics Centre)	Yes	No	Yes
NO	Oslo	No	Yes (Alnabru in Oslo)	Yes	Yes	Yes
DK	Kobenhavn	Yes	No	Yes	No	No
DE	Hamburg	Yes	Several logistic platforms, nearest FV: Bremen	Yes	No (planned by 2015, stepwise starting with harbour ferries)	No (planned by 2015 for cruise ships)
	Bremen	Yes	FV Bremen	Yes	No	No
	Lübeck	Yes	"Virtual" FV Lübeck spread over 7 industrial areas	Yes	No (planned by 2016)	Yes (Nordlandkai, also planned at oth. quays)
	Rostock	Yes	FV Rostock nearby	Yes	No (planned by 2016)	No
IT	Livorno	Yes	FV Guasticce in the vicinity	Yes	No (only offshore terminal for other usage, COSTA project ongoing, LNG use for shipping planned)	No
	La Spezia	Yes	FV S. Stefano di Magra in the vicinity	Yes	No (only regasification terminal for other usage)	No
	Ancona	Yes	FV/Interporto Marche (20 km)	Yes	No	No (but a study was executed)
	Bari	Yes	FV Interporto regionale della Puglia (5 km)	Yes	No	No (planned and completed by 2016)
	Taranto	Yes	2 logistics platforms in the vicinity	Yes	No	No
	Gioia Tauro	Yes	No	Yes	No	No
	Napoli	Yes	FV NOLA, FV Marcianise	Yes	No	No
	Palermo	Yes	No	Yes	No	No
	Augusta	Yes	No	Yes	No (terminal planned, but cancelled!)	No
MT	Marsaxlokk	Yes	No	Yes	No	No
	Valletta	Yes	No	Yes	No	No

Table 37: Compliance analysis of ScanMed ports - Port & Logistics Infrastructure

a) Non-discriminatory access to terminal(s)

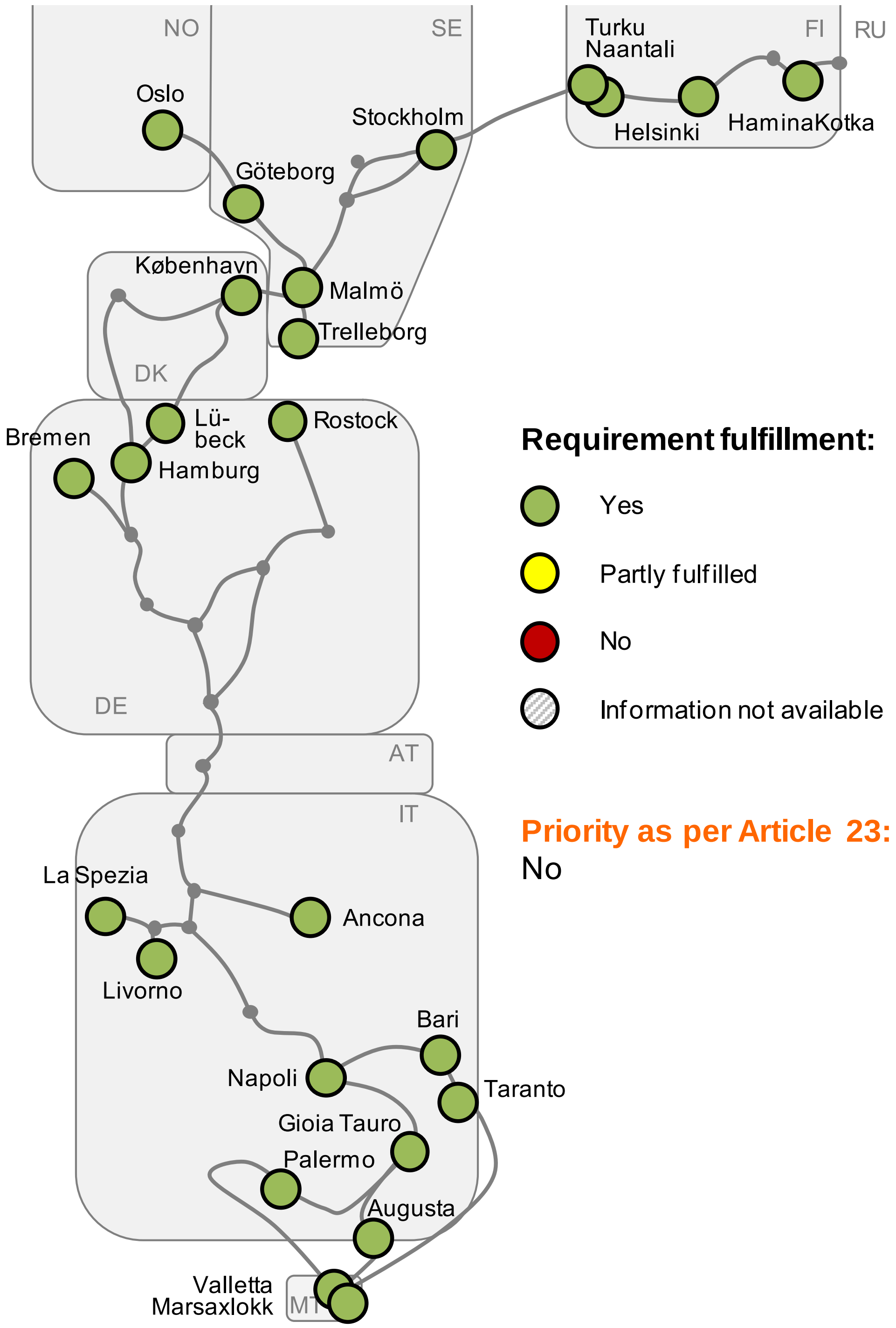


Figure 34: Analysis of requirement “Non-discriminatory access to terminal(s)” for ScanMed ports

The core requirement for the non-discriminatory access to the ports’ terminals and infrastructure is defined in the Article 22 (1) (b), Regulation (EU) No. 1315/2013 which says that “Member States shall ensure that any maritime port that serves freight traffic offers at least one terminal which is open to users in a non-discriminatory way and which applies transparent charges.”

The main findings of the compliance/deviation analysis for this requirement are:

- All ports offer “open” access to at least one of their terminals as required.
- In some ports it’s difficult to get information about charges, formal conditions or technical limitations.

According to the expert’s knowledge there haven’t been reported any other problems or even discrimination against certain customers, shipping companies or any other stakeholders.

b) Logistics platforms or freight villages (FV)

Port		Logistic platforms / freight villages (FV)
FI	Helsinki	Logistics areas, e.g. next to Vuosaari Harbour
	HaminaKotka	Logistics areas around the port, many full-service logistics and industrial enterprises
	Naantali	LogiCity project (planned)
	Turku	Full service logistics distribution centre
SE	Stockholm	No "central" FV, several logistic areas
	Göteborg	New logistics area planned
	Malmö	Municipality owned logistics area (25 000 m²)
	Trelleborg	Logistics Centre is planned close to the port area
NO	Oslo	Alnabru in Oslo
DK	København	No [105]
DE	Hamburg	Several logistic platforms, nearest FV: Altenwerder
	Bremen	FV Bremen
	Lübeck	"Virtual" FV Lübeck spread over 7 industrial areas
	Rostock	FV Rostock nearby
IT	Livorno	FV Guasticce in the vicinity
	La Spezia	Logistics platform in S. Stefano di Magra in the vicinity (7 km)
	Ancona	FV/Interporto Marche (20 km)
	Bari	FV Interporto regionale della Puglia (5 km)
	Taranto	2 logistics platforms in the vicinity; new logistic platform in the port domain will be finished in 2015 [106]
	Gioia Tauro	No
	Napoli	FV NOLA, FV Marcianise
	Palermo	No
	Augusta	No
MT	Marsaxlokk	No
	Valletta	No

Table 38: Analysis of requirement “Logistics platforms or freight villages (FV)” for ScanMed ports

[105] Even though København and Malmö are defined as two separate ports in the Regulation (EU) 1315/2013, they operate as one legal entity, Copenhagen Malmö Port (CMP). Therefore, the Danish Ministry of Transport stated that requirements have to be fulfilled for CMP and not necessarily for both parts of the port. (Feedback provided by e-mail of 28.11.2014.)

[106] According to information of Taranto Port Authority provided by e-mail on 28.11.2014, the logistics platform in the port domain is under construction and will be completed in June 2015. The project of another logistic platform ("DISTRIPARK") to be built in the vicinity of the port (in the area behind the container terminal) is under development.

The core requirement regarding the existence of logistics platforms or freight villages (FV) is covered by the Article 21 (1) (b), Regulation (EU) No. 1315/2013 which says that "*Motorways of the sea shall include […] logistics platforms and freight villages located outside the port area but associated with the port operations.*"

The main findings of the compliance/deviation analysis for this requirement are:

- Most ports have own logistic zones within the port's area.
- The concept of "freight villages" is widely spread, especially in Italy and partly in Germany but is being extended to other European countries, especially Finland and Sweden, too. Some ports are offering the functionalities of a "freight village" in their own territory, while in other regions "freight villages" have been planned outside of the traditional port or city area where sufficient space for the settlement of warehouses and transhipment facilities is possible.
- In St. Stefano Magra, very close to the Port of La Spezia, additional activities are under way to build a new 600,000 sqm Multimodal Logistics Platform for logistic activities, including rail yard (8 rail tracks 650 m long), yard operated with RTG and RS.

Several ports in Scandinavia and Italy are planning or even have begun the construction new logistics platforms (e.g. the new logistics area in Göteborg, a new multmodal terminal with 750 meters of double rail tracks in Göteborg and a logistic platform in the port domain of Taranto).

The Regulations definition that these freight villages should be "associated" with the port operations can however not be assessed at a general level, despite port (authorities) explicitly acting as land lord, developer or "promoter" of the "associated" freight village as well.

c) Port Reception Facilities

The core requirement regarding the port reception facilities including waste and residuals is defined in Article 22 (2), Regulation (EU) No. 1315/2013 which says that "*Member States shall ensure that ports include equipment necessary to assist the environmental performance of ships in ports, in particular reception facilities for ship-generated waste and cargo residues in accordance with Directive 2000/59/EC of the European Parliament and of the Council and in compliance with other relevant Union law.*"

The main findings of the compliance/deviation analysis for this requirement are:

- All concerned ports have some kind of PRF.
- There's no indication that there is a serious lack of fulfilment of the requirement in any country or port.

Most European ports have made enormous efforts to fulfil the legal requirements regarding waste disposal and reduction of environmental impacts related to this.

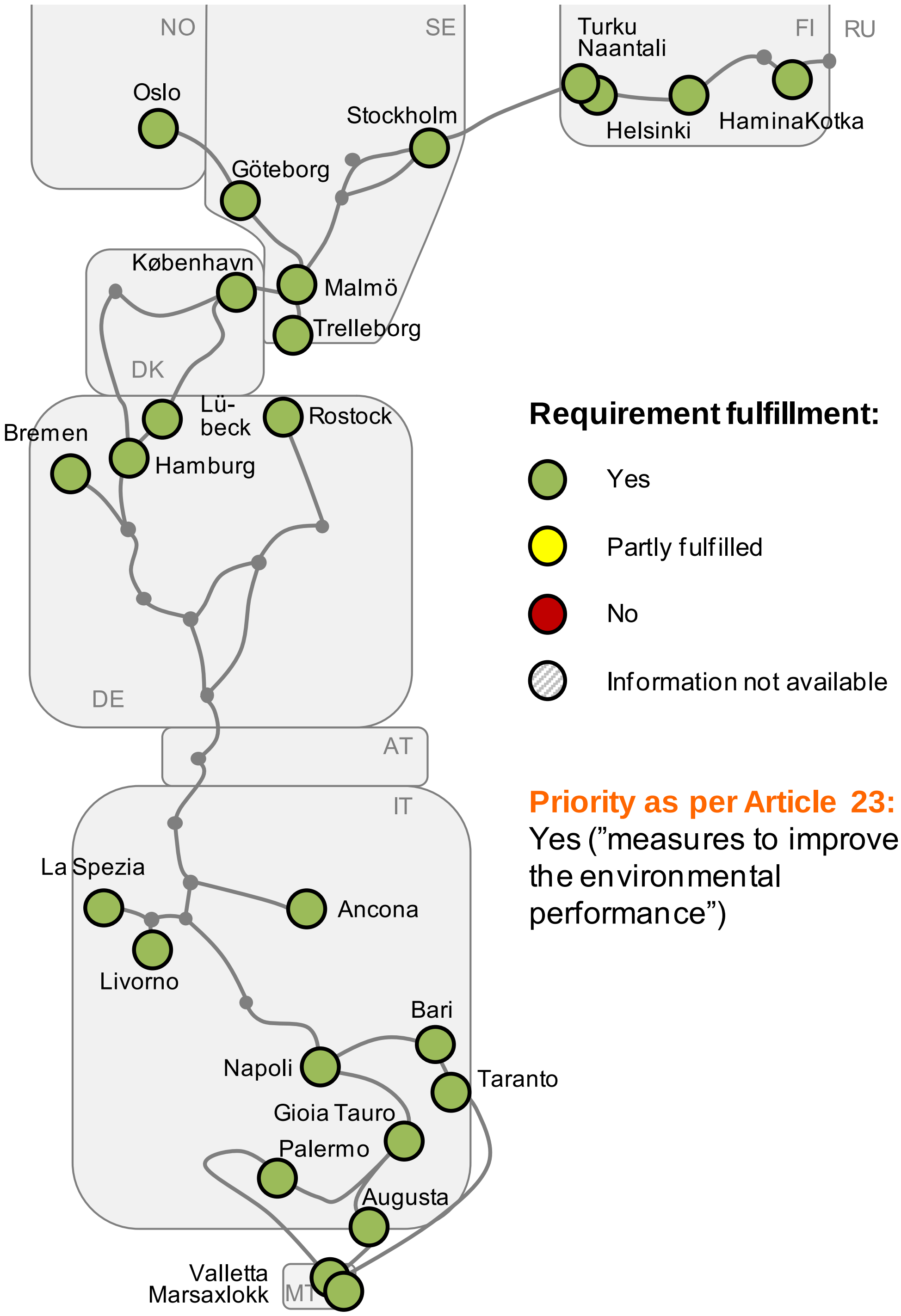


Figure 35: Analysis of requirement "Port Reception Facilities (PRF)" for ScanMed ports

d) LNG bunkering facilities

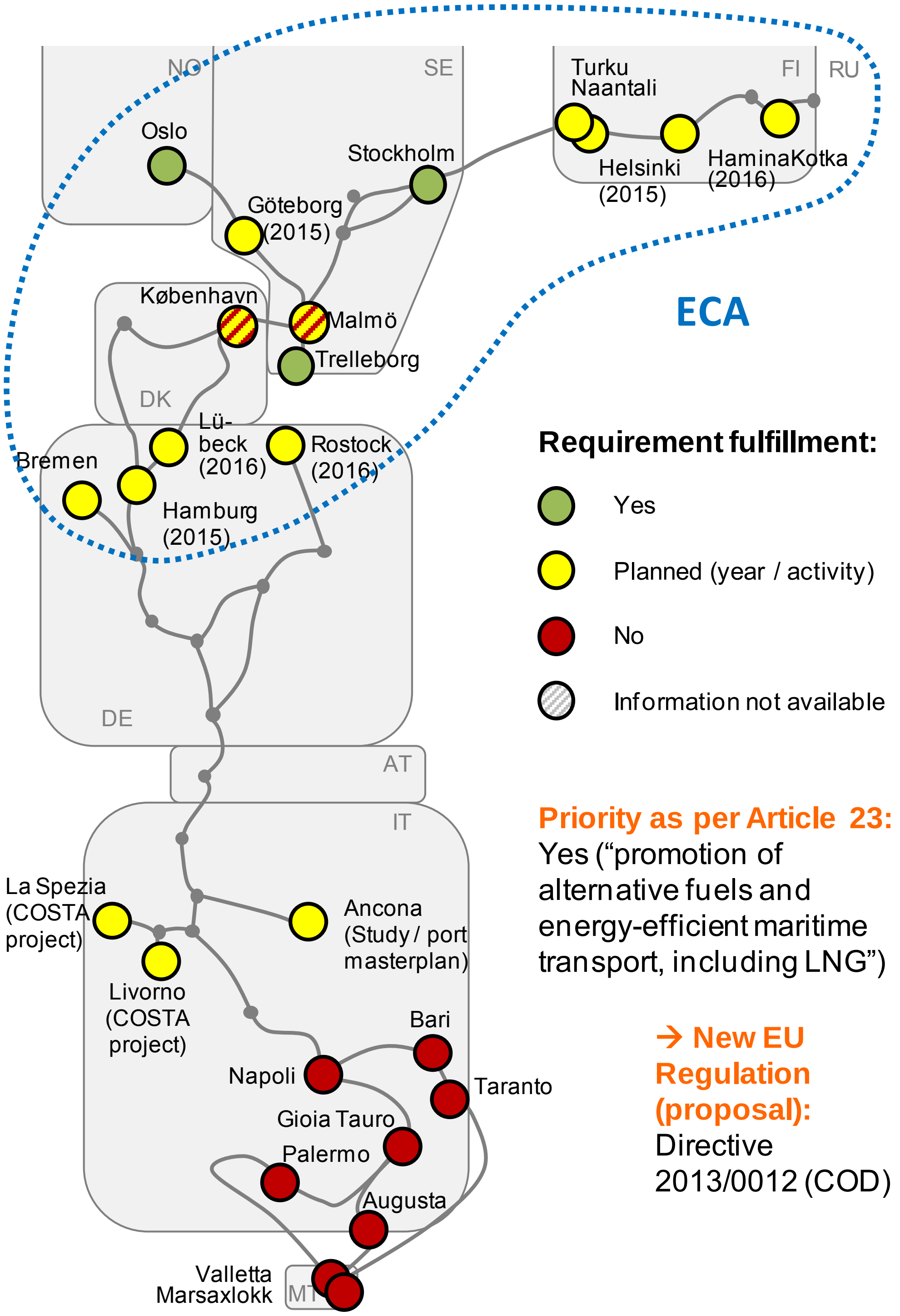


Figure 36: Analysis of requirement "LNG bunkering facilities" for ScanMed ports

The core requirement regarding LNG bunkering facilities is also defined in the Article 22 (2), Regulation (EU) No. 1315/2013 which says that "*Member States shall ensure that ports include equipment necessary to assist the environmental performance of ships in ports.*"

The main findings of the compliance/deviation analysis for this requirement are:

- Many ports within the Emission Control Area (ECA) of North and Baltic Sea already have established or are planning LNG bunkering facilities. In particular, the Ports of Stockholm, Oslo and Trelleborg[107] already provide LNG for ships and ferries. The ports of HaminaKotka, Turku, Helsinki, Göteborg and the 4 German ports are planning or are already installing LNG facilities. The Port of Göteborg together with the Port of Rotterdam is involved in an EU-financed LNG project to secure LNG bunkering facilities in Northern Europe.
- Ports in the southern part of the corridor have started LNG planning activities; in particular, the two Italian ports of La Spezia and Livorno.

Currently, several ports show activities regarding the development and installation of LNG bunkering facilities:

- The Ports of København-Malmö, Helsinki, Stockholm and Turku have participated in the "LNG in Baltic Sea Ports" project, co-financed by the EU TEN-T Multi-Annual Programme. The aim of the project is to foster a harmonised approach towards LNG bunker filling infrastructure in the Baltic Sea area. After completion of the project the participating ports expect to develop own LNG facilities from 2015 onwards.[108]
- In general terms, LNG bunkering facilities do not exist in Finland yet, but it is planned at all Finnish core network ports Naantali, Turku, Helsinki and HaminaKotka.
- The Port of Hamburg has already finished the planning for a new LNG bunkering terminal which will be built by the Bomin Linde LNG Company in the area of the Kattwick Harbour, LNG bunkering ships included. The Ports of Bremen, Lübeck and Rostock are planning to build LNG bunkering facilities, too. In Lübeck, for example, a LNG fuel station will be installed by the end of 2016. Until 2030, the installation will be extended continuously. Bremen wants to start LNG with port service vessels.
- The Ports of La Spezia and Livorno participated in the EU COSTA project. La Spezia, for example, is planning to provide LNG facilities for maritime side (vessel bunkering, tug bunkering), port operations (use of LNG for cranes, reach stackers or other operational equipment) and land side (use of LNG for train shunting, shuttle trains to inland terminal and LNG trucks).
- The Port of Ancona has carried out a study for the installation of onshore power supply; the results of this study are part of the Port Master plan and the three Years Operational Plan.

[107] Although Trelleborg is not equipped with LNG bunkering terminal, it provides LNG in cooperation with other ports via mobile vehicles/bunkering vessels.
[108] Copenhagen Malmö Port has no current plans to establish LNG bunkering facilities, according to feedback provided by the Danish Ministry of Transport via e-mail on 28.11.2014.

The phrase "LNG bunkering facilities" does not necessarily mean a physical bunkering station but asks for the technical pre-requisites and facilities to receive LNG as a vessel operator. Supplying LNG to vessels may be also executed by truck or by barge.

e) Onshore power supply (OPS)

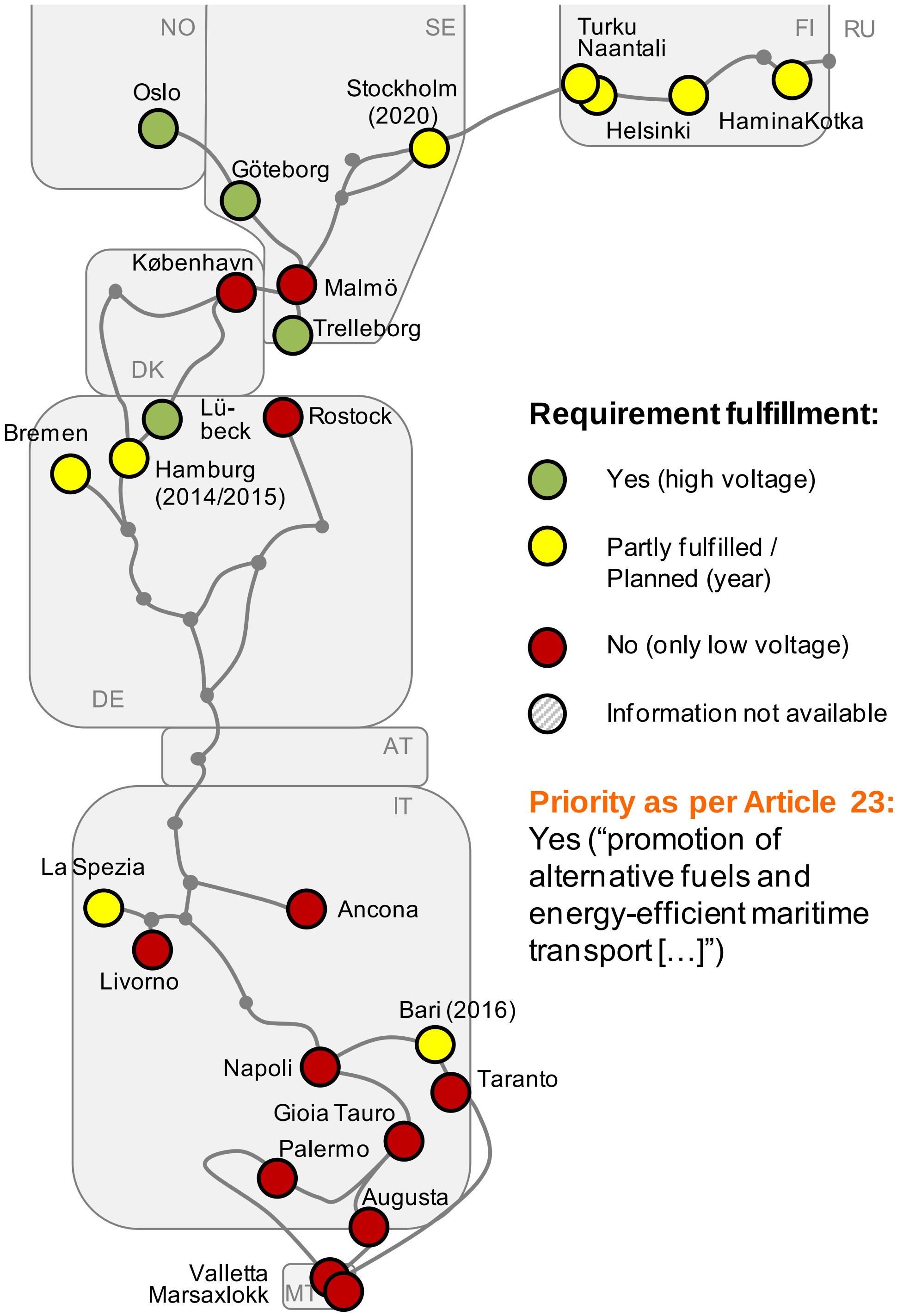


Figure 37: Analysis of requirement "Onshore power supply (OPS)" for ScanMed ports

The core requirement regarding the provision of onshore power supply is defined in the same Article 22 (2), Regulation (EU) No. 1315/2013 which says that "*Member States shall ensure that ports include equipment necessary to assist the environmental performance of ships in ports*."

The main findings of the compliance/deviation analysis for this requirement are:

- 4 of 25 ports already have OPS systems with high voltage (e.g. 6-20 kV suitable for cargo and passenger ships); these are the Ports of Oslo, Göteborg, Trelleborg and Lübeck (Nordlandkai).
- Onshore power supply is partly fulfilled or planned at all four Finish Core ports Naantali, Turku, Helsinki and HaminaKotka.
- 5 ports are planning to install OPS systems by 2014 or later. 3 of them are located in the North Sea and Baltic area (Stockholm, Hamburg and Bremen). In Italy, the Port Authority of La Spezia and the Bari Port Authority are developing new OPS systems.

Further findings with regard to port specific OPS activities are:

- Low voltage power supply is almost ubiquitous.
- At the Cruise Center Altona in the Port of Hamburg an onshore power connection for cruise ships is under construction. It is to start operations by 2015. The Cruise Terminal HafenCity will be equipped with onshore power through a LNG hybrid barge. The start of operations has been planned by mid of 2014 but is likely to be delayed until end of 2014.
- Since 2008, at the Nordlandkai in the Port of Lübeck an OPS system exists. Thus, the port is a pioneer in providing onshore power. Further onshore power connections are planned at other quays from 2016 onwards.
- The Port of La Spezia is developing projects with the aim to install specific OPS systems in the multipurpose and cruise terminal, and later in the cargo terminal. Different solutions for OPS systems are carried out (e.g. for simultaneous loading of more than one ship).

I&C Technologies

As provided for in Directive 2002/59/EC of the European Parliament and of the Council, **Vessel Traffic Monitoring and Information Systems (VTMIS)** are systems that are deployed to monitor and manage traffic and maritime transport using information from

- Automatic Identification Systems of Ships (AIS)
- Long-Range Identification and Tracking of Ships (LRIT)
- Coastal radar systems and radio communications.

Vessel Traffic Service (VTS) is an essential component of VTMIS. It is provided by local competent authorities in order to improve the efficiency of vessel traffic movements and the safety of navigation within port approaches or through hazardous areas. There are three types of operational services:

- Information Service (INS): Providing essential and timely information about current traffic situation to assist on-board decisions (no route advises, only information);
- Traffic Organisation Service (TOS): INS + identifying and managing potentially dangerous traffic situations (information, route advises and instructions);
- In addition to INS or TOS, Navigational Assistance Service (NAS) (pilotage).

The **SafeSeaNet (SSN)** is a European Platform for maritime data exchange between the Member States' maritime authorities. It is a network and internet solution based on the concept of a "distributed" database providing information on ships, ship movements and hazardous cargo. The main information sources for SSN are AIS data (position reports) and notification messages from authorities.

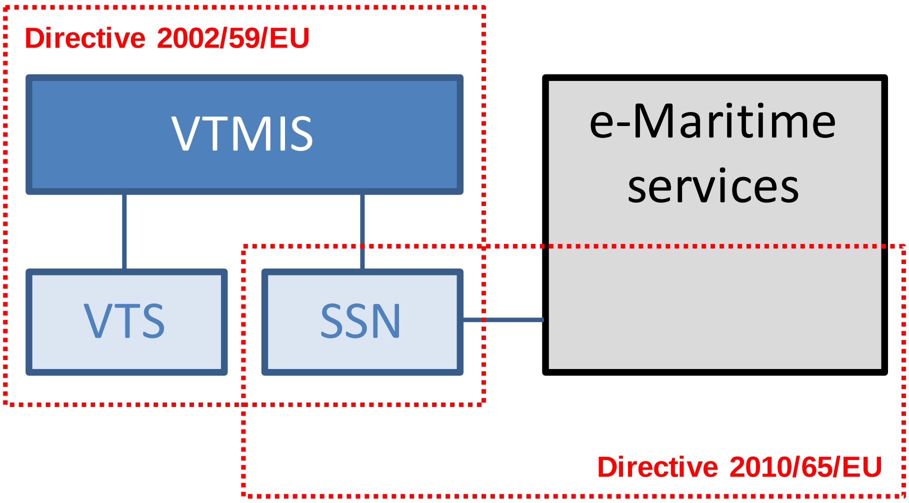


Figure 38: Vessel Traffic Monitoring and Information System and e-maritime services

Concerning the fulfilment of the core requirements regarding the I&C technologies the key findings are:

- I&C Technology is well developed regarding VTMIS throughout the whole corridor, further e-Maritime services have to be developed accordingly.
- The required VTMIS comprises services and systems such as Vessel Traffic Services (VTS) and SafeSeaNet (SSN). Both services are fully implemented throughout the corridor.
- In the future, e-Maritime services have to be ´further developed, reporting formalities shall be harmonized with SSN and e-customs services focussing on the single window approach.

The detailed findings for each parameter are outlined below.

	Ports	VTMIS: Implementation of Vessel Traffic Services (VTS)	VTMIS: Implementation of SafeSeaNet (European database of the EMSA)
FI	Helsinki	VTS (Helsinki)	Yes
	HaminaKotka	VTS (Kotka)	Yes
	Naantali	VTS (West Coast)	Yes
	Turku	VTS (West Coast)	Yes
SE	Stockholm	VTS area Stockholm	Yes
	Göteborg	VTS (Gothenburg)	Yes
	Malmö	VTS (SOUNDREP area)	Yes
	Trelleborg	VTS	Yes
NO	Oslo	VTS (Oslofjord station)	Yes
DK	Kobenhavn	VTS (SOUNDREP area)	Yes
DE	Hamburg	VTS (Hamburg)	Yes (ZMGS)
	Bremen	VTS (Bremen Weser / WSA)	Yes (ZMGS)
	Lübeck	VTS (Travemunde)	Yes (ZMGS)
	Rostock	VTS (Rostock-Warnemunde)	Yes (ZMGS)
IT	Livorno	VTS (PMIS)	Yes
	La Spezia	VTS (PMIS)	Yes
	Ancona	VTS (VTSL Centro-Ancona)	Yes
	Bari	VTS (VTSL Centro-Bari)	Yes
	Taranto	VTS (VTSL Centro-Taranto)	Yes
	Gioia Tauro	VTS (VTSL Sud-Gioia Tauro)	Yes
	Napoli	VTS (VTSL Sud-Napoli)	Yes
	Palermo	VTS (VTSL Sud-Palermo)	Yes
	Augusta	No	Yes
MT	Marsaxlokk	Coastal VTMIS of Malta	Yes (PortNet)
	Valletta	Coastal VTMIS of Malta	Yes (PortNet)

Table 39: Compliance analysis of ScanMed ports - I&C Technologies

a) Vessel Traffic Service (VTS)

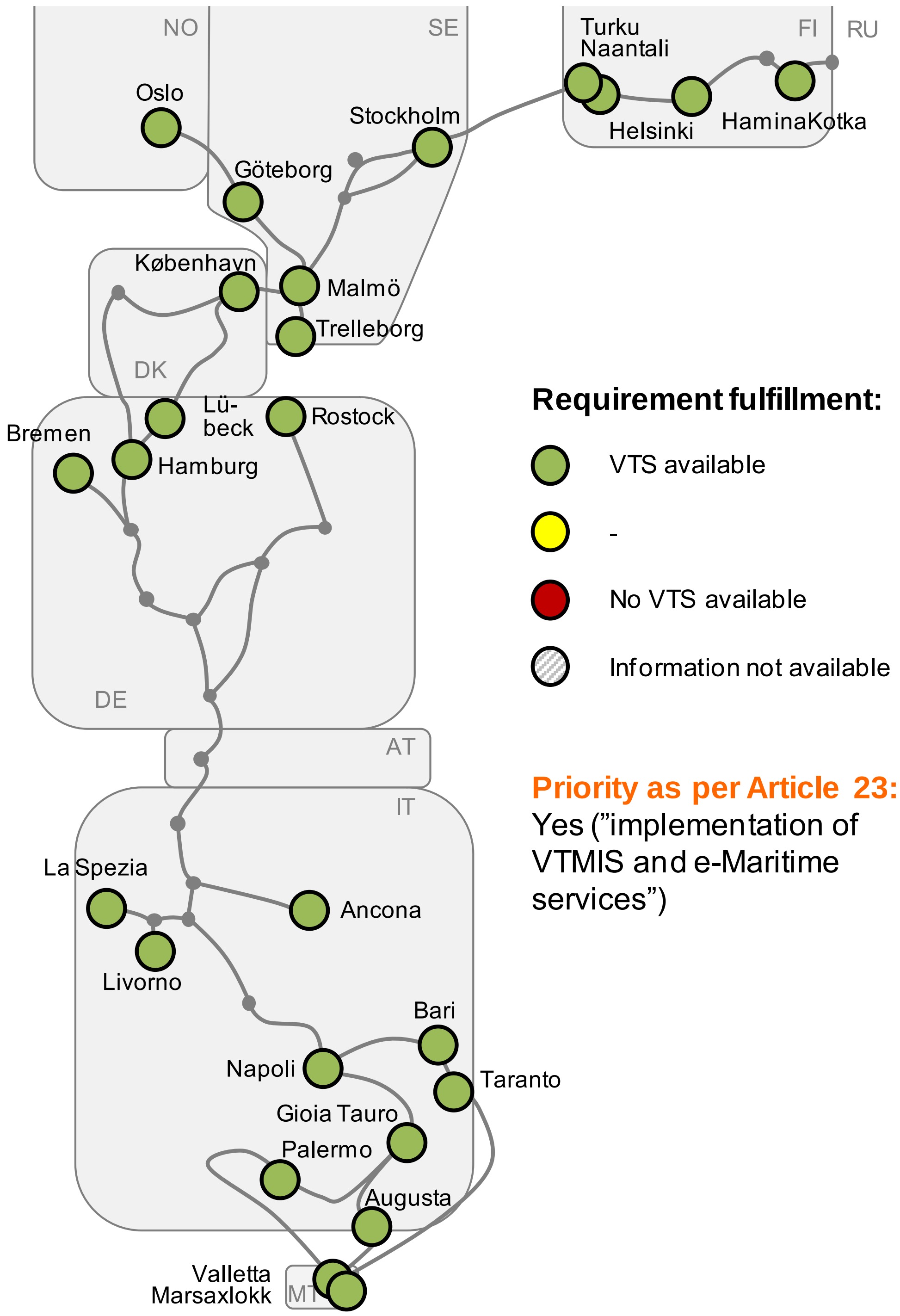


Figure 39: Analysis of requirement "Vessel Traffic Service (VTS)" for ScanMed ports

The core requirement regarding the existence of Vessel Traffic Service (VTS) is defined in the Article 22 (3), Regulation (EU) No. 1315/2013 which says that "*Member States shall implement VTMIS [...] as provided for in Directive 2002/59/EC.*"

The main finding of the compliance/deviation analysis for this requirement is: All countries provide VTS for coastal regions and ports.

b) SafeSeaNet (SSN)

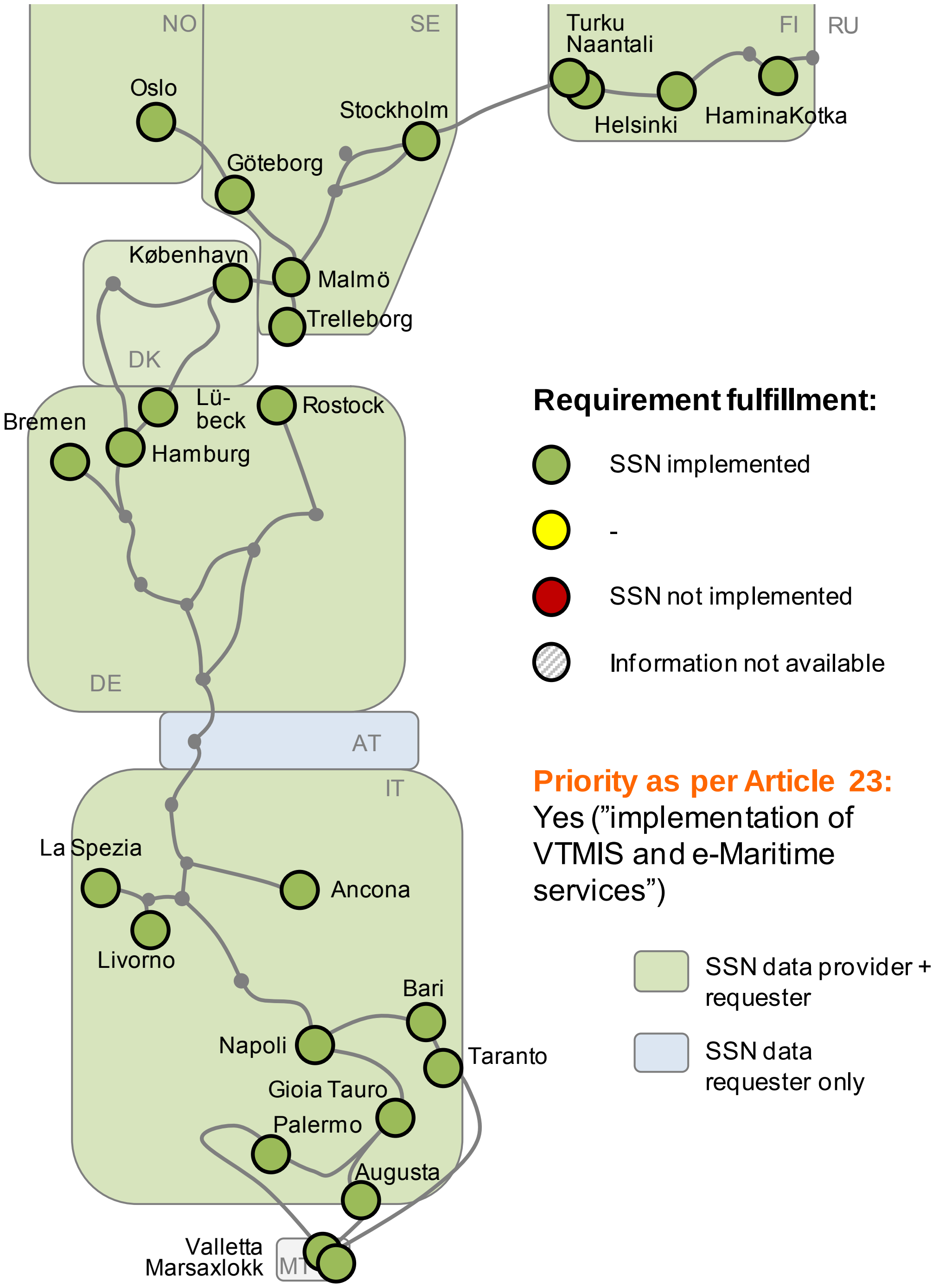


Figure 40: Analysis of requirement “SafeSeaNet (SSN)” for ScanMed ports

The core requirement regarding the implementation of SafeSeaNet (SSN) is also defined in the Article 22 (3), Regulation (EU) No. 1315/2013 which says that "*Member States shall implement […] SafeSeaNet as provided for in Directive 2002/59/EC*."

The main findings of the compliance/deviation analysis for this requirement are:

- The SSN is implemented EU wide through systems of local or national authorities (e.g. ZMGS in Germany, PortNet in Malta).
- The European Maritime Safety Agency (EMSA) manages the SSN IT infrastructure (e.g. the EIS server) and runs the Maritime Support Services Operations Centre.
- All countries with seaports are SSN data provider and requester; Austria is only data requester, as they are a landlocked country.

c) e-Maritime services

Furthermore, the Article 22 (3), Regulation (EU) No. 1315/2013 says that "*Member States […] shall deploy e-Maritime services, including in particular maritime single-window services, as provided for in Directive 2010/65/EU.*"

E-Maritime services use advanced and interoperable information technologies in the maritime transport sector to simplify administrative procedures and to facilitate the throughput of cargo at sea and in port areas. They include single-window services such as the integrated maritime single window provided for in Directive 2010/65/EU of the European Parliament and of the Council, port community systems (such as SSN) and relevant customs information systems.

The objective of e-Maritime services is to deepen cooperation between competent authorities (e.g. customs, border control, public health and transport authorities) in order to simplify and harmonise reporting formalities within the Union.

Concerning the implementation of e-Maritime services, Member States shall accept the fulfilment of defined reporting formalities in electronic format and their transmission via a single window as soon as possible and in any case no later than 1 June 2015. There are many examples of project approaches for the successful implementation of services such as:

- The IT network established by La Spezia and corresponding hinterland dry ports. They developed a common Port Community System called "AP NET" for speeding up and increasing data exchange between logistics operators, customs, phytosanitary and other stakeholders along the supply chain.
- In Hamburg the "Port River Information System Elbe" (PRISE) became operational in March 2014. It helps to optimize inlet and outlet control of large ships. With PRISE the port of Hamburg is expanding its port communication system on the water side. Specifically, the system brings together existing data from the fields of ship supply, ship handling and ship disposal. They are

provided to relevant stakeholders such as terminals, brokers, tugs and mooring.

Conclusions

Finally, the core requirements by the Regulation (EU) 1315/2013 are mainly fulfilled by the 25 ScanMed core ports regarding maritime and hinterland transport infrastructure. However, the port's environmental infrastructure is still developing. Consequently already in 2014 a couple of MoS-Projects have been set up to mitigate this identified shortcoming. The I&C Technologies are on a high level. VTS and SSN are fully implemented; e-Maritime services have to be further developed with a focus on harmonization of IT and data exchange, especially through "single window" solutions, also this task is covered by a MoS project already, where the individual ports need to check in detail how they could fulfil the requirement.

4.1.6 Rail-Road Terminals (KombiConsult)

The analysis performed in the framework of this study covers a number of rail tracks and road lanes used for accessing the rail-road terminal and the handling volume in tons per year.

While infrastructure data could be obtained from public sources or maps, a general conclusion on the TENtec parameters is: The data that could not be obtained from public sources so far (e.g. handling volume in tons per year) is in the property of the operating companies concerned and considered commercially sensitive.

Where volume data are provided, they refer to the latest available year and were converted to the requested "tons per year" from the original quantity expressed in TEU or loading units by the operator or other sources.

All terminals are connected to rail and road by at least one rail track or one road lane so that this fundamental criterion is met (see next figure).[109]

[109] The Port of Naantali, which is part of the core node Turku-Naantali and itself made of two port areas, was added by the Finnish Transport Agency (feedback by e-mail on 15.10.2014), unfortunately without providing the required data. A search at the port authority's website and other publicly available sources with reasonable efforts brought no result so that this task is left for the year 2015.

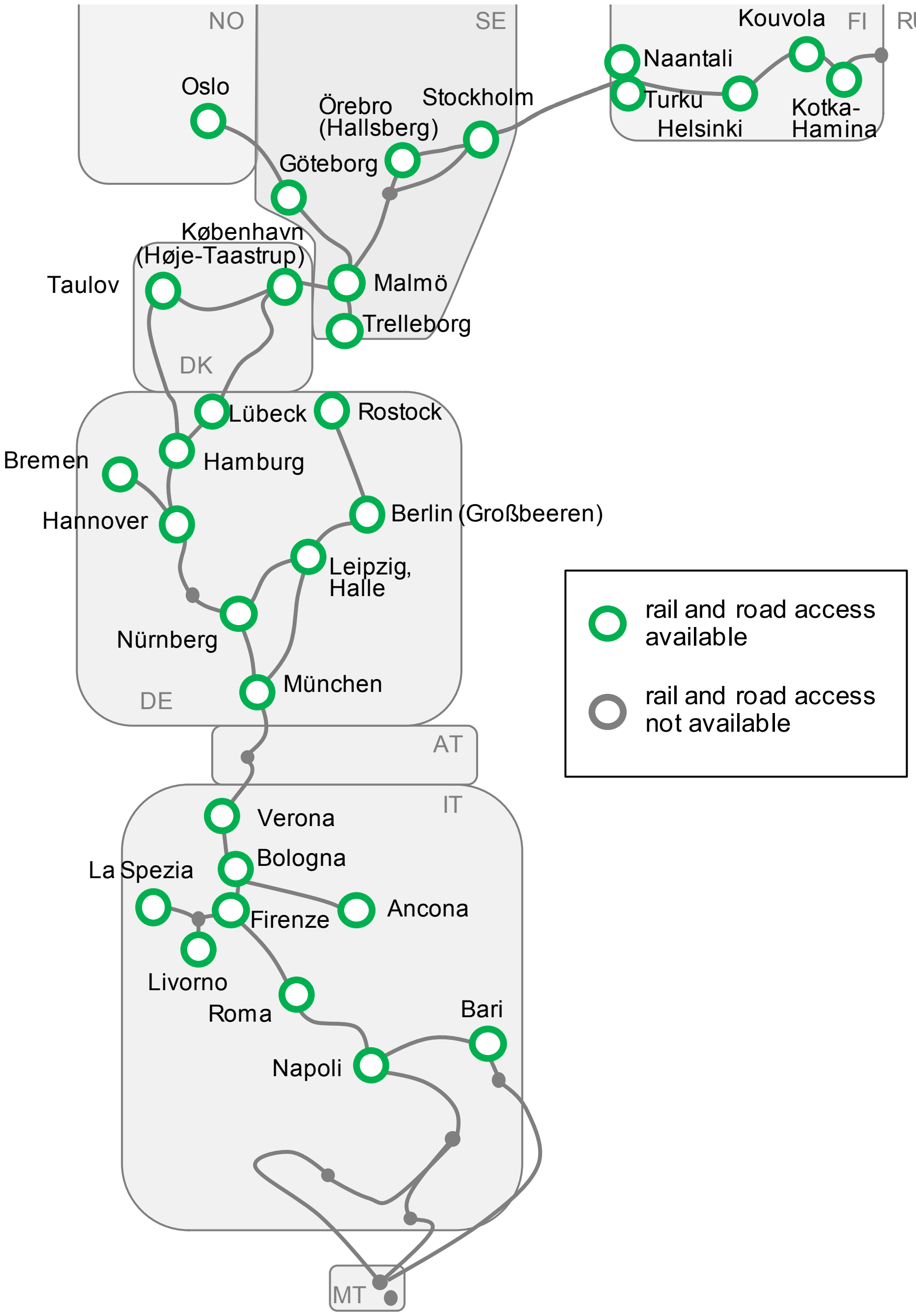


Figure 41: Compliance analysis for ScanMed RRT - rail and road access

For more than 60% of the sites recent volume data could be obtained and analysed. The largest volumes to/from rail are handled in seaport related terminals and some RRT with hub function (facilitating also gateway handlings between train services).[110]

[110] For definitions, see www.intermodal-terminals.eu.

The following list of analysed RRT is ordered by quantity of volume, starting with the highest value.

- Hamburg-Altenwerder
- Hamburg-Burchardkai
- Hamburg-Eurokombi
- Hamburg-Billwerder
- München-Riem
- Verona Quadrante Europa
- Oslo Alnabru
- Nürnberg Tricon
- La SpeziaBremen-Roland
- Hamburg-Tollerort
- Leipzig-Wahren
- Rostock Trimodal
- Interporto Bologna
- Lübeck Skandinavienkai
- København (Høje-Taastrup)
- Malmö Kombiterminal

According to Regulation (EU) 1315/2013, Art. 28, Member States shall ensure that:

- “transport modes are connected to each other at freight terminals [...] in order to allow multimodal transport of [...] freight” and
- “freight terminals [...] are equipped for the provision of information flows within this infrastructure and between the transport modes along the logistic chain. Such systems are in particular to enable real-time information to be provided on available infrastructure capacity, traffic flows and positioning, tracking and tracing, and ensure safety and security throughout multimodal journeys”;
- “Freight terminals shall be equipped with cranes, conveyors and other devices for moving freight between different transport modes and for the positioning and storage of freight.”

These requirements are either self-evident (rail and road access) or vague (provision of information flows) so that an assessment on their fulfilment can only be performed with the involvement of the infrastructure managers and their customers. In particular the systems for the “information within this infrastructure” are understood as terminal management systems, meaning ICT systems used by the terminal operator for managing its terminal. The requirement on those systems is to enable real-time information on the available infrastructure capacity, traffic flows as well as positioning, tracking and tracing (within the terminal).

The questions to be discussed with terminal operators is if they provide for such information systems, if they are willing to share this kind of information in particular “in real-time”, and with whom.

Accompanied combined transport services on Brenner Corridor

After the comprehensive rail/road terminals were no longer presented in the framework of Chapter 1.2.1, Austria[111] required to add a specific chapter on the accompanied combined transport, rolling motorways (RoLa), which are only in use on the Brenner section of the ScanMed corridor. In RoLa services complete trucks and their drivers in dedicated coaches are transported by rail. RoLa services have historically been one of the components enabling a modal shift from road to rail on sensitive sections of the corridor. The current services (time table access October 2014) supplied with their respective features (terminal – terminal, operator, frequency, overall time) are as follows:

- Regensburg (DE) – Trento (IT), Bayernhafen, 1 train pair per day, 9.5 hours;
- Wörgl (AT) – Trento (IT), ÖBB, 4 train pairs per day, 6 hours;
- Wörgl (AT) – Brennersee (AT), ÖBB, 12 train pairs per day, 2.5 hours.

All three terminals are comprehensive terminals of the ScanMed corridor so that they were finally not reported in the terminal chapter although they generate about 40 daily trains on this section of the corridor which are requiring respective capacity (train slots).

Conclusions

All rail-road terminals are connected to rail and road by at least one rail track or one road lane so that this fundamental criterion is met. The other indicators, such as provision of information flows, can hardly be assessd without the involvement of the infrastructure managers and their customers. The questions to be discussed with terminal operators is if they provide for such information systems, if they are willing to share this kind of information in particular “in real-time”, and with whom. That should be done in the year 2015.

[111] Feedback of BMVIT per e-mail of 17.101.2014.

4.2 Multimodal Transport Market Study – MTMS (Prognos)

4.2.1 Objectives and Role of the MTMS

The objective of the multimodal transport market study (MTMS) is to evaluate the future quantitative requirements towards the transport infrastructure of the ScanMed Corridor. The MTMS comprises an evaluation of the capacities of the future infrastructure along the ScanMed Corridor in light of the expected corridor traffic volume in 2030.

More in detail the MTMS for the ScanMed Corridor covers all relevant modes of transport (road, rail, Motorways of the Sea (MoS / Short Sea Shipping)) plus intermodal nodes (seaports, rail-road terminals, airports) for freight and passenger transport, where available until 2030. It intends, according to the discussions in the 1st and 2nd Corridor Forum meetings, to provide a "big picture" of the present and future transport and traffic volumes intending to reveal the global and general development of the freight and passenger transport markets of the corridor.

However, to gain a big picture, one essential pre-condition to generate a reasonable and reliable output is the stringent necessity to analyse all available information even if small scaled. The analysis is therefore not limited to the references given in the Appendix I of the Terms of Reference and those quoted in the WP 3 study review, but exploits further relevant sources of information which are quoted respectively.

The quoted results and conclusions are based on an extensive review and analysis of studies, reports, infrastructure investments plans etc. Wherever possible, these information were supplemented by transport and traffic related data provided by the various external stakeholders (e.g. Member States' Ministries, infrastructure managers, port authorities etc.).

WP 7 plays an essential role within Task 4, and therefore is located between the work packages 5, 6 and 8, which will give an overall insight in:

- the current and future status of the ScanMed Corridor;
- the comparison of available capacities and the expected traffic volume in the target year of the Regulation (EU), the year 2030, provided by "official" national/ regional/ local sources;
- the qualitative indication of enlargement investments.

4.2.2 Methodology

Basically, two approaches for conducting the MTMS have been considered by the contractor consortium: the model based approach and the study based approach.

Model based approach

This approach aims at preparing a MTMS on existing traffic flow data (i.e. ETIS Plus) following a possible 3-step model based approach that could be described as follows:

- Step 1: All origin/destination pairs (O/D pairs) "touching" the ScanMed Corridor will be identified in existing data bases. In this context "touching the corridor" means that flows with **origin and / or destination on** the corridor and flows with **origin and destination outside** the corridor, but partly transiting the corridor are considered.
- Step 2: Assignment and calibration of all flows on a European network model.
- Step 3: Forecasting future traffic flows by means of the most current available information to support a new forecast.

Strength of this approach:

- The model based approach provides a comprehensive and coherent picture of all flows on the corridor for each section.

Weaknesses of this approach:

- The most negative aspect of this approach is that the model results may, for whatever reason, differ from approved national forecasts.
- This approach requires a complete definition of the corridor catchment area, which may superpose the catchment areas of other corridors, thus may lead to incomparable results of the MTMS for other corridors.
- It requires a completely new traffic model (including all future infrastructure measures of the MS), which will most likely lead to different results compared to the other corridor studies and would require a harmonisation process between these studies.
- The calibration of the model requires the extensive use of observed traffic load data on the network section, which are as a general rule confidential, in particular for rail freight transport.
- Finally, in the reality rail transport routes may differ from the modelled optimal route, due to e.g. market or operational reasons, thus a corridor load of traffic will not be achieved as wanted.

To conclude, the main strength of this approach is to reach a comprehensive and coherent picture of all corridor relevant flows for each section. In contrast, the result of such a procedure most likely differs from national forecasts as well as from other corridor specific analysis of the stakeholders concerned.

Study based approach

This approach is based on the analysis of existing studies for transport infrastructure enhancement at national level, single infrastructure projects or operational measures/ projects and will be carried out stepwise:

- Step 1: Analysis of quantitative results (e.g. tons, passengers, trains, cars, trucks etc.) for the respective current and future situation.
- Step 2: Assessment and mapping the results of this work for the ScanMed Corridor.

Strengths of this approach:

- No contradiction to approved national or project specific forecasts and investment plans (which is in line with the discussion and the conclusive finding of the 1st Corridor Forum meeting).
- Differences at the border of respective study areas are highlighted at the level of the results rather than base data, model assumptions and other analytic questions.

Weaknesses of this approach

- Study availability: in some cases studies were not available or relevant detailed material is confidential.
- Studies not exploitable: some of the studies are not exploitable, due to different reasons (e.g. outdated, non-harmonized base assumptions, study covers only small parts of the ScanMed Corridor).
- No complete picture for all sections of the corridor outside the "hot spots" of the corridor.
- No coherent and/or harmonised forecast situation along the corridor.
- Even if – in theory – a harmonisation of the forecast assumptions (e.g. socio-demography) is possible, this would consequently lead to harmonised forecasts differing from the national forecasts and investment plans (cf. contradiction to the strength mentioned above).

After comparing strengths and weaknesses and to gain a reliable result, it was decided to build the future transport volume analysis and forecast upon the "study based approach". Finally, the mandatory usage of national forecasts and infrastructure investment plans determined the content related frame of the MTMS and the approach.

To conclude: this approach is expected to be, in comparison to the above mentioned model based approach, in line with national infrastructure investment plans/forecasts, which have – in general – a binding character for the Member States. Nevertheless, this approach also implies difficulties concerning the availability of information/data, traffic revelation for the corridor as well as the coherence and comparability of forecasts and its assumptions (see Chapter “Limits of data significance”). Particularly, it has to be noted that relevant data is hardly available at the level of defined TENtec sections, if at all for more aggregated sections ("market sections") between nodes. Nevertheless, the chosen study based approach constitutes the most acceptable and reliable procedure.

4.2.3 Determination of MTMS relevant Market Sections and Nodes

Following these fundamentals, the available forecast data regarding future freight and passenger transport volumes show that traffic loads will be subsequently presented for each "market section" and the adjacent nodes. To do this, the differentiated TENtec corridor sections were aggregated to "market sections". In addition, we were able to add relevant maritime market sections to demonstrate the link between the ports via the sea. The result is a set of overall 37 nodes, 46 market sections and 17 maritime sections, as listed in Table 40, Table 41 and Table 42.

Nodes (Seaports, Airports, RRT)

Ctr.	ID	Name	Seaport	RRT	Airport
FI	N1a	HaminaKotka	X		
FI	N1b	Kouvola		X	
FI	N2	Helsinki	X		X
FI	N3a	Turku	X		X
FI	N3b	Naantali	X		
SE	N4a	Stockholm	XX	X	X
SE	N4b	Örebro		X	
SE	N5	Malmö	X	X	X
NO	N6	Oslo	XX	X	X
SE	N7	Göteborg	XX	X	X
SE	N8	Trelleborg	X	X	
DK	N9	København	X	X	X
DK	N10	Taulov		X	
DE	N11	Lübeck	XX	X	
DE	N12	Hamburg	XX	X	X
DE	N13	Hannover		X	X
DE	N14	Bremen	X	X	X
DE	N15	Nürnberg		X	X
DE	N16	Rostock	X	X	
DE	N17	Berlin		X	X
DE	N18	Leipzig, Halle		X	X
DE	N19	München		X	X
IT	N20	Bologna		X	X
IT	N21	Verona		X	
IT	N22	Ancona	X	X	
IT	N23	Firenze		X	
IT	N24	Livorno	X	X	
IT	N25	La Spezia	X		
IT	N26	Roma		X	X
IT	N27	Napoli	X	X	X
IT	N28	Bari	X	X	
IT	N29	Taranto	X		
IT	N30	Gioia Tauro	X		
IT	N31	Palermo	X		X
IT	N32	Augusta	X		
MT	N33	Valletta	X		X
MT	N34	Marsaxlokk	X		

"XX" illustrates that the seaport also represents a ScanMed relevant inland port

Table 40: Defined nodes for MTMS along ScanMed Corridor

Market sections (Road, Rail)

Ctr.	ID	From	To	Road	Rail
FI	S1	Russian border	Kotka-Hamina	X	
FI	S2	Kotka-Hamina	Helsinki	X	
FI	S3a[112]	Russian border	Kouvola		X
FI	S3b	Kouvola	Kotka-Hamina		X
FI	S3c	Kouvola	Helsinki		X
FI	S4	Helsinki	Turku-Naantali	X	X
SE	S5	Stockholm	Malmö	X	X
NO/SE	S6	Oslo	Göteborg	X	X
SE	S7	Göteborg	Malmö	X	X
SE	S8	Malmö	Trelleborg	X	X
SE/DK	S9	Malmö	København	X	X
DK	S10a	København	Ringsted	X	X
DK	S10b	Ringsted	Taulov	X	X
DK/DE	S11	Taulov	Hamburg	X	X
DK	S12	København	Lübeck	X	X
DE	S13	Lübeck	Hamburg	X	X
DE	S14	Hamburg	Hannover	X	X
DE	S15	Bremen	Hannover	X	X
DE	S16	Hannover	Würzburg	X	X
DE	S17	Würzburg	Nürnberg	X	X
DE	S18	Rostock	Berlin	X	X
DE	S19	Berlin	Leipzig / Halle	X	X
DE	S20	Leipzig / Halle	München		X
DE	S21	Leipzig / Halle	Nürnberg	X	X
DE	S22	Nürnberg	München	X	X
DE	S23	München	Rosenheim	X	X
DE/AT	S24	Rosenheim	Kufstein	X	X
AT	S25	Kufstein	Wörgl	X	X
AT	S26	Wörgl	Baumkirchen	X	X
AT	S27	Baumkirchen	Innsbruck	X	X
AT	S28	Innsbruck	Patsch	X	X
AT/IT	S29	Patsch	Fortezza (via Brenner)	X	X
IT	S30	Fortezza	Verona	X	X
IT	S31	Verona	Bologna	X	X
IT	S32	Bologna	Ancona	X	X
IT	S33	Bologna	Firenze	X	X

[112] According to the definition of sections in TENtec Information System, the exact routing of ScanMed Corridor infrastructure for rail and road is different between RU/FI border and Helsinki..

Ctr.	ID	From	To	Road	Rail
IT	S34	Firenze	Livorno	X	X
IT	S35	Livorno	La Spezia	X	X
IT	S36	Firenze	Roma	X	X
IT	S37	Roma	Napoli	X	X
IT	S38	Napoli	Bari	X	X
IT	S39	Bari	Taranto	X	X
IT	S40	Napoli	Gioia Tauro	X	X
IT	S41	Gioia Tauro	Palermo	X	X
IT	S42	Gioia Tauro	Augusta	X	X
MT	S43	Valletta	Marsaxlokk	X	

Table 41: Defined market sections for MTMS along ScanMed Corridor

Maritime market sections between core network seaports of the ScanMed corridor

Ctr.	ID	From	To
FI/SE	M1	Turku-Naantali	Stockholm
FI/SE	M2	Helsinki	Stockholm
FI/DE	M3	Turku-Naantali	Lübeck
FI/DE	M4	Helsinki	Lübeck
FI/DE	M5	HaminaKotka	Lübeck
FI/DE	M6	Turku-Naantali	Rostock
FI/DE	M7	Helsinki	Rostock
FI/DE	M8	HaminaKotka	Rostock
FI/DE	M9	Helsinki	Hamburg
FI/DE	M10	HaminaKotka	Hamburg
SE/DE	M11	Malmö	Lübeck
SE/DE	M12	Trelleborg	Lübeck
SE/DE	M13	Trelleborg	Rostock
NO/DK	M14	Oslo	København
IT/IT	M15	Gioia Tauro	Palermo
IT/MT	M16	Augusta	Valletta/Marsaxlokk
IT/MT	M17	Taranto	Valletta/Marsaxlokk

Table 42: Defined MoS connections for MTMS on ScanMed Corridor

Most relevant studies, reports and sources

Although an initial list of sources and studies has been provided by the contractor (c.f. Chapter 3), extensive research was performed to gain additional information for the ScanMed corridor MTMS. The following list provides an overview of the most relevant studies, reports and sources of information being used to comprehend the current and future traffic and transport loads on the ScanMed Corridor, listed by focus:

General focus:

- ETIS Plus (2010): ETIS PLUS Database
  The ETIS PLUS database (available at: http://www.etisplus.eu/default.aspx) was used to describe the most current situation (2010) of freight traffic flows (in tons) between the countries of the corridor (FI, SE, DK, NO, DE, AT, IT, MT). Consequently, the data enables to determine the current most important freight flows for rail, road and seaborne transport by a country–to-country matrix.
- ProgTrans (2012): World Transport Reports 2012/2013
  The ProgTrans World Transport Reports 2012/2013 include national freight transport performance until 2030 and also Eurostat road freight country matrices.
- Transport market study of Rail Freight Corridor 3 (2014): Interim Results – Current market situation / Forecast & Outcome Interviews
  In the first instance of the ScanMed project, the results of the RFC 3 analysis and forecast, which consider the rail freight market development in most of the relevant countries of the ScanMed Corridor (excluding Finland and Malta), was intended to be used as one important source to determine the future rail freight volumes/traffic load. However, the intense communication between both projects revealed the incompatibility of both approaches and results, mainly due to the differences of:
  - Objectives (competitiveness measures vs. infrastructure requirements),
  - Data structure (freight corridor trains vs. network load by freight & passenger trains),
  - Forecast horizon (short-term 2017 vs. long-term 2030).
- Swiss federal office of transport (2013): Alpinfo 2012.

Focus on market sections

- BMVIT (2009): Verkehrsprognose Österreich 2025+. http://www.bmvit.gv.at/verkehr/gesamtverkehr/verkehrsprognose_2025/index.html
- BVU Beratergruppe Verkehr + Umwelt & Intraplan Consult (2010): Überprüfung des Bedarfsplans für die Bundesschienenwege.
- BVU Beratergruppe Verkehr + Umwelt & Intraplan Consult (2007): Prognose der deutschlandweiten Verkehrsverflechtungen 2025.
- Femern A/S (2013): Traffic forecast for a Fehmarnbelt Fixed Link (Update to 2002 FTC forecast).
- Finnish Rail Administration (2009): Tulevaisuuden henkilöliikennesevitys.
- Finnish Transport Agency (2014): Raraverkon tararaliikenne-ennuste 2035.
- HaCon Ingenieurgesellschaft mbH & KombiConsult GmbH (2012): Erstellung eines Entwicklungskonzeptes KV 2025 in Deutschland als Entscheidungshilfe für die Bewilligungsbehörden.

- IBU - Øresund (2010): Delaktivitet 4 – Trafikanalyser for Øresundsregionen.
- iMONITRAF! (2012): Alpine Transit Traffic – Policy Scenarios 2020 (PRIMES Model BAU).
- IVV (2010): Überprüfung des Bedarfsplans der Bundesfernstraßen.
- ÖBB Infrastruktur AG (2014): Betriebsdaten zur Bemessung von Infrastrukturanlagen.
- Orestata (2014): Traffic across Øresund.
- ProgTrans (2007): Aktualisierung der Personen- und Güterverkehrsprognose für den Brenner 2015 und 2025. Schlussbericht zur 2. Aktualisierung Phase II.
- Ramböll Finland (2014): Finish road data 2012 and 2030.
- Scandria (2012): The Scandinavian-Adriatic Corridor for Innovation and Growth.
- European Commission (2014): TENtec Information System. Private Portal. http://ec.europa.eu/transport/themes/infrastructure/tentec/index_en.htm
- Trafikstyrelsen (2013): Trafikplan for den statslige jernbane 2012
- Trafikverket (2014a): RAPPORT Prognos för godstransporter 2030. Trafikverkets basprognos 2014.
- Trafikverket (2014b): RAPPORT Prognos för personresor 2030. Trafikverkets basprognos 2014.
- Trafikverket (2014): Underlagsrapport Disaggregering av prognos för godstransporter 2030 till Bansek, EVA och Sampers/Samkalk. Trafikverkets basprognos 2014.
- Transitects (2012): Transalpine Transport Architects "Sustainable shift of cargo transport into rail networks between Berlin/Brandenburg and Italy/Slovenia".

Focus on particular nodes

- Airport Research Center GmbH (2009): Prognose des Verkehrsaufkommens und Erstellung des Datenerfassungssystems für die Flugbewegungen der sechs verkehrsreichsten Monate für das Jahr 2020 während der Tag- und Nachtstunden.
- Autorità Portuale Livorno (2012): Piano opertivo triennale 2013/2015.
- Autorità Portuale di Livorno (2014): Market study – Port of Livorno traffic flows and estimates.
- Copenhagen Airport (2014): Passenger forecast 2040. http://www.cph.dk
- European Commission (2012): TEN-T EA. Work Programmes 2007-2013. Application form for EU financial aid in the field of trans-European transport network. Part B.2. Rail Access from Coast to Corridor (RACCORDO).
- Faber, Jasper; Nelissen, Dagmar; Koopman, Marnix (2013): Ökonomische Analyse der Erweiterung des Münchner Flughafens.
- Finavia (2013a): 2012 lentoliikennetilasto/air traffic statistics.
- Finavia (2013b): Finavia is starting a major development programme at Helsinki Airport.
- Finavia (2013c): Traffic statistics 2013. http://www.finavia.fi/en/finavia-corporation/statistics/statistics-2013/.

- Hanseatic Transport Consultancy/ RMCon (2013): Kapazitive Leistungsfähigkeit des Eisenbahnnetzes im Großraum Bremen.
- Intermodadria (2014): Il Porto di Ancona. Nodo intermodale della rete adriatica. Analisi territoriale dei flussi merci Ro-Ro e containers. Terza versione, maggio 2014.
- L. Mantecchini (2013): I Progretti Metropolitani – L'aeroporto.
- MWP GmbH, IHS and Uniconsult (2013): Verkehrsverflechtungsprognose 2030. Los 2 – Seeverkehrsprognose – Eckwerte der Hafenumschlagsprognose.
- Port of Helsinki (2012): Port of Helsinki Development Programme 2022.
- Port of Napoli (2005): The final budget 2004 and the three year operating plan 2005-2007.
- Ramböll Finland (2014): Finish road data 2012 and 2030.
- Ramboll Sweden (2014) Swedish rail and road data for 2012 and 2030 (based on Trafikverket forecasts (2014)).
- Rete Ferroviaria Italiana (RFI) - Direzione Pianificazione Strategica (2014): Forecasts for the Italian rail traffic in 2030.
- Swedavia (2014): Historical investment plan to ensure Swedish air travel connections.
- Trafikverket (2013a): Trafikprognos För Svenska Flygplatser 2030.
- Trafikverket (2013b): Prognoser för arbetet med nationell transportplan 2014-2025 – Godstransporters utveckling fram till 2030.

As already stated, this list only represents an extract of available public sources with high relevance. Further data were delivered by local, regional and national authorities and stakeholders via e-mail or in personal contact. The complete list of references is attached to this report (Annex 5).

As regards Germany, the accepted forecast ("Prognose der deutschlandweiten Verkehrsverflechtungen 2025") for the federal Transport Master Plan which is currently in force and underlines the approved infrastructure projects has been used rather than the recently published new forecast until 2030, which does not cover the traffic load by section, yet, and which will only lead to a new federal Transport Master Plan in the year 2015 in accordance with the German Ministry of Transport and Digital Infrastructure.[113]

4.2.4 Main Findings of Current International Freight Transport

In a first step, an overview of the most important and corridor-relevant current trade lanes between countries along the corridor is provided. To do this, indepent

[113] E-mail exchange between HaCon and BMVI of 7th May 2014.

calculations were performed based on ETIS Plus (2010), AlpInfo (2013) and ProgTrans 2012/2013 World Reports (2012), which is based on Eurostat figures.

The base year 2010 was used because the ETIS Plus database (most recent data available for 2010) is the most comprehensive and adequate database, which covers freight flows between the relevant corridor countries and for the respective transport modes.

Table 43 shows that in 2010 the most important rail freight flows amount to almost 90 % of all relevant international rail freight flows comprising about 34 million tons. The most important relationships are, in both directions, SE - DE, AT – DE, DE – IT and IT – AT. It becomes obvious that the "gravity centre" of rail freight flows is located in Germany and Austria.

In subsequent tables (Table 43 and Table 44) attention should be paid to the fact that for all transport volumes crossing the Alps, rough estimations with regard to the Brenner axis were conducted by means of allocating the freight volumes according to the information regarding the share of the Brenner axis provided by Alpinfo 2012. This means, the quoted freight transport volumes implying transalpine relations, e.g. between Italy and Germany, specifically depict flows via the Brenner axis.

		Destination							
		FI	NO	SE	DK	DE	AT	IT (via Brenner)	Total
Origin	FI	-	26	193	1	10	0	1	**231**
	NO	0	-	1.068	3	130	0	1	**1.202**
	SE	129	501	-	124	2.087	202	154	**3.198**
	DK	7	2	76	-	91	1	214	**392**
	DE	11	91	2.099	380	-	8.219	5.105	**15.904**
	AT	1	0	154	45	6.553	-	3.001	**9,.53**
	IT (via Brenner)	0	0	71	142	3.165	1.985	-	**5.364**
	Total	**148**	**620**	**3.660**	**695**	**12.035**	**10.408**	**8.476**	**36.043**

Table 43: International rail freight volumes (1.000 tons) covering ScanMed Corridor countries in 2010 (based on ETIS Plus 2010, AlpInfo 2012)

Table 44 shows the most important corridor relevant road freight flows in 2010. In both ways the relations DK – DE, IT – DE and FI – SE are dominant and amount to almost 70 % of all international road freight flows between the corridor countries, which overall comprise app. 50 million tons. In comparison to the previous rail freight volumes, the structure of flows illustrates a broader spatial distribution of important relations on the corridor. Thus, the "gravity centre" of road freight volumes is located in the southern part of the corridor and to a less extent in the far northern part.

		Destination							
		FI	NO	SE	DK	DE	AT	IT (via Brenner)	Total
Origin	FI		407	2.714	85	64			**3.270**
	NO	59		901	542	315			**1.817**
	SE	2.059	936		1.441	1.503	67	36	**6.042**
	DK	30	689	1.827		5.666	0	162	**8.374**
	DE	45	374	1.595	5.694		1.798	9.061	**18.566**
	AT			59	0	1.326		692	**2.077**
	IT (via Brenner)			29	100	9.654	420		**10.203**
	Total	**2.193**	**2.406**	**7.125**	**7.862**	**18.528**	**2.284**	**9.951**	**50.349**

Table 44: International road freight volumes (1.000 tons) covering ScanMed Corridor countries in 2010 (ProgTrans AG (2012) World Transport Reports, based on Eurostat, AlpInfo 2012)

Finally, Table 45 provides an overview of relevant sea freight flows in 2010. With an overall transport volume above 128 million tons, the seaborne freight transport between all ports of the corridor countries is distinctly higher than the continental corridor flows (rail and road). The dominant relations are located in the northern part of the corridor, mainly related to Germany and Sweden supplemented by the flows from the remaining Scandinavian countries. These volumes accumulate to 64 % of international sea freight flows.

		Destination								
		FI	NO	SE	DK	DE	AT	IT	MT	Total
Origin	FI		503	6.255	908	8.808	0	1.139	2	**17.614**
	NO	2.200		9.104	3.448	16.437	0	2.184	5	**33.378**
	SE	8.359	2.053		5.848	13.148	0	473	44	**29.925**
	DK	687	2.278	10.707		4.390	0	219	5	**18.287**
	DE	5.210	2.206	9.761	5.730		0	1.468	47	**24.422**
	AT	0	0	0	0	0		0	0	**0**
	IT	110	144	345	69	739	0		1.633	**3.040**
	MT	0	0	4	0	138	0	2.166		**2.308**
	Total	**16.566**	**7.184**	**36.176**	**16.003**	**43.659**	**0**	**7.650**	**1.736**	**128.974**

Table 45: International sea freight volumes (1.000 tons) covering ScanMed Corridor countries in 2010 (based on ETIS Plus 2010)

In addition, the ETIS Plus database enables us to separately analyse the sea freight volumes between the 26 core ports allocated to the corridor, as shown in Table 46. With regards to the previous table, the transport volumes still aggregate to more than 46 % of the overall seaborne transport volumes. Furthermore, the spatial concentration of freight flows is quite similar to the overall distribution of sea freight flows. Exceptions are relationships between the core ports from Denmark to Sweden/ Norway and from Sweden to Finland.

		Destination								
		FI	NO	SE	DK	DE	AT	IT	MT	Total
Origin	FI		350	3.328	74	5.737	0	237	1	9.727
	NO	956		8.170	463	9.425	0	477	5	19.495
	SE	1.786	1.531		1.954	8.614	0	14	35	13.934
	DK	56	339	1.038		379	0	10	1	1.822
	DE	3.521	1.755	6.547	403		0	289	44	12.559
	AT	0	0	0	0	0		0	0	0
	IT	15	66	64	0	282	0		766	1.192
	MT	0	0	4	0	136	0	1.060		1.200
	Total	6.334	4.041	19.151	2.894	24.572	0	2.086	851	59.929

Remark: Assignment of NUTS 3 freight volumes to ScanMed core ports

Table 46: International sea freight volumes (1.000 tons) between core ports of ScanMed Corridor in 2010 (based on ETIS Plus 2010)

The first conclusion that can be drawn from these tables is that the majority of dominant trade lanes are related to Germany, Norway, Sweden and Finland, thus the whole Baltic Sea Region constitutes a "turn table" of corridor-related sea transport. E.g. about 90 % of Finnish exports and 70 % of imports are transported by sea. Thus, (core) ports of the ScanMed corridor depict important elements for the efficient performance on the whole transport network.

4.2.5 Future Traffic Development of Market Sections and Nodes

Annex 5 contains the detailed results of the MTMS for the market sections and nodes defined above in form of graphics and tables.

4.2.6 Conclusions of Future Traffic Development of Market Sections and Nodes

Limits of data significance

Given the vast amount of existing sources, the research revealed several difficulties to get a comprehensive picture of the future corridor traffic for the entire alignment. Combining different data in a study-based approach without harmonisation was only to some extent successful. The main issues could be identified as:

- Different time periods of the forecasts, concerning base and forecast years, definitely constrains the comparison of main figures;
- No harmonised definition of corridor sections: Forecasts spatially overlap, leave gaps and produce contradictions at intersections;
- No harmonised key indicators relevant to ideally depict the future passenger and freight traffic situation. The way how traffic volumes are measured greatly

differ between sources (cars, lorries, vehicles in general, freight-trains, passenger-trains, trains in general, tonnage, passengers etc.).
- For various sections (e.g. partly Italy) and transport modes, a general lack of available data has to be accepted.

Nevertheless, the “big picture” for the corridor traffic development could be generated by gathering and comparing the complete supply of available data. Wherever possible and available, more differentiated information and data, in compliance with remarks and comments of stakeholders provided after the 3rd Corridor Forum, were considered and incorporated in the analysis in Annex 5. Subsequently, the ranges and differences of all these figures along the corridor are integrated into a qualitative and comprehensive review, including recommendations for market sections and nodes showing traffic loads or traffic volumes respectively.

Main analysis results

As pointed out above, the “study approach” provides a comprehensive big picture of the traffic load, nearly for the whole corridor. However, the studies, forecasts and other sources include different base and forecast years, as well as different parameters. With the aim to draw a comparable picture, we decided to inter- / extrapolate the given figures to a common forecast year 2030, where necessary. It has to be pointed out that this is not a new or updated forecast, but an exercise to make figures comparable. Following assumptions were used for the calculation of harmonized future traffic:

- Utilization of average values, where data ranges are provided,
- Average freight train volume: 500t,
- Average passenger train occupancy rate: 220 passengers,
- Average weight of TEU: 10t.

Hence, subsequent maps provide a comparable picture for the ScanMed Corridor and show “hot spots” of future freight and passenger traffic.

As Figure 42 indicates, in 2030 most seaports show freight volumes between 15 and 45 million tons per year, with the exception of Hamburg (exceeding 300 million tons), Göteborg (more than 55 million tons) and Livorno (app. 50 million tons).

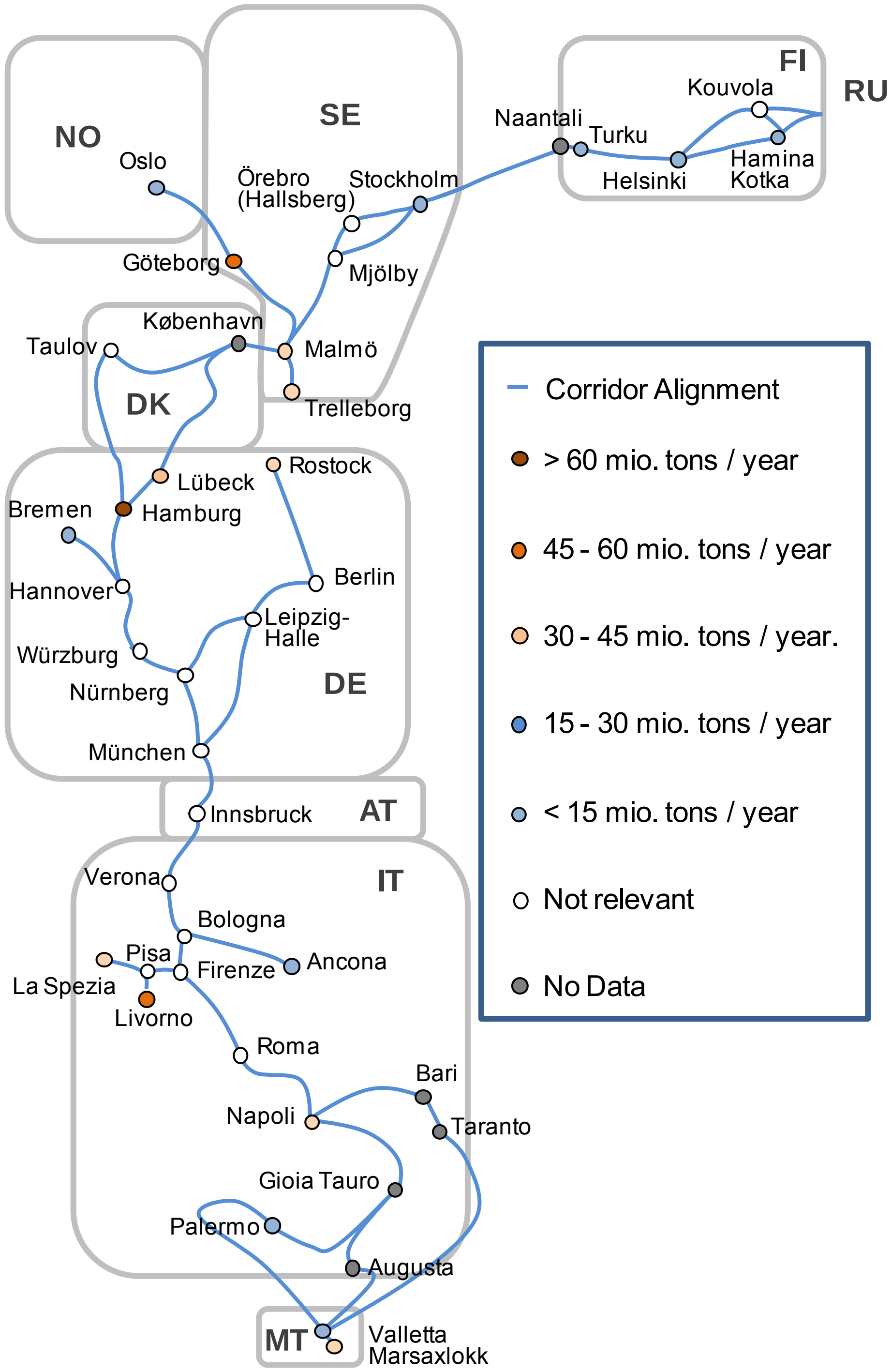


Figure 42: Seaport freight volumes of ScanMed Corridor in 2030

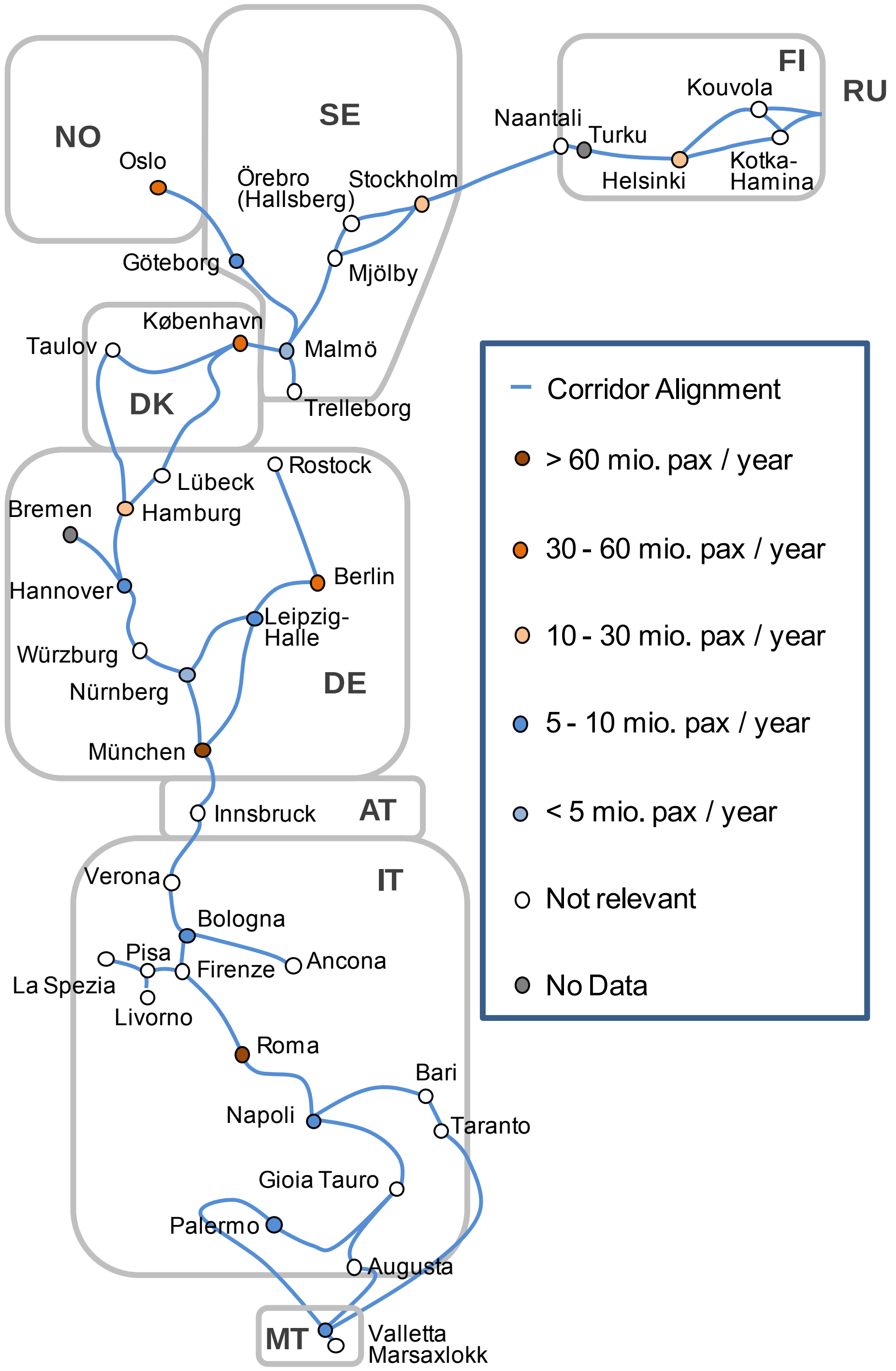


Figure 43: Airport passenger volumes of ScanMed Corridor in 2030

Airports show a wide range of future passenger volumes. Hence, in 2030 the most important ScanMed airports, with an annual volume above 30 million passengers are the international hubs of München and Roma (> 60 million passengers) followed by Oslo (30 – 60 million passengers) and the newly built airport of Berlin.

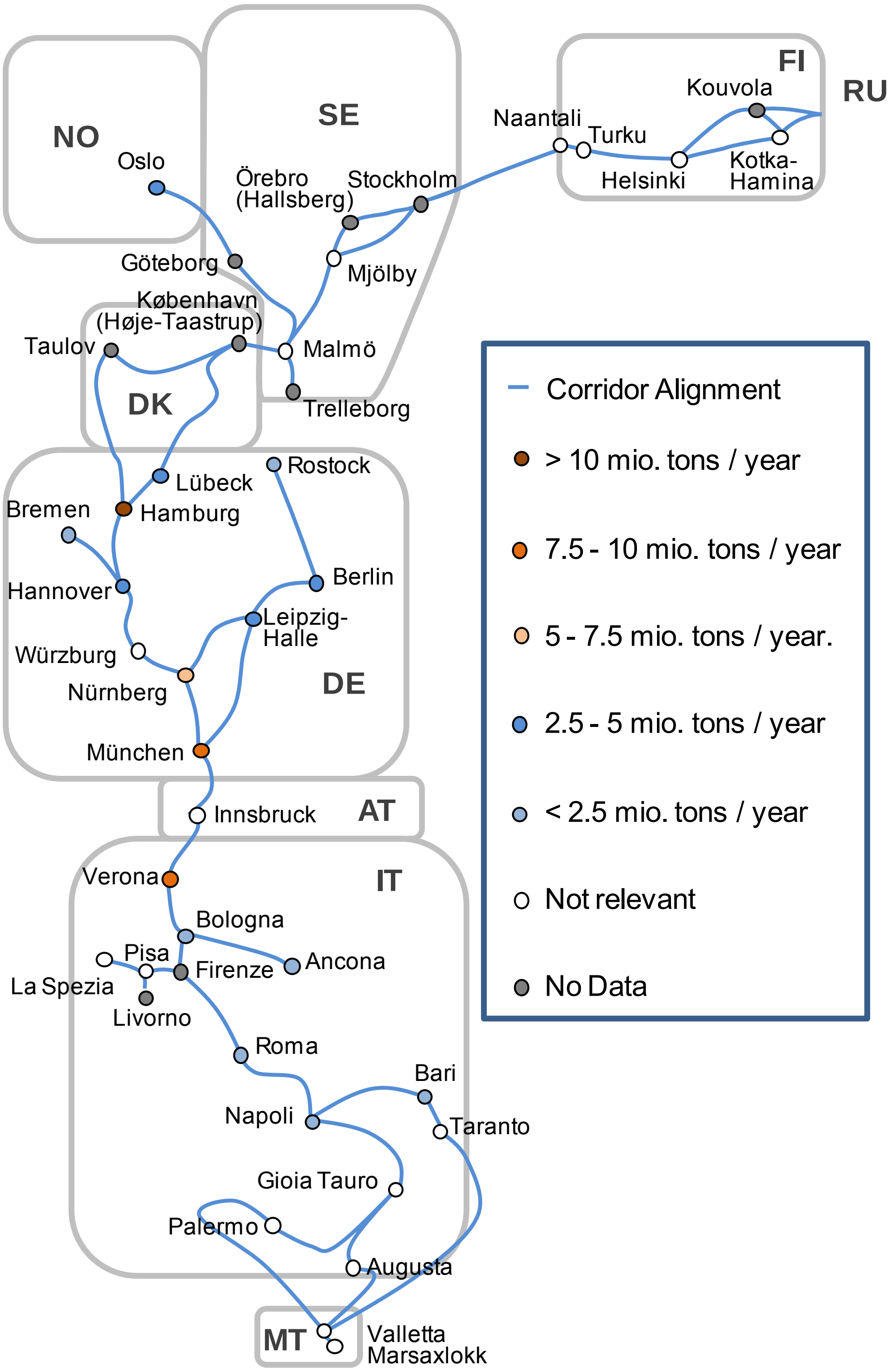


Figure 44: RRT freight volumes (terminal regions) of ScanMed Corridor in 2030[114]

[114] RRT Napoli excl. RR-Terminal NOLA, which is located outside the port on the main line.

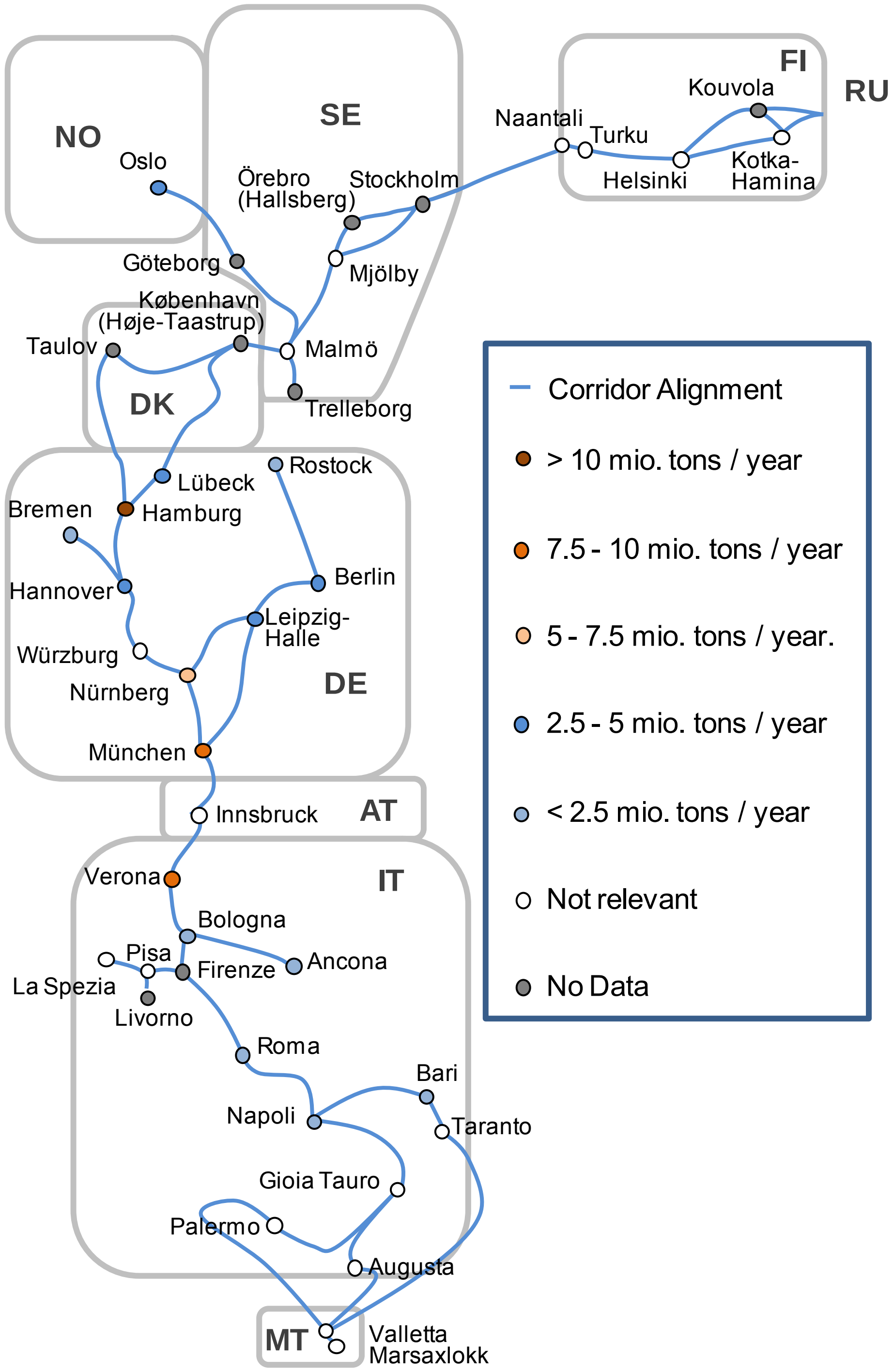


Figure 44 shows thatthe terminal regions of Hamburg and München will be of paramount importance for the ScanMed Corridor in 2030, concerning their freight volumes. They account for more than 10 million tons per year (Hamburg terminal region) and 7.5 – 10 million tons for the München terminal region. In addition, also Verona, in the Italian part of corridor, is expected to account for 7.5-10 million tons per year.

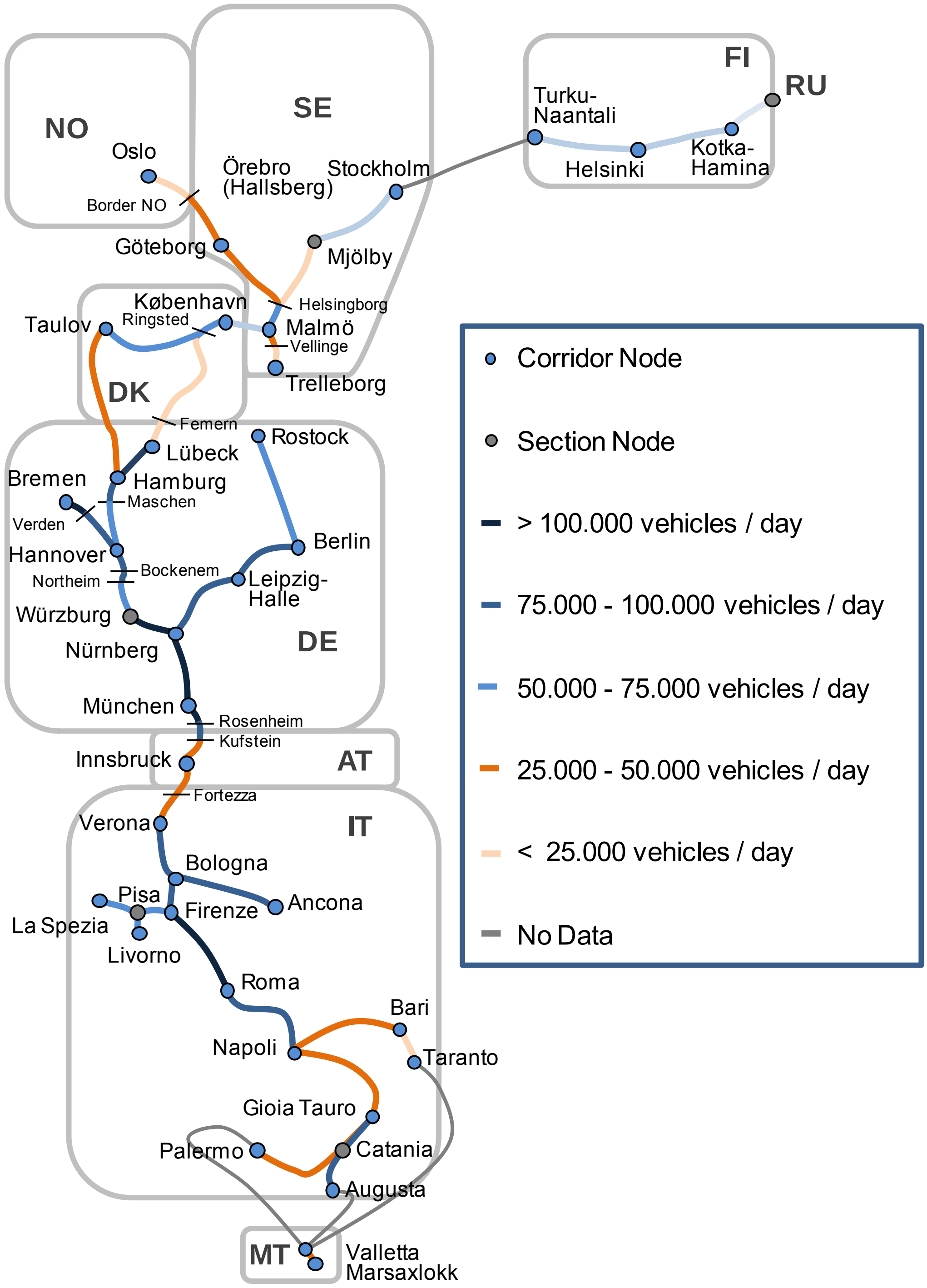
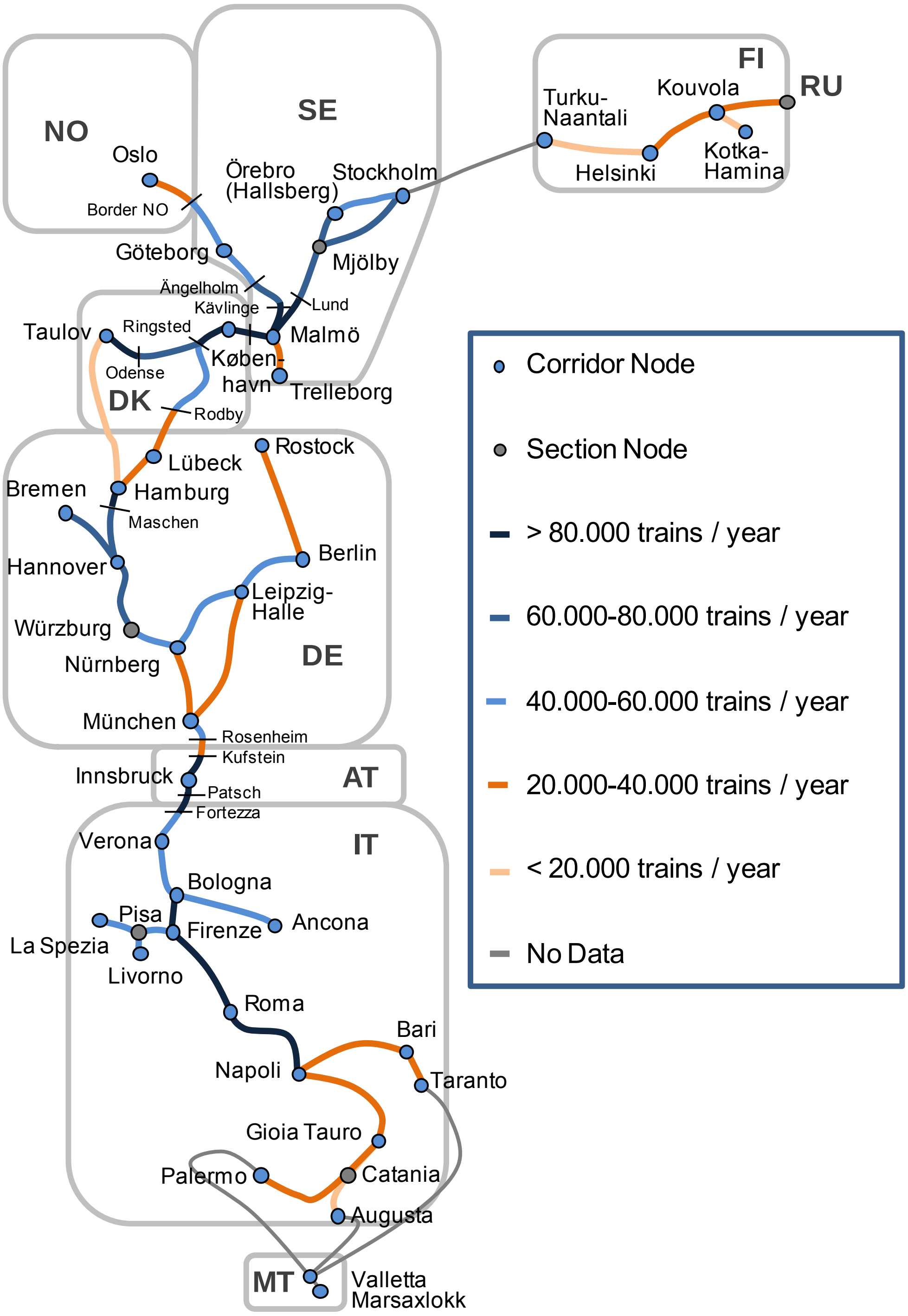


Figure 45: Road traffic loads for market sections of ScanMed Corridor in 2030

In 2030, market sections for road traffic loads quote a diversified picture. While the Scandinavian road traffic loads are comparatively low, the road traffic is expected to be comparatively high in Germany (specifically Lübeck - Hamburg, Hamburg//Bremen – Hannover, as well as the Nürnberg – München market sections) and on the important Italian relation between Firenze and Roma.



Remark: Rail passenger and freight forecast figures for Austria are shown for 2025

Figure 46: Rail traffic loads for market sections of ScanMed Corridor in 2030

For 2030, the rail traffic calculations show high loads (> 60.000 trains / year) on the northern market sections in the area of Malmö, København and Taulov, Hamburg/Bremen – Hannover - Würzburg as well as in the Innsbruck area (Brenner) and on the sections Bologna – Firenze – Roma - Napoli. Several other market sections are expected to carry between 40.000 and 60.000 trains per year, freight and passenger trains in total. The highest expected volumes both are supposed to be effects of the specific infrastructures Øresund Fixed Link and Brenner Base Tunnel.

4.2.7 Future Capacities, Bottlenecks and Missing Links

In general, the capacity of specific infrastructure depicts the maximum amount of traffic the infrastructure is able to manage or handle (technical maximum capacity). However, in reality the maximum capacity might also depend on external as well as the qualitative conditions of the infrastructure. In the reality of the rail transport, a capacity constraint appears, when transport demand not only exceeds the maximum capacity, but when the demand is about to reach 80% of the maximum capacity. In this case a high risk of unstable operation conditions i.e. timetables is possible.

The following chapter depicts publically available information regarding future traffic development and possible capacity constraints on the ScanMed Corridor at national / international scale ('big picture') for different forecast years and transport modes as well as conclusions derived as a joint work from the "country managers" of the Consortium partners.

Finland (Ramböll Finland)

Major railway capacity considerations of the following sections, which will remain congested in the future if no measures are taken, were discovered:

- Helsinki – Turku (single track with challenging geometry makes traffic sensitive to interferences, limitations for the train length <740 m);
- Helsinki region (construction of the Ring Rail Line and new railway line in Central Pasila will make the public transport system more effective, creates railway connection to the Helsinki airport and improves the functionality of the railway transport, but does not remove all the bottlenecks and efficiency problems);
- Kouvola – HaminaKotka (needs for renewal of the safety equipment and improvement of few railway yards and sections);
- Luumäki – Vainikkala (single track with heavy transport makes traffic sensitive to interferences).

With respect to roads, the analysis agreed upon with the Finnish administration identifies congestion at the following locations:

- Turku region (congestion, several sections along the Turku ring road do not meet motorway or express way standards, poor connection to the port of Naantali. Construction of port of Turku road connection Suikkilantie will remove the existing bottlenecks to the port of Turku);
- Helsinki region (congestion in several areas, construction of the Ring Road III phase II will remove the most urgent capacity problems of some sections, but not all of them);

- Connection to the Port of HaminaKotka (current design standard is not at motorway or express way level);
- Construction of the E18 Hamina bypass, E18 Koskenkylä–Kotka will remove the existing bottlenecks between Koskenkylä–Kotka–Hamina–Vaalimaa).

Concerning the Rail-Road-Terminals, according to Finnish sources, the Kouvola RRT requires development measures because of increasing demand and transport volume.

Figure 47 illustrates the corridor-relevant part of the Finnish transport system.

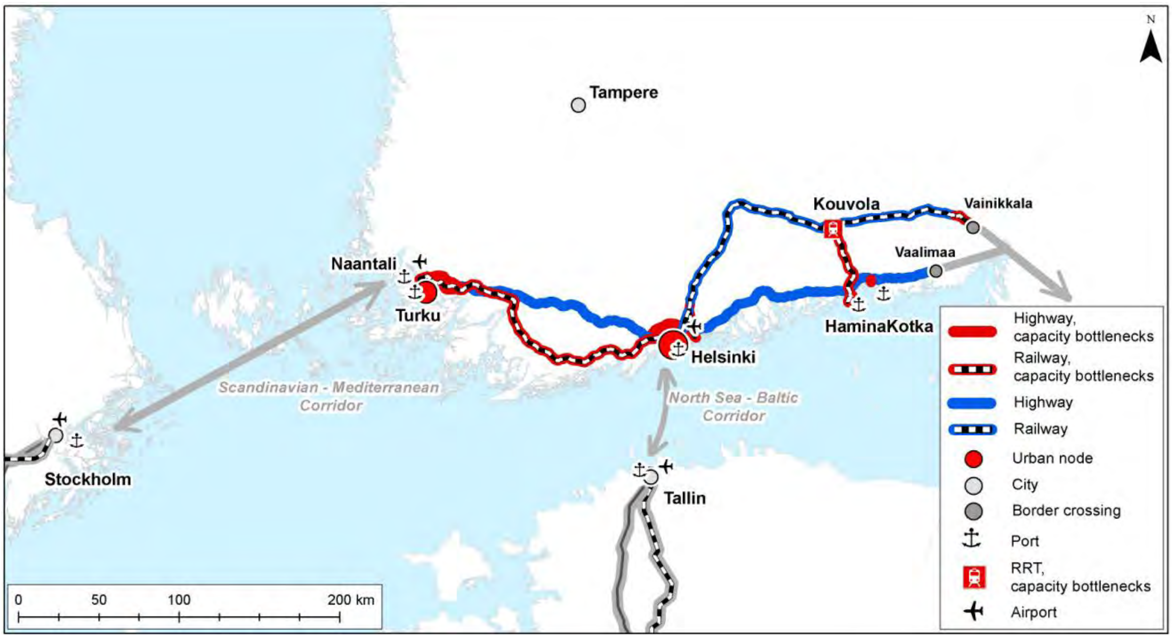


Figure 47: Corridor specific transport infrastructures and capacity bottlenecks in Finland

Sweden and Denmark

Both forecasts shown in Figure 48 and Figure 49 include already decided infrastructure projects to the years 2020 and 2030. Figure 49 includes a complete electrification of the Danish railway network. The scenario does not include the completion of a double-tracked extension of the southern access to the Fehmarn Belt Fixed Link in the German hinterland railway network by that year. Both figures reveal that rail capacity is exhausted on several market sections of the corridor, especially between the comparably dense areas of København, Göteborg, Malmö, Helsingborg, Trelleborg and Hässleholm. Furthermore, the analysis identifies a bottleneck on the German railway section south of the Fehmarn Belt Fixed Link (southwest of Puttgarden) after opening of the tunnel, and another one around Vordingborg which will be removed after the construction of the new Storstrøm Bridge, the latest 2021.

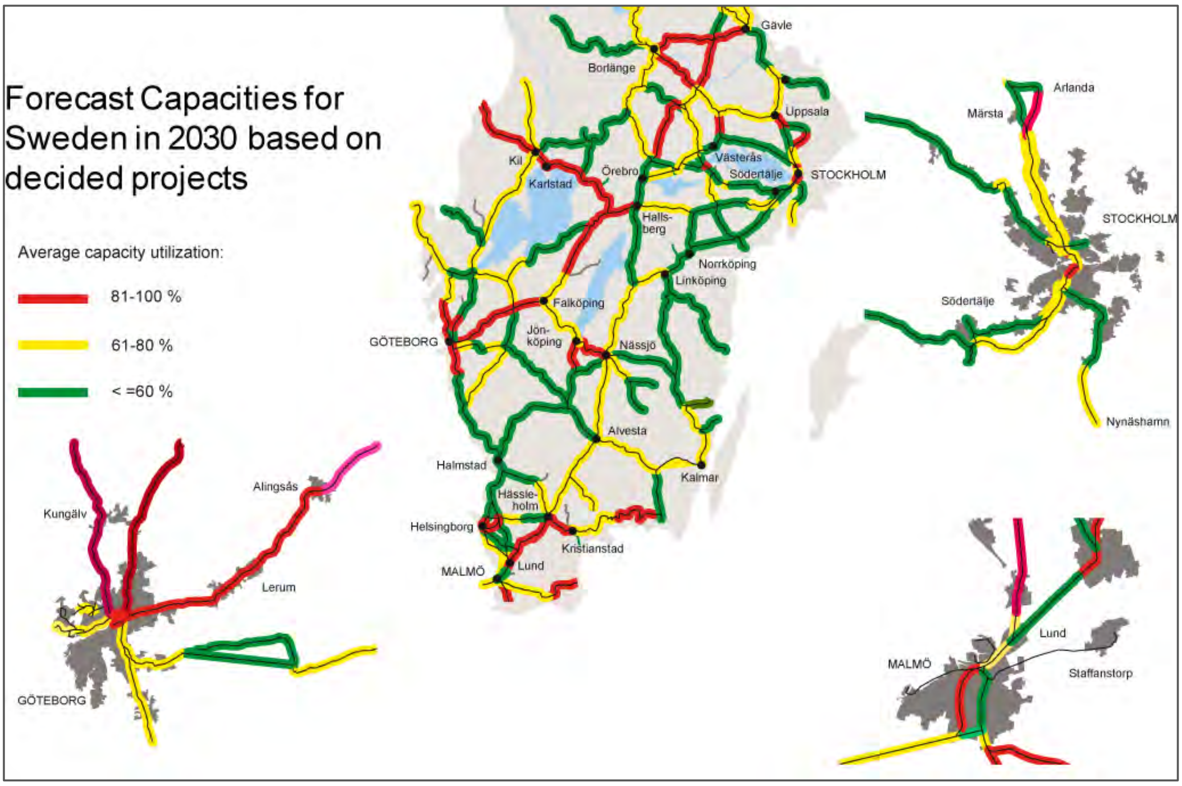


Figure 48: Forecast capacities for swedish rail sections in 2030 based on decided projects in the National Plan (provided by Regeringskansliet - Government Offices of Sweden).

Colour of sections: Red – no capacity, Yellow – limited capacity, Green – free capacity

Figure 49: Forecast capacities for Danish and Swedish rail sections in 2020 based on already decided projects until 2020 (Ibu-Øresund 2010)

Germany

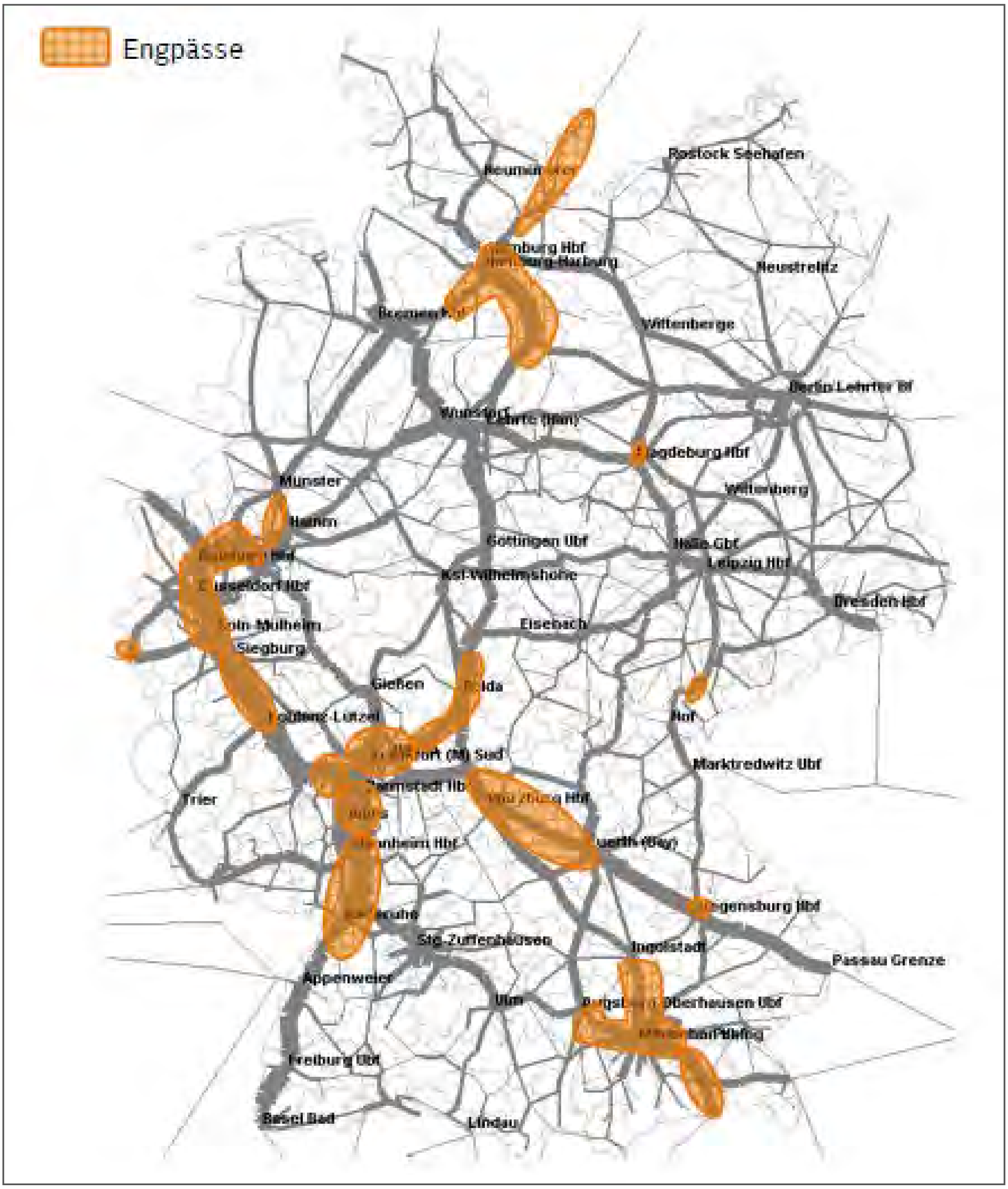
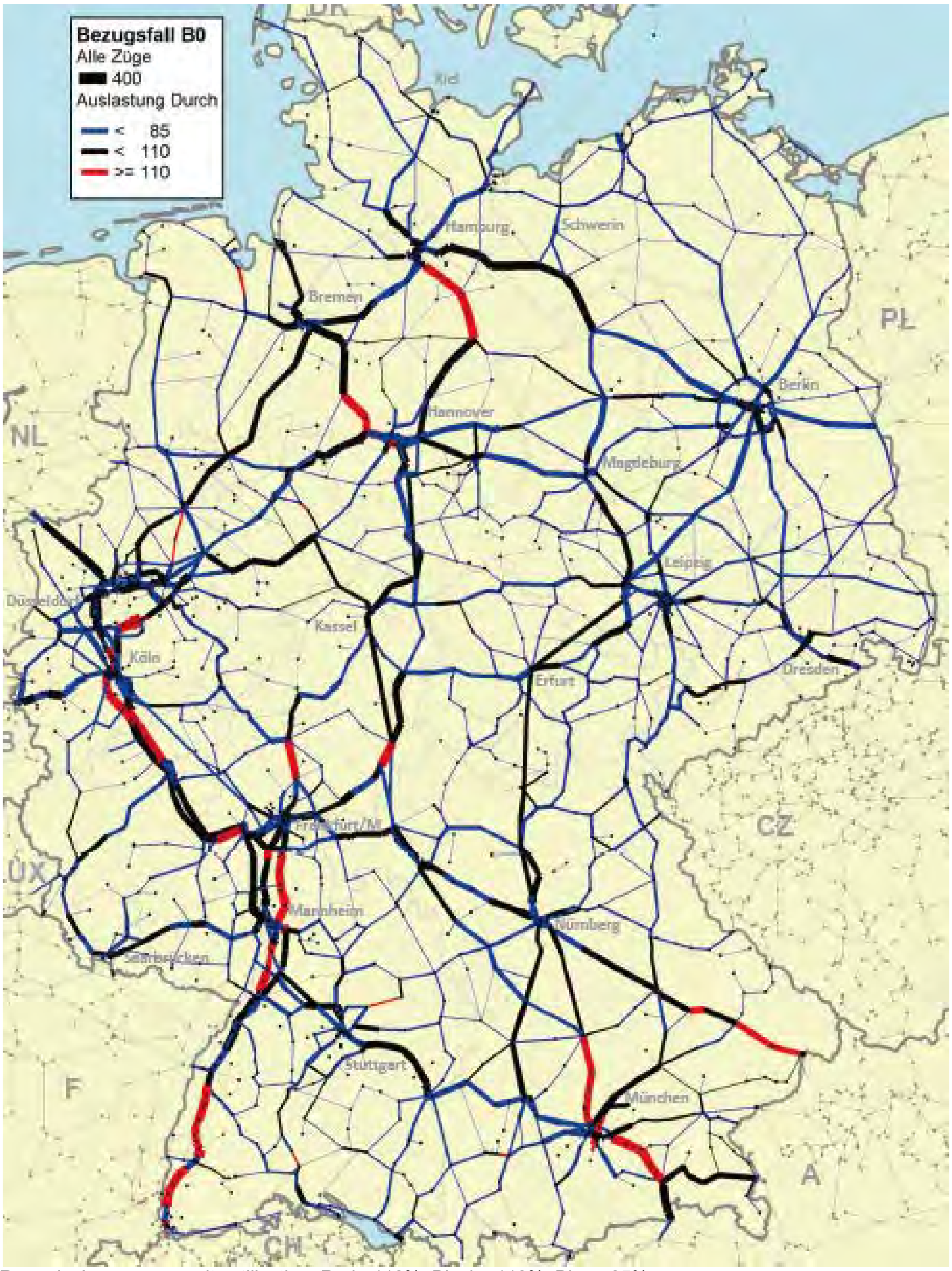


Figure 50: Forecast bottlenecks for German rail sections in 2030 (DB Netz AG 2013)

Figure 50 illustrates capacity constraints on the German railway network in 2030 from DB Netz[115]. Various capacity constraints are expected, of which several are located on the ScanMed Corridor, mainly in the Hamburg area in the northbound direction toward the Fehmarn region and southbound toward Bremen and Hannover. Further

[115] DB Netz AG 2013

southbound capacity limits are expected to appear in the area of Fulda, for the rail connection between the cities of Würzburg and Nürnberg as well as to a significant extent in the whole München area. Furthermore, the DB Netz AG expects minor capacity constraints along the ScanMed Corridor railway network north of Hof on the connection between Leipzig and Nürnberg.



Remark: Average capacity utilization: Red >110%, Black <110%, Blue <85%

Figure 51: Forecast capacities on an average workday for German rail sections in 2025 based on railwaynetwork in 2007 (BMVI 2014)

Figure 51 shows the forecasted capacities for the German rail sections in 2025 on an average workday. The reference rail network in 2025 corresponds to the network state in 2007, including all at that time fixed expansion and construction measures in which the "point of no return" in the view of the project decision has been exceeded. It includes as well measures that have been valued positively in the cost-benefit analysis of the BVWP 2003. Assuming these conditions, the figure shows similar to the above quoted map that in 2025 significant (red line: >110 % of average rail traffic load) capacity constraints on the corridor are expected south-east of Hamburg and between Bremen and Hannover. Again the München area will be congested. In contrast to the previous map the rail market section between Würzburg and Nürnberg is comparatively less loaded. These findings are mostly supported by the detailed analysis of rail capacity utilization in 2025 which was done in WP 5 by HaCon in accordance with DB Netz.

The following graphics (Figure 52, Figure 53 and Figure 54) were prepared by HaCon based on a list of TENtec sections with utilization rates which were part of the report "Schlussbericht zur Überprüfung des Bedarfsplans für die Bundesschienenwege (November 2010)" provided by DB Netz[116]. Since the "Y-Trasse" (Lauenbrück/ Langwedel – Visselhövede – Isernhagen) will not exist in the year 2025, these TENtec sections are displayed as "planned infrastructure"[117].

[116] According to DB Netz the data itself references the final report on the „Überprüfung des Bedarfsplans für die Bundesschienenwege" (review of the requirement plan for the Federal railway lines) of November 2010. The network that was reviewed in 2010 composed of the "Y-Trasse" (Bremen – Hamburg – Hannover) which is now abandoned, so that additional bottlenecks will exist in that area.

[117] Feedback from DB Netz „Bewertung des Draft Final Report", 28.11.2014.

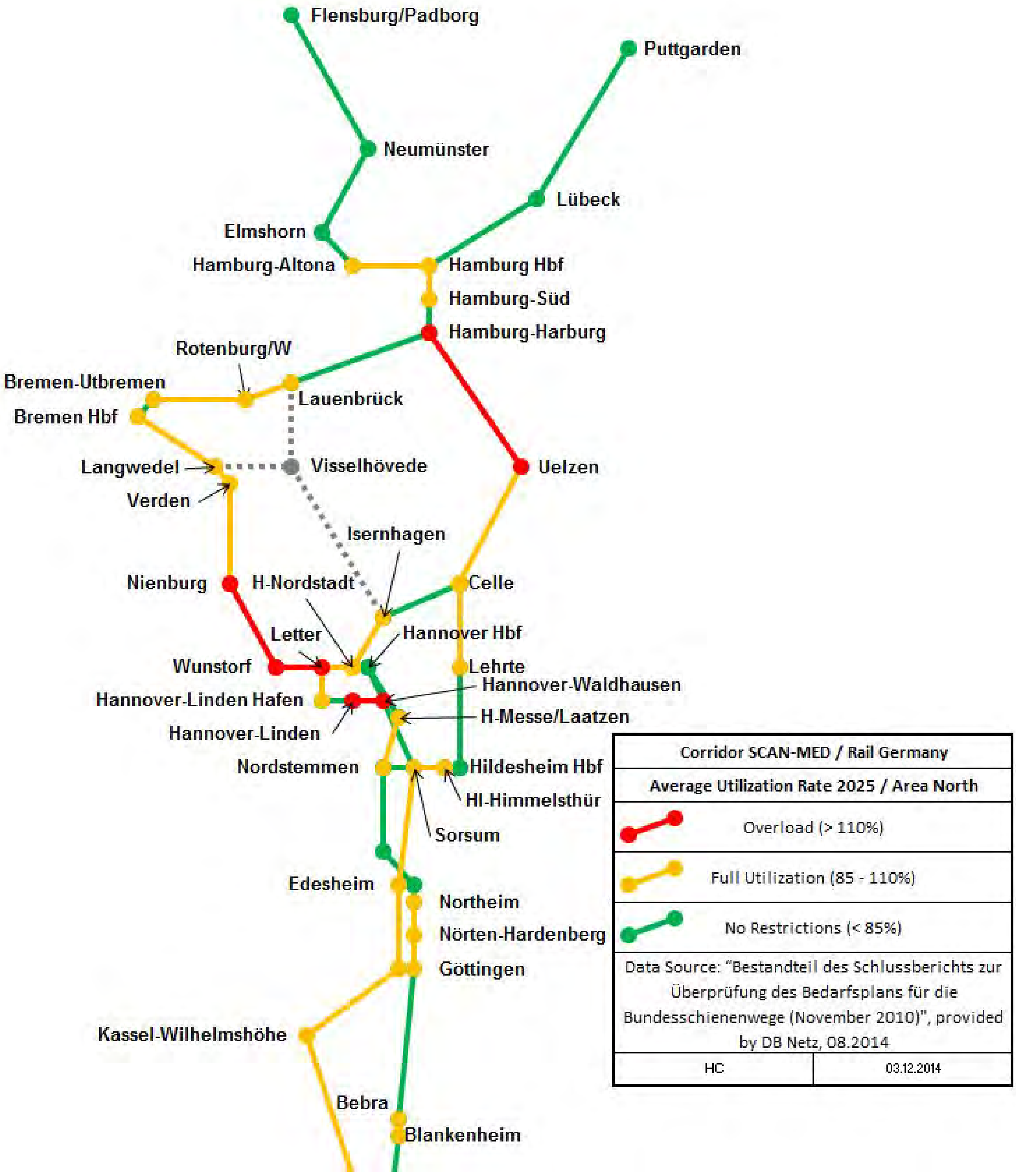


Figure 52: Average utilization rate 2025 of German ScanMed rail network, Area North (Figure: HaCon; Data Source: DB Netz)

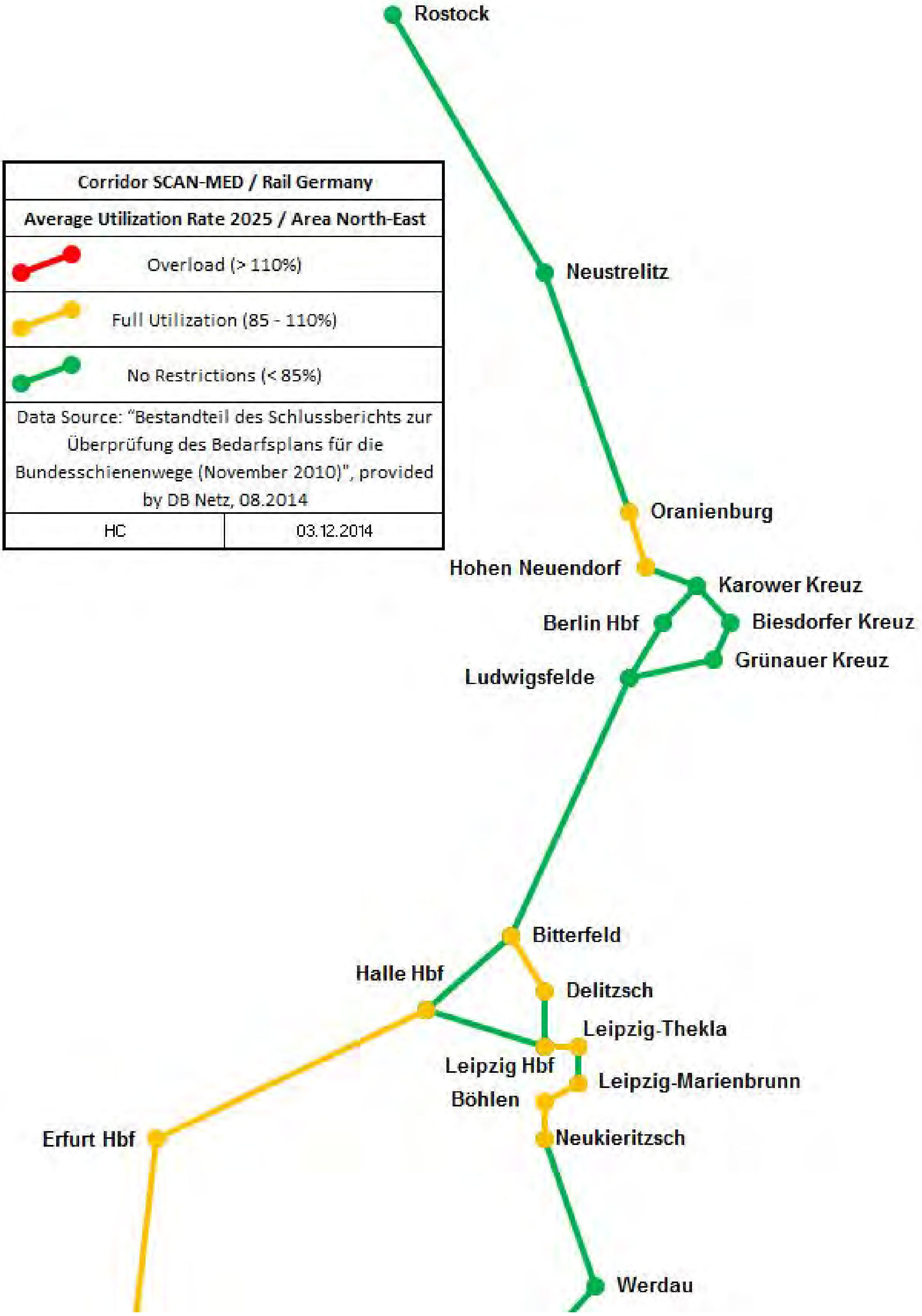


Figure 53: Average utilization rate 2025 of German ScanMed rail network, Area North-East (Figure: HaCon; Data Source: DB Netz)

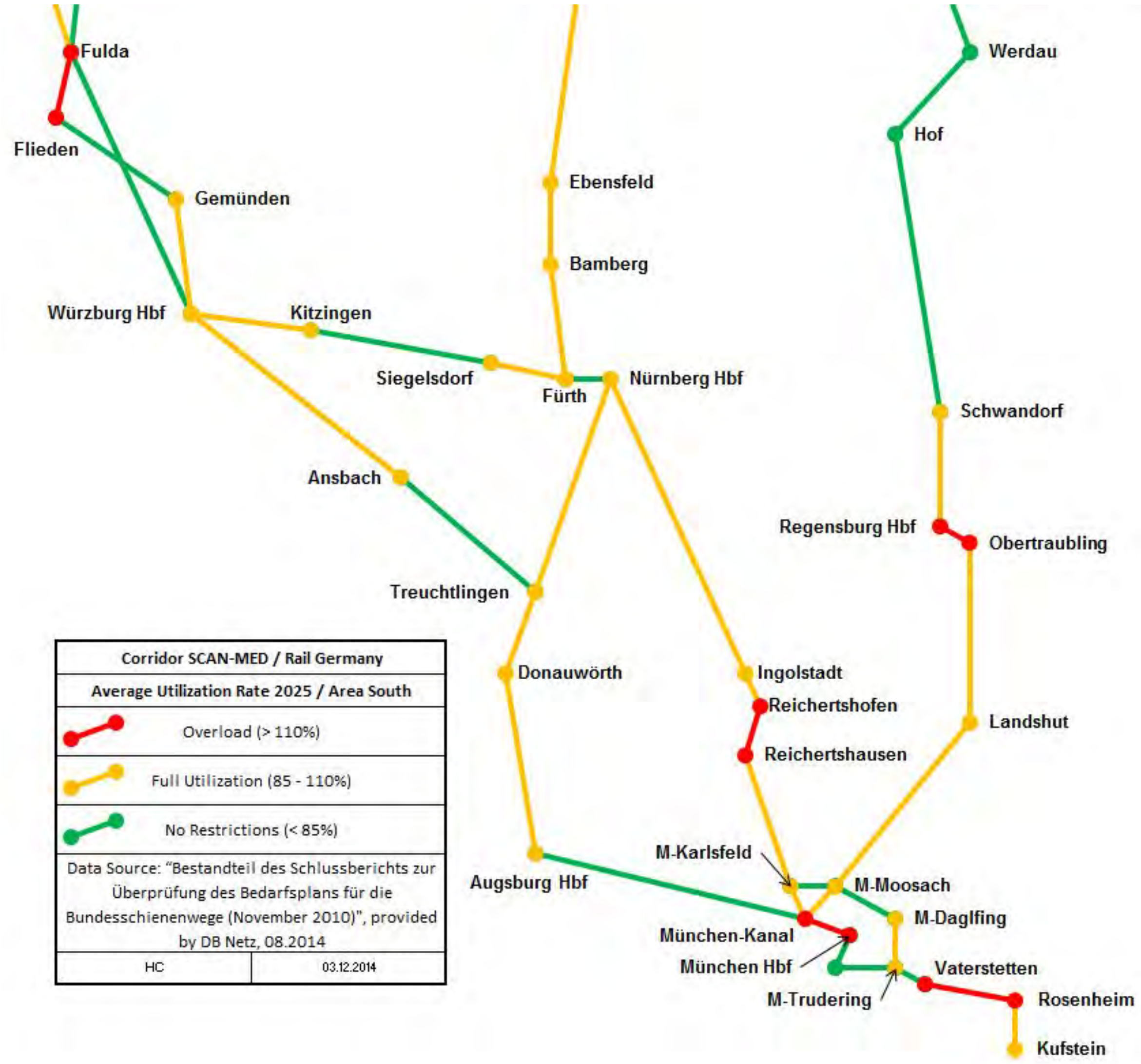


Figure 54: Average utilization rate 2025 of German ScanMed rail network, Area South (Figure: HaCon; Data Source: DB Netz)

In these figures, the average utilization rate in the year 2025 is shown based on the forecast for the rail traffic growth by 2025. It can be seen that primarily the western section of the network corridor is more or less completely utilised (rate 85 – 110%, marked in yellow) and some parts mainly in the north, in the area between Hamburg and Hannover and the south around München, are overloaded (rate >110%, marked in red). Note: The sections shown in the three diagrams above have been defined within the TENtec system, the utilization rates have been provided by DB Netz. These figures also contain some projects like "Y-Trasse" Lauenbrück/Langwedel – Visselhövede – Isernhagen (Figure 52), which are not expected to be finalized by 2025 from today´s point of view. The "Y-Trasse" is now (since 2013) in discussion again and will be compared with new variants of new or upgraded lines in the area Hamburg/Bremen/Hannover. It is expected that none of these variants will go into operation before 2030. Additionally there are some other measures in discussion, such as the improvement of the privately owned infrastructure (EVB) between Bremerhaven, Bremervörde and Rotenburg/Wümme, which could be used as a bypass for the node Bremen Hbf together with an upgraded DB-Line Rotenburg/Wümme – Verden/Aller.[118] This line becomes reasonable, because in the node Bremen Hbf passenger and freight trains compete for attractive train paths. Additionally an upgrade (electrification and upgrade as double track line) of the East-West-Line Langwedel – Uelzen could be an alternative for freight trains from the Bremen/Bremerhaven region to South-East-Germany and other directions (e.g. Czech Republic) to reduce the utilization rate in the Hannover area (overload).

The German State of Lower Saxony (Bundesland Niedersachsen) points out the particular importance of the rail node Hannover[119], which is touched by three TEN-T Corridors: Scandinavian-Mediterranean, North Sea – Baltic and Orient/East-Med. The rail node Hannover is already affected by increased freight and passenger traffic. In addition, the node Hannover has a special meaning in the port "Hinterland" traffic. Outstanding infrastructure decisions will have very significant impact on the node Hannover, e.g. the "Y-Line" Hamburg/Bremen – Hannover, which ends near Hannover and would cause an additional utilization rate of the node. In addition also on the east-west axis substantial infrastructure decisions (HSL Minden – Seelze) are expected, which may bring additional traffic for the node Hannover. The freight bypass Hannover (Wunstorf – Seelze – Hannover-Linden – Hannover-Waldhausen – Lehrte, "Güterum-gehungsbahn") is used today by north-south- and east-west-traffic and therefore overloaded. An upgrading of the east-west-line Löhne – Hameln – Elze (south of Hannover) could be an alternative to reduce the utilization rates in the node Hannover as well as other traffic relocations in Northern Germany (see above). Due to the complexity of the requests to the node Hannover, separate investigations are required.

The utilization rates displayed in Figure 52, Figure 53 and Figure 54 provided by DB Netz (Source: "Bestandteil des Schlussberichts zur Überprüfung des Bedarfsplans für die Bundesschienenwege (November 2010)" can lead to discussions on particular sections. E.g. the Danish Ministry of Transport[120] "expects the line Hamburg-Lübeck-Puttgarden to be overloaded in 2025 after the opening of the Femern Belt Connection in 2021" already, while the DB Netz evaluation shows a utilisation rate below 85% ("no restrictions") for theses sections in 2025 and expects capacity constrains only by 2030.

[118] Feedback provided by Free Hanseatic City of Bremen, e-mail 16.10.2014.
[119] Feedback provided by Ministry of Transport (Niedersachsen/Germany), e-mail N. Seggebrock, 27.11.2014.
[120] Feedback provided by Danish Ministry of Transport on draft report, e-mail 30.09.2014.

Figure 55: Forecast capacities for German road sections in 2025 based on roadnetwork 2015 (BMVI 2014)

Figure 55 illustrates the forecasted capacities for German road sections in 2025 on the road network of 2015. It includes the existing network infrastructure and measures to be finished or under construction in 2015 according the investment framework programme IRP 2011 – 2015. It depicts the sections with expected “frequent” (dark blue, risk of congestion >300 h/a) and “occasional” (light blue, risk of congestion >100 h/a) congested motorways. Similar to the rail network capacity analysis above, it becomes obvious that several sections of the ScanMed Corridor road network will be frequently and/or occasionally congested in 2025, especially the areas of Hamburg, Hannover, Würzburg, Nürnberg and München as well as some minor parts of the motorway network around Berlin.

Austria

Remark: Capacity utilization: Red >100%, Yellow >80 – 100%, Green <80%

Figure 56: Forecast capacities 2025 based on rail network 2009 (ÖBB 2011)

Figure 56 provided by ÖBB Infrastruktur AG (2011) depicts the traffic forecast for 2025 assigned to the western parts of the Austrian rail network infrastructure in 2009. It becomes evident that the relevant rail market sections of the ScanMed Corridor are expected to be utilized above 80 % by the rail traffic load in 2025 between Wörgl and Baumkirchen and between Innsbruck and the Brenner, if not expanded. In contrast, Figure 57 illustrates the same traffic assigned to the so-called “infrastructural target network” in 2025. The positive contributions for the expanded rail network capacity due to the completion and operation of the Brenner Base Tunnel in 2026 are illustrated in this figure, whereby previously noted market sections will have sufficient capacity.

Remark: Capacity utilisation: Red >100%, Yellow >80 – 100%, Green <80%

Figure 57: Forecast capacities 2025 based on rail network 2025 (ÖBB 2011)

For the Italian rail sections, RFI (2014) delivered the following information: For the section Ponte Gardena - Verona, capacity utilisation between 80 and 100% is expected in future, equally for some sections belonging to the link Firenze - Livorno/La Spezia.

The central section of Malta's TEN-T core road network, which provides intermodal connection between the country's airport and its capital city and core port of Valletta, is the busiest section of TEN-T of Malta. It currently accommodates an Average Annual Daily Traffic volume of more than 100,000 vehicles and is currently operating at the capacity limit during the peak periods. In 2026, travel times are forecasted to increase significantly throughout the day and average vehicle speeds on this section will reduce to 15 km/h during peak hours if there is no infrastructure upgrade. There are plans to carry out a major upgrade of this section of TEN-T road between 2015 and 2020.

Figure 58: Capacity utilisation 2026 based on present road network if nothing is improved (Transport Malta 2014)

4.2.8 Overall Conclusion of the MTMS

The MTMS pursues the goal to provide a “big picture” of the present and future situation of the transport market for the ScanMed Corridor. According to this objective, a comprehensive overview including all relevant transport modes and infrastructure was presented. The basis for this general perspective is an extensive review of numerous studies, reports and forecasts investigating market sections and nodes of the corridor stemming from the existing databases of our team and additional data provided by infrastructure managers, Member States' Ministries and other stakeholders with the help of the MS involved. This results in a comprehensive amount of data, subsequently gathered, edited and included into a large scale view on the traffic development of the ScanMed Corridor.

The comparison of the expected traffic volumes and network loads in 2030, based on the description to draw a comparable picture (c.f. chapter 5.2.2) along the corridor, facilitates the identification of core network areas with highest importance for the transport market.

Our overview for capacity constraints and capacity utilization provides some valuable indication that, even after the construction of new infrastructure (Fehmarn Belt Fixed Link, Brenner Base Tunnel and their access lines), there remain some bottlenecks along the ScanMed Corridor that may impede future growth of passenger and freight transport. These can be found most notably in Germany[121] (Fehmarn - Lübeck – Hamburg, Bremen/Hamburg - Hannover, Würzburg - Nürnberg, München area) and Denmark (area of København) as well as in Sweden (in particular the Malmö region, along the southern mainline between Lund and Hässleholm and the Göteborg area), which turned out to be an essential centre for the future development of the corridor.

With respect to publicly unavailable information concerning future traffic and infrastructural development, the picture of capacity constraints in Italy is not provided.[122]

A considerable share of the total traffic volumes between Scandinavia and Central Europe are handled by shipping. Due to the limited scope of this study, these maritime connections should be analysed more detailed, e.g. against the background of MoS.

4.3 Identification of Critical Issues on the Corridor (KombiConsult)

In the Preparatory Meeting, with the European Commission on 18th March 2014 the Contractors were asked to provide not only an outline of the Corridor, the detailed assignment of rail and road infrastructure to Corridor sections and nodes as well as the TENtec analysis, but also an initial technical analysis and estimation of “main critical issues” in addition to the tasks assigned to them. Since the EU-Regulations do not define “critical issues” but “missing links” and “bottlenecks”, the Contractors have provided a preliminary assessment based on their experience and analysis of studies which were already gathered. Basically, there are physical bottlenecks, technical parameters lower than the technical standards set by the objectives of the TEN-T and CEF - Regulations to be achieved by 2030, interoperability issues, and the slower implementation of planned projects due to national prioritisation, budget limitations and required public consultation in order to acquire building permits.

Since the item “critical issue” was maintained to be added to the study and the work plan without a precise definition we have used the following categories (see Table 47) to group the sections or nodes – and finally the resulting measures and projects. If a certain section or node is characterized by at least one of these items, it is deemed to be a “critical issue” for the Corridor.

[121] According to BMVI by e-mail of 17.10.2014 the final identification of bottlenecks are subject to the Federal Infrastructure Plan investigations, which are about to be completed in 2015.
[122] Conclusions on Malta were deleted after feedback from Transport Malta, 31.10.2014.

Category	Definition
Pre-identified	Pre-identified section according to Regulation (EU) 1316/2013, Annex I Part 1
Capacity /Bottleneck	Network capacity issues: e.g. road congestion in urban nodes, rail capacity; Physical, technical or functional barrier which leads to a system break
Missing link	Physically missing links e.g. in highway system and rail high speed lines
Cross-border	Issues located on cross-border sections according TEN-T Regulation (EU) 1315 Article 3 and Annex II, part 1
Interoperability / Compliance with TEN-T standards	Regulatory, technical and operational conditions, of the infrastructure in a transport mode to allow safe and uninterrupted traffic flows for that infrastructure or mode; Technical compatibility of infrastructure/vehicles and systems e.g. missing ERTMS, ITS deployment; practically the measures resulting from the "compliance analysis"
Multimodality	Issues facilitating multimodal transport services for freight and passenger transport e.g. terminal capacity issues (expansion/upgrade/construction),
Last mile connection	Issues regarding last mile connection: e.g. lack of rail connections to airports, ports
Externalities / Sustainability / Innovation	Issues regarding negative transport externalities e.g. noise, pollution, accidents; Issues where the transport infrastructure is potentially affected by the climate change, e.g. floods, increase of sea level, sea ice as well as innovation issues / pilot projects e.g. LNG, ICT, tracking and tracing
Urban areas	Actions implementing/facilitating TEN-T transport infrastructure located in "Urban nodes of the Core Network" according to Regulation (EU) 1315, Annex II, part 1

Table 47: Pre-identified sections and categories of "critical issues"

This categorisation has been applied to the projects listed in Annex 3 and the result has been marked in the respective column "critical issue".

Results concerning critical issues

Following the "Corridor Approach", the findings from the characterisation of "critical issues" have been grouped by mode rather than by Member State following the geographic sequence from north to south in the following sections.

In order to prevent ourselves from becoming deterred by the quantity and extent of "critical issues", we have also used the following sections to highlight the progress already realized on our corridor and "good practices" that have been achieved on the ScanMed Corridor or its sections in recent years in the same chapter. In this way of presentation, good practices are also mentioned as encouragement to continue in that direction, transfer them to other parts of the corridor and beyond, and to seek their integration into a consistent corridor system.

4.3.1 Rail (HaCon)

In terms of **good practises,** the following can be highlighted:

- The Great Belt Fixed Link bridge/tunnel construction (opened in 1998);
- Completion and operational start of the Øresund Fixed Link (in 2000) as a combined two track rail and four lane road bridge and tunnel across the Øresund Strait between Sweden and Denmark;
- Realisation of a maximum permitted train length of 835 m for freight trains between Maschen and Padborg;
- Mixed high-speed lines and dedicated passenger HSL in parallel along the North-South corridor rail line in Germany;
- The upgraded rail way line (Ausbaustrecke [ABS]) Berlin – Leipzig, the Berlin node (5 bl € investments in rail infrastructure) and the newly built line (Neubaustrecke [NBS]) Nürnberg – Ingolstadt (- München);
- Construction and opening of the "Unterinntal" rail line with ERTMS Level 2 providing a major part of the northern access to the envisaged Brenner Base Tunnel in Austria;
- Realisation of a loading profile (“P400”) allowing the transport of standard mega trailers on modern pocket wagons along almost all parts of the corridor north of Verona/Bologna and thereby supporting increases to the transport of these types of units in continental intermodal transport;
- Milano – Roma – Napoli high speed line which became fully operational with the completion of the section between Bologna and Firenze at the end of 2009.

In terms of **critical issues** the following can be summarised:

Finland is somewhat isolated from the rest of the ScanMed rail infrastructure and is therefore exempted from complying with the European rail gauge standard. Concerning this parameter, the Finnish rail network is similar to the Russian, but the respective border crossing to Russia was not in the focus of this study. The comprehensive view to the future of the Finnish railway system within Europe takes into account the ScanMed Corridor for the East-West traffic and the North Sea-Baltic Corridor for the north-south traffic, both interrelated at the node of Helsinki. Consequently, some major rail projects are located in that urban node to improve the network capacity, such as: Ring rail to Helsinki airport (under construction), improvements near Helsinki end station (new track to Pasila, improvements at Helsinki yard, city rail loop) and separation of commuter and long distance trains to their own tracks (urban rail to Espoo) as well as the port connection. These are complemented by a measure in the freight terminal Kouvola. Results of the study review, compliance analysis and multimodal transport market study were discussed with Finnish stakeholders, which confirmed the above findings and identified the following measures to mitigate additional critical issues:

- Repairs to areas with ground frost damage and soft soils along main railway lines;

- A new shortcut railway Espoo – Lohja - Salo in Helsinki - Turku section;
- Investigation of the Helsinki – Turku - Tampere triangle;
- Improvements to service levels along the railway section Kouvola – Kotka/Hamina: Several improvement measures for the railway yards as well as different railway and road sections (combined rail and road project);
- Implementation of ERMTS.

The technical parameters are basically fulfilled by the **Swedish** rail network, despite the required freight train length of 740 m and the implementation of ERTMS, as parts of ERTMS Corridor B: Stockholm – Malmö, Hallsberg – Katrineholm, Hallsberg – Mjölby. The main concerns result from current and even more ambitious future passenger and freight volumes to be transported by rail. Norwegian, Swedish, and Danish regions have created the vision of the "8 million city" linking major towns – even across borders - by high speed trains with reasonable travel times. In order to achieve this, the network lines need to be upgraded or newly built, both in the designated urban nodes of Stockholm, Göteborg and Malmö, as well as the relevant sections in between. Results of the study review, compliance analysis and multimodal transport market study were discussed with Swedish stakeholders, which confirmed the above findings and identified the following measures to mitigate the following additional critical issues.

The start and efficient completion of Swedish infrastructure projects, which are about to provide additional capacity and/or reduce travel time for passengers and freight or allow a more efficient rail operation, in particular:

- Stockholm city line (renovation of rail line Stockholm Central - Stockholm-Södra);
- Citybanan (commuter train tunnel under central Stockholm with two new stations);
- Ostlänken (new double-track line for High Speed Trains on section Linköping – Järna),
- Hallsberg - Åsbro - Dunsjö - Degerön (-Mjölby), upgrade to double track and grade separation on respective sections;
- Malmö – Jönköping: High Speed Link study;
- Norwegian/Swedish border – Göteborg: study
- Western Sweden/Göteborg (different improvement measures including a city tunnel "West link project");
- Göteborg: Central station (replacement of signal box), Olskroken (grade separation);
- Western Sweden: Varberg – Hamra (new double track), Hallandsås project (double track railway tunnel), Western Main Line Ängelholm –Maria station, Åstorp – Teckomotorp - Arlöv (expansion and new stations);
- Southern Main Line Arlöv – Lund (made of two sections with improvement works);

- Skåne/Småland regional railway stations renewal ("Pågatåg" network); Skåne region: different capacity enhancement measures;
- Fosieby – Trelleborg: Different capacity enhancement measures including construction of a double track line.

The technical parameters (axle load, operating speed for freight trains) are basically fulfilled by the **Danish** rail network, with the exception of some areas which do not fulfill the required full electrification, implementation of ERTMS and at least 740 m freight train length on all sections today (this will be changed in the next years with coming projects, see below).. Interoperability on border crossing sections Malmö/København and Padborg/Hamburg is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules. The main concerns result from current and even more ambitious passenger and freight volumes that shall be transported by rail on the corridor. In order to do that the network lines need to be upgraded or newly built, both in the urban node København and the relevant lines sections connecting it with Sweden (Malmö via the Öresund fixed link) and Germany via the Great Belt and the Fehmarn Belt (København – Ringsted – Rødby – Fehmarn Belt Fixed Link - Fehmarn), involving the Fixed Link as a combined rail and road tunnel. Results of the study review, compliance analysis and multimodal transport market study were discussed with Danish stakeholders, which confirmed the above findings and identified the following measures to mitigate the critical issues in addition.
Start and efficient completion of Danish infrastructure projects, which are about to provide additional capacity and/or reduce travel time for passengers and freight or allow a more efficient rail operation, in particular:

- ERTMS Level 2, Baseline 3. A total replacement of all signalling systems on the entire conventional railway network in Denmark with ERTMS by the end 2021 and all signalling systems on the København S-line with CBTC by 2018.
- Ny Ellebjerg Station (København): Increase the capacity of København central station through development of Ny Ellebjerg station as the new nerve centre for train connections between Øresund and København - Ringsted;
- Ringsted - Fehmarn: Upgrade and renew the 115 km long railway line to a new, future-proof line. The project includes: Electrification Ringsted – Rødby, Construction of new double track Vordingborg - Rødby (except Storstrøm Bridge), Upgrading of top speed to 200 km/h, Passing tracks for 1.000 meter long freight trains and passenger train station at Holeby;
- New Storstrøm Bridge (primarily rail, but includes also road and bicycle lanes): Located on the Ringsted-Fehmarn railway line, the project removes a major bottleneck in the TEN-T-network;
- New rail line between København and Ringsted: New high speed railway line between København and Ringsted via Køge (up to 250 km/h for passenger trains). Will result in a better timetable with more departures, shorter travel times and fewer delays. Capacity will also be increased for freight trains.

- Ringsted-Odense speed increase: Speed increase Ringsted-Odense. It is the Danish Government's ambition to reduce the travel time between the larger Danish cities, including between København and Odense, to one hour. Infrastructure investments are therefore required in order to increase train speed between Ringsted and Odense. This implies upgrades in Ringsted, Sorø, Slagelse, and at the Great Belt Bridge etc. [pending political decision on preferred technical solution as per 10/2014]
- New railway line on Western Funen Kauslunde – Odense: about 35 km, 4 km shorter than the present line, thus saving travel time for passenger and freight trains.
- Double track Vamdrup and Vojens: Construction of double track in Southern Jutland in order to increase capacity and secure the current freight connection between Scandinavia and Germany.
- Reach Compliance by increasing freight train length to min. 740 m: Improve technical parameter to achieve the objective set for 2030. To be clarified, if part of a project or not.
- Capacity increase on the Øresund railway line to eliminate potential future bottleneck. Establishment of a waiting track OR directional traffic near Copenhagen Airport (pending political decision). *"EIA has been finalized. Funding has not yet been allocated to the project."*[123]
- Full attention on the completion of the Fehmarn Belt Fixed Link for road and rail by mitigating the controlled, but nevertheless, inherent risk elements such as financing, environmental assessment, involvement of civil society by 2021;

Despite the high technical standard of the **German** rail network, some required parameters are not met along entire sections of the ScanMed in that country, e.g. electrification, operating speed, ERTMS implementation. Interoperability on border crossing sections Padborg/Hamburg is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules. The main concerns result from current and even more ambitious passenger and freight volumes that shall be transported by rail on the corridor. In order to do that the network lines need to be upgraded or newly built, both in the urban nodes and the relevant lines sections connecting the network with Denmark and Austria. Denmark is reached on two ways: via Jutland and the Fehmarn Belt (Hamburg – Lübeck – Fehmarn – Fehmarn Belt Fixed Link - København), involving the Fixed Link as a combined rail and road tunnel. Austria is reached at the Kufstein border station. Results of the study review, compliance analysis and multimodal transport market study were discussed with German stakeholders, which confirmed the above findings and identified the following measures to mitigate the critical issues in addition.

[123] Feedback provided by Ministry of Transport, Denmark, e-mail, Th. Rousing-Schmidt, 28.11.2014.

Start and efficient completion of German infrastructure projects, which are about to provide additional capacity and/or reduce travel time for passengers and freight or allow a more efficient rail operation, in particular:

- The Fehmarn Belt Fixed Link will be in operation by the end of 2021, as the implementation for the southern access will be in two steps - electrification until 2021 and upgrading to double track until “seven years after the opening of the tunnel”, thus 2028 according to the current timing. Associated with that, a decision on how to supply sufficient capacity on the Fehmarnsund crossing (isle of Fehmarn - German main land) has to be made.
- Timely completion of the studies and works on the southern connection to/from the Fehmarn Belt Fixed Link in Germany ("Hinterlandanbindung FBQ”); The Danish authorities are of the opinion that already in 2025 (not only in 2030) the southern access to the Fehmarn Belt Fixed Link will be overloaded while DB Netz is expecting an utilization of the respective rail line below 85% (see Chapter 4.2.7). The small difference should be jointly harmonized in the detailed planning process for that line.
- Hamburg: Multi-rails extension between Hasselbrook and Bargteheide to increase the capacity of Hamburg central station and remove bottleneck on section Lübeck - Hamburg;
- One of the measures related to the previous is also the Fehmarnsund bridge. It is a combined rail and road bridge opened in 1963 with 1 rail track and 2 road lanes which are presently used by 40 trains and about 20.000 vehicles per day. The substantial increase in traffic and the low remaining lifetime of the construction require action by the owners. A joint decision of the Federal BMVI and the Land Schleswig Holstein is announced by end of 2014.[124] It is needed to define if the Fehmarnsund bridge shall be renovated or replaced by a new “combined” bridge or by separate bridges and to identify who has to pay. Since the current bridge is relevant for road and rail the issue is also mentioned in “roads” chapter.Interoperability constraints resulting from different electrification standards (15 kV 16 2/3 Hz in Sweden, Germany and Austria, 25 kV 50 Hz in Denmark and 3 kV DC in Italy on the existing lines used for freight transport) and still a few non-electrified sections in Denmark and Germany (e.g. Lübeck – Puttgarden), requiring a change of locomotives and Diesel traction;
- Capacity constraints on the rail network on the lines (Bremerhaven-) Bremen/Hamburg – Hannover as well as Fulda – Nürnberg, Ingolstadt – München, node München, München – Kufstein; even if the foreseen measures of the BVWP 2015 (German “Bundesverkehrswegeplan”) for high priority improvements (“Vordringlicher Bedarf BVWP”) of the railway network are realised, there will remain bottlenecks in the railway network regarding the transport volume forecasted for 2025 on the ScanMed Corridor in Germany (see Chapter 5.2.7 for details). These figures also contain some projects like

[124] DB Netz presentation on Fehmarbelt Days 2014.

"Y-Trasse" Lauenbrück/Langwedel – Visselhövede – Isernhagen which will not be finalized until 2025 from today´s point of view. The "Y-Trasse" is now (since 2013) in discussion again and will be compared with new variants of new or upgraded lines in the area Hamburg/Bremen/Hannover. It is expected that none of these variants will go into operation before 2030. Additionally, there are some other measures in discussion like improvement of the privately owned infrastructure (EVB) between Bremerhaven, Bremervörde and Rotenburg/Wümme, which could be used as a bypass for the node Bremen together with an upgraded DB-Line Rotenburg/Wümme – Verden/Aller.[125] This line becomes reasonable, because in the node Bremen Hbf passenger and freight trains compete for attractive train paths. Additionally an upgrade (electrification and upgrade as double track line) of the East-West-Line Langwedel – Uelzen could be an alternative for freight trains from the Bremen(/Bremerhaven) region to South-East-Germany and other directions (e.g. Czech Republic) to reduce the utilization rate in the Hannover area (overload), where the freight bypass line is used simultaneously for North-South- and East-West-Freight-Traffic.

- Abandoning the planned new passenger line ("Y-Trasse") linking Bremen, Hamburg and Hannover to relieve the capacity constraints after an increase in the planned costs has led to some agreed studies searching for alternative routings such as the ABS/NBS Hamburg/Bremen – Hannover which are part of the present ScanMed corridor definition or even the link to the "Ost-Korridor". The "Ost-Korridor" is concept to by-passing the rail node of Hannover and the overloaded lines Hannover – Fulda – Würzburg. Seaport hinterland traffic to/from northern ports would then use the existing rail line via Uelzen – Salzwedel - Stendal – Magdeburg – Halle – Leipzig/Hof – Regensburg (in Uelzen and Halle connection with ScanMed's current alignment is reached); Construction works to upgrade the connection from Uelzen to Stendal into a double track line have already begun and will continue in the coming years.[126]
- ABS Berlin - Rostock: Expansion of rail routes from the port of Rostock to the steel plant Eisenhüttenstadt to an axle load of 25 tons (mainly the missing section Rostock Seaport -> Kavelstorf or the routes from Berlin via Frankfurt/O to Eisenhüttenstadt)"
- Berlin – Nürnberg covered by "Verkehrsprojekte Deutsche Einheit – VDE", in particular: VDE 8.2 Erfurt - Halle/Leipzig: New line/Upgrade; VDE 8.1 Nürnberg - Erfurt: New line/Upgrade
- ABS/NBS Nürnberg - Ingolstadt - München: New line/upgrade Ingolstadt - München to be finished in 2015
- Competition for valuable market attractive train path between far distance high speed, regional passenger and freight trains on mixed lines in particular in Germany around the nodes of Hamburg, Bremen, Hannover, Nürnberg and

[125] Feedback provided by Free Hanseatic City of Bremen, e-mail 16.10.2014.
[126] Requested clarification e-mail of Port of Hamburg, 22.10.2014

München at particular times of the day resulting in respective measures in nodes of the German ScanMed corridor: Node Halle, ESTW (2. Stage): Upgrade; Node Leipzig; Links to VDE 8.2/8.3: Upgrade/New lines; Node Erfurt; Links to VDE 8.1/8.2: Upgrade/New lines;

- Node Berlin: Detailed planning/Extension and upgrading of rail infrastructure including link to BER airport
- Node München (without "Walpertskirchener Spange"): Upgrade
- ABS/NBS München - Rosenheim Grenze (Kufstein): Upgrade/New line
- Reach Compliance by improve technical parameter to achieve the objective set for 2030 (to be clarified, if part of a project or not).
    - Markkleeberg – Gaschwitz - Großdeuben by increasing operating speed for freight to 100 km/h.
    - Altenburg - Paditz
    - Hof – Regensburg Hbf by electrification of about 180 km of track.
- Regional projects in the Capital Region Berlin-Brandenburg, identified by the region:
    - Improvement of the rail connections to the terminals / freight villages (if located in the core node) and intermodal freight capacities
    - Improvement interoperability by creating new management structures and introduction of innovative technologies: (e.g. new freight train concepts, new transport technologies and communication structures for freight centres)
    - Improvement of the last mile, development of new concepts regarding greening transport in the Capital Region
- Study on additional railway links to Hamburg Airport: Study on the creation of a railway link from the northern catchment area of Hamburg Airport. Technical feasibility study as well as cost-benefit analysis (Rail and Airport project)

The following issues are to be coordinated at the **German / Austrian border** crossing project:

- Timely completion of studies and works on the remaining parts of the northern access lines to the Brenner Base Tunnel in the area of Kundl/Radfeld – Kufstein – Rosenheim – München, where a joint project has been agreed upon between Germany and Austria and is currently carried out by DB Netz and ÖBB respectively;
- DE/AT border – Schaftenau: Capacity improvement for border crossing rail traffic: Unterinntalbahn - expansion second step; The existing double track line will be expanded by construction of a new double track line on the length of about 8 km to reduce the travel time and to expand the capacity (expected finalisation after 2030);

On the **Austrian** section of the ScanMed corridor, the technical parameters are basically achieved, with the exception of operating speed, which is below the standard on the present Brenner mountain line. Due to the slope, the train length (in connection with the weight) is also limited. However, Austria is made considerable progress with building the new Unterinntal railway line for High speed passenger and freight trains. Interoperability on two border crossings (Kufstein, Brenner/Brennero) is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules, which had to be modified in conjunction with the implementation of ETCS level 2 between Kufstein and Brenner. The main concerns are resulting from current and even more ambitious passenger and freight volumes that shall be transported by rail on the corridor. In order to do that the network lines have been upgraded or newly built. Results of the study review, compliance analysis and multimodal transport market study were discussed with Austrian stakeholders, which confirmed the above findings and identified the following measures to mitigate the critical issues in addition.

Start and efficient completion of Austrian infrastructure projects, which are about to provide additional capacity and/or reduce travel time for passengers and freight or allow a more efficient rail operation, in particular:

- Schaftenau – Kundl/Radfeld as part of the Unterinntalbahn - expansion second step: The existing double-track rail line will be expanded by construction of a new double-track high-speed line on a length of 19 km to reduce travel time and to expand the capacity (expected finalisation after 2030);
- Tyrolean parts of the Scan Med Corridor: "Investment network 2013-2018: Rehabilitation point switches, safeguarding of level crossings, noise protection, Rehabilitation railway stations, Park & Ride sites";
- Brixlegg and Schwaz, respectively, reconstruction railway station;
- München - Verona, in particular Brenner/Brennero station: Improve interoperability by short term measures: Short term infrastructural, operational and regulatory measures to improve the quality of the service and the efficiency until the base tunnel is in operation;
- Full attention on the completion of the Brenner Base Tunnel mitigating the inherent risk elements such as financing, environmental assessment, involvement of civil society [see map and project description];

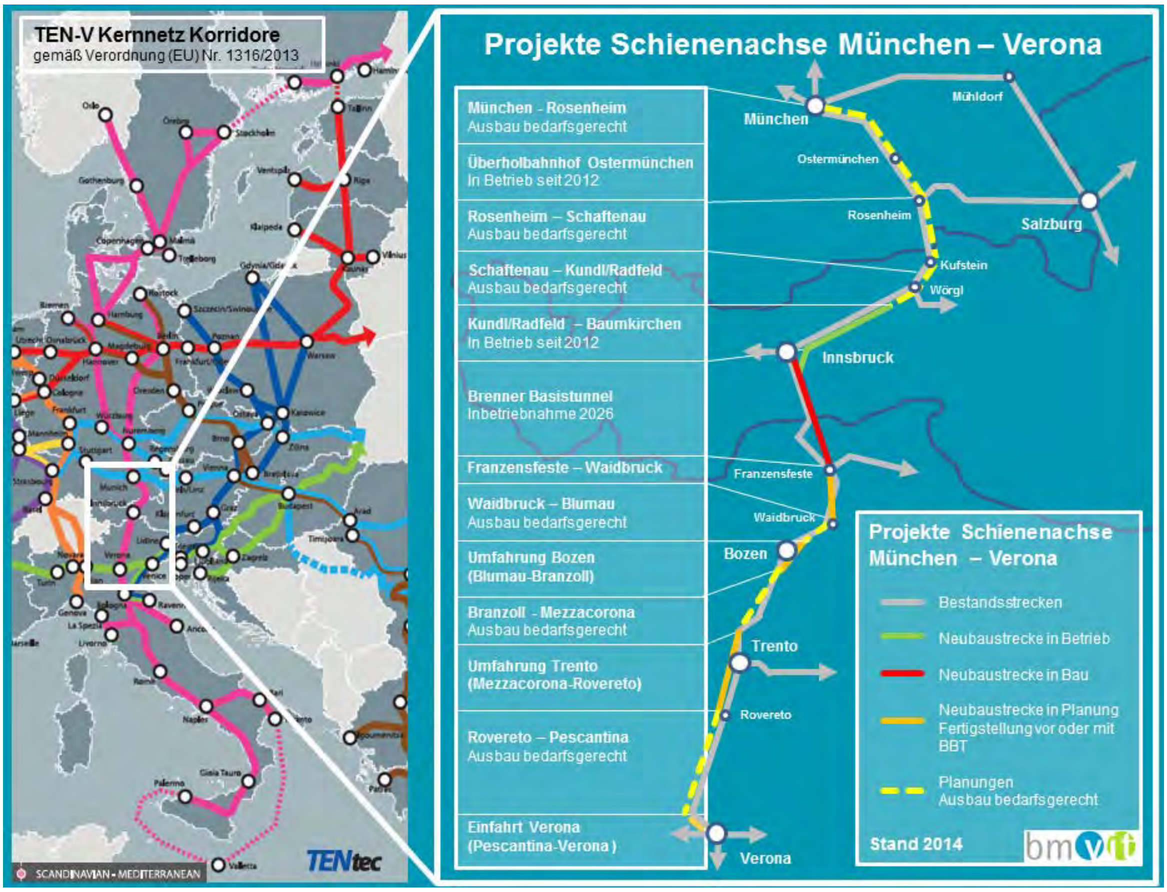


Figure 59: Projects München – Verona (BMVIT - Austrian Ministry for Transport, Innovation and Technology, 2014)

On the **Italian** sections of the ScanMed corridor multiple technical parameters are not achieved, with the exception of 1435 mm gauge and electrification, although provided by two different power supply systems (3kV on the conventional and 25 kV on the new high speed lines). The following could be highlighted: train length below 740 m, on the Brenner line until Firenze/Ancona (600 m), and on many sections in Italy south of Firenze (400/600 m); axle loads below the standard parameter (< 22.5 t), on 18% of the sections in Italy; loading profile for the transport of semi-trailers ("P400") which is not achieved on the current lines in Italy south of Bologna. Interoperability on the Brenner border crossing (Brenner/Brennero) is currently achieved by multi-system locomotives of the railway undertakings and respective transition rules, which will have to be modified in conjunction with the implementation of ETCS level 2 between Kufstein and Brenner. The main concerns result from current and even more ambitious passenger and freight volumes that shall be transported by rail on the corridor. In order to do that the network lines have been upgraded or newly built. Results of the study review, compliance analysis and multimodal transport market study were discussed with Italian stakeholders, which confirmed the above findings and identified the following measures to mitigate the critical issues in addition.

Start and efficient completion of Italian infrastructure projects, which are about to provide additional capacity and/or reduce travel time for passengers and freight or allow a more efficient rail operation, in nodes and line sections, in particular:

- Timely completion of the studies and works on the remaining parts of the southern access lines to the Brenner Base Tunnel on the line of Fortezza – Verona;
- Brennero - Verona: Upgrade regarding capacity and increasing speed;
- Brennero – Verona - Bologna: Upgrade to train length 750m[127];
- Verona HS node: connection from north (2nd phase): The project consists in the first phase of the connection between the Verona Porta Nuova station and the Verona - Padova HS line (double track along the access line);
- Verona: Technological and infrastructural upgrading of the Verona Porta Nuova Station;
- Bolzano: New double tracks for south accessibility to Bolzano station - Virgolo tunnel;
- Napoli – Bari HSL: Doubling Bovino-Cervaro line (Phase 1);
- Napoli – Bari HSL: Completamento itinerario Napoli - Foggia - Bari: Construction of Napoli-Cancello and the completion of doubling of lines Cancello-Vitulano and Apice-Bovino;
- Messina - Catania - Palermo: several measures:
  - Double track Giampilieri - Fiumefreddo;
  - Upgrading of gauge,
  - Upgrade to train length 750 m,
  - ERTM System Catania-Palermo;
- Palermo – Catania:
  - construction of double track on the Catania Bicocca-Catenanuova-Raddusa stretch and the enhancement allowing higher speed of Roccapalumba-Marianopoli,
  - construction of the new line between Palermo and Catania (stretch Raddusa - Castelbuono),
  - construction of the new line between Palermo and Catania (double track between Fiumetorto and Castelbuono);
- Napoli - Reggio Calabria: Upgrading of railway line;
- Technical and infrastructural upgrade of the following nodes: Bari, Palermo (second track of the Palermo bypass and the provision of Computer Based Railway Control System in order to develop urban and suburban railway services and enhance the connection with Punta Raisi airport), Firenze (Multistation Computer Based Railway Control System[128] Upgrading on the node and signalling on the Firenze-Empoli stretch; Railway by-pass and Belfiore HS station) Falconara/Ancona, Napoli, Foggia,

[127] The RFI source indicate “750 m module” which we have left as a value since it is above the minimum requirement of “740 m.

[128] The technical description provided does not allow to evaluate what the system is about and maybe part of ERTMS implementation, or not.

- Firenze - Roma (linea DD): Upgrade of Firenze-Roma HS section: The Firenze-Roma HS section will be upgraded and equipped with ERTMS; a new interconnection is to be built in Borghetto;
- Node Roma:
  - Technological upgrade of the Roma node: The technological upgrading of the Roma node interests the stations of Tuscolana, Casilina, the freight connection and the distancing on the Tiburtina-Ostiense stretch,
  - Rome Ring north, first phase: The project consists in the realisation of the first phase of the northern stretch of the Rome railway ring;
- Roma - Napoli (via Formia): Technological upgrade of the Roma-Napoli: The measure will consist in technological upgrading of the Roma-Napoli connection (via Formia, conventional line);
- Roma - Napoli AV: Upgrade of traffic control system on Roma-Napoli HS line: The measure will provide an upgrade of the traffic control system and enhance ERTMS standard to 2.3.0d;
- Napoli - Salerno: Completion of TLC on the coast line;
- Bari - Foggia: Completion of FCCM and infrastructure;
- Salerno: Salerno railway station plan: The measure will consist in the definition and development of a new layout for the station infrastructure and equipment;
- Bari - Taranto: Second track on S.Andrea-Bitetto and technological equipment of Bari-Taranto line: The measure consists in the construction of the second track between S.Andrea and Bitetto and by the enhancement of technological equipment of Bari-Taranto line;
- Bologna - Ancona / Bari - Taranto: Technological upgrade, inter alia to train length 750m and P/C80 gauge;
- Bologna – Firenze and (Firenze) - Pisa - La Spezia: Upgrade to P/C80 gauge;
- Bologna - Firenze - Pisa - Livorno/La Spezia: Upgrade to train length 750m;
- Verona high-speed node: connection from north (2nd phase): The project consists in the second phase of the connection between the Verona Porta Nuova station and the Verona-Padova HS line, and the renewal of Verona Porta Vescovo station;
- Upgrading of Catania Node: Completing the Catania underground by-pass in order to develop urban and suburban railway services, including a double track line and three new urban stations;
- Roma node: Roma freight line: The measure envisages the development of a freight dedicated connection to the main north-south line bypassing the node, in order to allow a more effective management of rail freight traffic;
- Firenze - Roma - Napoli - (Gioia Tauro): Completion of upgrading to train length 750m Firenze - Roma - Napoli (- Gioia Tauro);
- Firenze - Roma - Napoli and Napoli - Paola: Gauge upgrade Firenze -Roma - Napoli - (Gioia Tauro);
- Bicocca - Augusta: Higher speed on Catania-Augusta;

- Most sections: Reach Compliance by increasing freight train length to min. 740 m: Improve technical parameter to achieve the objective set for 2030, for lines not included in other detailed projects;
- Firenze - Roma - Napoli - (Gioia Tauro): Reach Compliance by upgrading to min P/C 400 or P/C 80 like on connected lines: Improve technical parameter to achieve the objective set for 2030, for lines not included in other detailed projects;
- On various sections, which are to be identified by RFI in detail, the present non compliance with technical standards shall be mitigated:
  - Compliance to TSI in stations: The measure aims at improving service quality in stations with specific actions to improve accessibility, service quality and compliance to TSI,
  - Elimination of level crossings: The measure aims at improving safety on various lines in the core network through the elimination of existing level crossings,
  - Improving maximum axle weight to 22,5 tonne/axle: The project aims at improving the maximum axle weight on lines not included in other specific projects,
  - Deployment of ERTMS trackside equipment: Corridor ERTMS (phase 2) and preparation works,
  - Improving maximum speed on HS "antenna" lines: The project aims at improving the maximum speed allowed on lines feeding the HS network on ScanMed Corridor,
  - Increasing line speed: Implementation of the measure will allow reaching the compliance with standard of 100 km/h operating speed for freight.

In order to connect the RRT of the ScanMed corridor to international rail freight transport via Brenner/Brennero it is essential that their access and the aligned rail infrastructure provides for the loading profile P/C 400. The upgrading to that standard in Italy should therefore start from the North (Bologna/Firenze) to the South so that respective sections will become effective to the market stepwise.

If a focus on domestics transports and seaport hinterland service is agreed upon in Italy the enlargement of the loading gauge is less important since ISO containers can be transported on flat wagon already and the terminals are equipped for handling.

4.3.2 Road (Ramböll)

Like for the rail sector, there are some "**good practices**" to be noted for the Corridor's road network:

- The federal highways in Germany which form part of the corridor all have a minimum standard of 4 lanes. Large sections are already extended to 6 or even

8 lanes, e.g. minimum 6 lanes on about 50% of motorway A1, about 40% on A7 and about 99% on A9.[129]
- The completion and operational start of the Øresund Bridge as a combined two track rail and four lane road bridge and tunnel across the Øresund Strait between Sweden and Denmark.

However, also some **critical issues** regarding road transport in the corridor perspective have to be noted:

- Full attention on the completion of the Fehmarn Belt Fixed Link for road and rail by mitigating the inherent risk elements such as financing, environmental assessment, involvement of civil society.
- One of the measures related to the previous is also the Fehmarnsund bridge. It is needed to define if the Fehmarnsund bridge shall be renovated or replaced by a new "combined" bridge or by separate bridges and to identify who has to pay. Since the current bridge is relevant for road and rail the issue is also mentioned in "rail" chapter.
- Road quality e.g. maintaining speed, safety, standard etc. for cars, trucks and buses. Clear signposting etc.
- Congestion points in terms of bottlenecks or missing links. Often in and around large cities or geographically limited size such as certain bridges or tunnels.
- Availability of alternative fuels and filling stations along the entire corridor. As the future is likely to include several alternatives at the same time it is important to include ALL forms of alternative fuels for the whole corridor. The general location of LNG fuelling stations should be cordially agreed upon.
- Information systems and ITS solutions to e.g. inform and potentially steer the traffic to/from desired routes. Can be to avoid delays or accidents further down the network, to re-route in case of big events or simply to control the traffic flows via e.g. traffic metering.
- Safe parking facilities along the route. Distances not more than 100 km between parking locations have been suggested.
- General developments of vehicle technology, emission regulations, weights and dimensions regulation etc. have a significant effect on the ScanMed Corridor as well, but the potential of a corridor approach must be evaluated first.
- Furthermore it should be stressed that ongoing projects such as SWIFTLY Green – Sweden-Italy Freight Transport and Logistics Green Corridor are important for "Greening" of the Corridor. The project shall provide concrete advice on issues such as reducing noise and air emissions as well as increased environmental efficiency by mode. The project includes examples where high-emission HGV's are banned from certain parts of the network encouraging modal shift to less environmentally harmful transport modes as well as the use of newer and more environmentally friendly road vehicles.

[129] Feedback of BMVI by e-mail dated 18.11.2014.

- There is no common view between countries or regions on the issue of "longer and heavier trucks" (called HCT = High Capacity Transports in Scandinavia) HCT exempts parts of the road freight transport from the maximum permitted parameters defined in Directive 96/53/EEC. Regulations currently allow larger and heavier trucks in Sweden and Finland. Denmark is testing the same vehicle dimensions on a limited part of the Danish road system. Furthermore, there are pilot tests on the sections Malmö - Göteborg and Malmö - Stockholm using dual-trailers. The benefits of this solution are a better use of available capacity as well as lower emissions per transported ton and lower costs. In other parts of the corridor, there is scepticism to allow longer and heavier trucks. Germany has created field-test on selected roads for distinguished applicants which is ongoing, whereas Austria and Italy have already expressed that they will not accept such vehicles.

Finland

- Hamina: E18 Hamina bypass: The project includes a construction of a 15 km ring road for safe and smooth traffic on the north side of the city of Hamina.
- Helsinki: Ring Road III, the second phase: Ring Road III, which is part of E18, will be improved in the Lentoasemantie area and between Lahdenväylä and Porvoonväylä.
- Hamina-Vaalimaa (Russia border): E18 Hamina–Vaalimaa: The completion of the E18 highway between Hamina and Vaalimaa will provide a motorway-standard road from Turku to Vaalimaa, on the Russian border.
- Helsinki: Ring Road III, the third phase: Construction of new intersections and third lines for needed sections, improvement of existing intersections, parallel road connections as well as public transport and light traffic arrangements, implementation of the noise abatement.
- Naantali-Kaarina: E18 Naantali-Kaarina: Construction of additional line sections, new intersections and tunnel, improvement of existing intersections, parallel road network, light traffic system and traffic management system.
- Implementationof ITS projects such as Nordic way, Next-ITS and EIP++.

Sweden

- E4 Stockholm Bypass is a 21 kilometre new road (18km in tunnel) in the Western parts of Stockholm.
- E4/E18 Capacity enhancement, as a consequence of the Stockholm Bypass: Small-scale investments and ITS solutions for improved capacity and traffic management.
- E4/E20 Essingeleden-Södra länken: New access and exit ramps
- E4 Norrtull, Haga Södra-Kista: Minor improvements of existing roads and traffic management measures
- E4 Tomteboda-Haga Södra: Measures for increased capacity along existing road (E4/E20), including bridges and new ramps

- E4 Ljungby-Toftanäs: Reconstruction to motorway standard in existing alignment. The measures contribute to protect an important water reserve
- E6 Pålen-Tanumshede: A 7 kilometre new motorway and the final section of the motorway through Bohuslän. Passes a world heritage area
- E6.20 Söder/Västerleden, Sisjömotet: Construction of additional lanes on existing hard shoulders and ITS systems for increased traffic safety
- E6.20 Hisingsleden Södra delen, four lane road, interchanges and measures for traffic safety
- E6.21 Göteborgs hamn/Lundbyleden: Measures on existing road for increased road safety
- West Swedish Agreement Road, includes measures for a better and more environmental friendly road transport system in West Sweden and the Marieholm Tunnel.
- E6 intersection Flädie: Reconstruction of interchange including higher geometric standard and a new roundabout
- E6 intersection Spillepengen: A grade-separated junction in the form of a bridge over the existing roundabout so that the though-traffic bypass at an upper level
- New E6 Ring road in Trelleborg: Study on a new ring road in Trelleborg connecting E6 and the Port of Trelleborg.
- E20 Norra Länken, Värtabanan

Denmark

- Køgebugt Motorway: Expanding the motorway on this section South of København from six to eight lanes, removing a bottleneck of 14 km. Northern section due to open in 2015, Southern by 2018;
- South of Odense Motorway: Expansion from 4 to 6 lanes (current bottleneck);
- Western Funen Odense West – Middelfart: Extension from 4 to 6 lanes, technically divided into three sections;
- Western Jutland Fredericia – Kolding: Extension from 4 to 6 lanes on a stretch of 19 km. The EIA has been concluded.

Fehmarn Belt fixed link between **Denmark and Germany** (as part of the combined road and rail project, see detailed project description below);

Critical issues on the **German** sections and corresponding measures have been identified and grouped by subject and potential relevance for CEF funding[130] into five German Corridor Programmes (DE CPR):

1. Measures to increase road safety through additional parking areas (total investment years 2014-2020 ca. 280 M€)

[130] The grouping has been made by the German BMVI.

2. Measures to increase road safety by removing bottleneck on cross-border sections of federal highways

- "(Oldenburg -) Heiligenhafen - Puttgarden: A 1/B 207 Southern access to Fehmarn Belt fixed link (Fehmarnsund bridge not incl.): Upgrade of A 1 Oldenburg - Heiligenhafen-Ost (finalized in 2012); upgrade (4 lanes) of B 207 Heiligenhafen - Puttgarden"
- Avendorf - Großenbrode: B 207 Fehmarnsund bridge: Rehabilitation, if necessary replacement of bridge as part of southern access to Fehmarn Belt fixed link
- Rendsburg: A 7 Rader Hochbrücke (bridge crossing the North Sea and Baltic canal): Studies, if necessary replacement of bridge to cope with increase traffic volume and safety requirements.
- Hamburg: A 7 Dreieck Hamburg-Nordwest - Hamburg-Stellingen: Upgrade (8 lanes); partly tunnelling for noise protection
- Hamburg: A 7 Hamburg-Stellingen - Hamburg-Volkspark: Upgrade (8 lanes) including new construction Langenfelder Brücke
- Hamburg: A 7 Hamburg-Volkspark - Hamburg-Othmarschen: Upgrade (8 lanes); partly tunnelling for noise protection
- Malchow - Waren (Müritz): A 19 Replacement of bridge Petersdorfer See: Replacement of bridge
- Dreieck Havelland: A 10 Reconstruction Dreieck Havelland: Reconstruction and upgrade (6 lanes)
- Dreieck Havelland - Werder: A 10 Dreieck Werder - Dreieck Havelland: Upgrade (6 lanes)
- München: A 99 Kreuz München-Nord - Kreuz München-Süd: Upgrade (8 lanes)
- München - Rosenheim: A 8 Kreuz München-Süd - Dreieck Inntal: Upgrade (8 lanes)

3. PPP-projects, including the one on the A7 which already started in summer 2014.

- Bordesholm - Hamburg: A 7 Dreieck Bordesholm - Hamburg: Upgrade
- Hamburg: A 26 interconnection A 1/A 7 with port: new construction of link
- Salzgitter - Göttingen: A 7 Seesen - Nörten-Hardenberg: Upgrade (6 lanes)
- Lederhose - Rudolphstein: A 9 Lederhose – Bavarian border: Upgrade (6 lanes)

4. Measures to guarantee sustainable and efficient use of existing infrastructure through invention of new technologies/ITS

- Hamburg: A 1 Hamburg-SO - section influence system:
- Hamburg: A 1, A 7, A 21, B 205 - upgrade of network influence system: part of traffic control and information concept (VLIK) for upgrade and extension of A 7 motorway
- Hamburg: A 7 retrofitting of Elbe tunnel tubes 1-3: technical equipment and installations for increasing the road safety
- Niedersachsen: A 1, A 2, A 7, A 26, A 27, A 35 - network influence system: Long Distance Corridor (Nord)

- Hannover: A 7 / A 2 traffic control system Hannover: renewal of traffic control system
- Kassel: A 5, A 7, A 44, A 49 - network influence system Kassel:
- Bremen: A 27 Bremer Kreuz / Überseestadt - section influence system:
- Potsdam - Niemegk: A 9 Niemegk - Dreieck Potsdam - section influence system:
- Bayern: A 3, A 6, A 7, A 9, A 72 - dNet Bayern: dynamic network control
- Holledau - Neufahrn: A 9 Dreieck Holledau - Kreuz Neufahrn - traffic influence system:
- München: A 8, A 92, A 99, B 471 - dynamic sign-posting: Kreuz München-Süd and Kreuz München-Nordwest
- München: A 8, A 99 - section influence system: eastern sections of A 99 and A 8 - including temporary use of hard shoulder

5. Several measures for removing bottlenecks on and upgrading of the corridor.

On the **German/Austrian** border crossing Kiefersfelden – Kufstein on the motorway A 93 the bottleneck has to be removed by upgrading the Innbrücke Kiefersfelden.

On the A 12 Inntal Autobahn on the **Austrian** section of the Corridor one issue is critical to be completed by 2014: Volders - Hall: Rehabilitation of the carriageway surface.

According to analysis and evaluation of the **Italian** road infrastructure managers the following sections of the Italian ScanMed road networks shows particular deficits with respect to capacity, missing link or improvement of quality of service for the users:

- Firenze-Bologna: "Variante di valico" between Firenze and Bologna: The measure is a deviation of A1 motorway, 62.5 km long and with long stretches in viaduct and tunnel, running parallel to the central part of the Bologna-Florence section.
- Salerno-Reggio Calabria motorway: Completion of the motorway between Salerno and Reggio Calabria
- Bologna motorway node: Construction of a northern by-pass for the Bologna node and Bologna-Casalecchio di Reno node: Upgrade of motorway connection between Bologna and Casalecchio
- Verona-Bologna: Motorway link Campogalliano-Sassuolo: Objective of the measure is the connection between the Sassuolo industrial area and the A1 motorway by the construction of a road link.
- Roma-Napoli: Roma-Latina Motorway: Construction of a new motorway stretch between Roma and Latina (68,3km) a by-pass in Latina and the upgrade of connections to the existing infrastructure.
- Napoli-Salerno: Salerno-Avellino motorway upgrading: Upgrading of the Salerno-Avellino existing road to motorway standards.
- Roma-Napoli: Benevento Caianello motorway: Upgrading to 4 lanes of the Benevento-Caianello road (SS 372 Telesina)

- Roma: Connection between Fiumicino Airport and A24 motorway: Preliminary and final planning of south-west quadrant exits and new parallel roads
- Roma: Upgrade of technological equipment and safety in galleries: Upgrade of technological equipment and safety in galleries
- Palermo: New Palermo ring road: Construction of a new ring road for the Palermo metropolitan area
- Palermo-Catania maintenance and upgrade: Reinforcing of structures and installations of new safety barriers
- Catania by-pass RA15: Modernisation and upgrade of by-pass
- Gioia Tauro: Enhancement of SS 682 and SS 18: Enhancement of SS 682 and SS 18 enabling a better last mile connection to the port
- Augusta: Enhancement of SS 193: Enhancement of SS 193 enabling a better last mile connection to the port
- Bari: Enhancement of Bari ring road: Enhancement of Bari ring road enabling a better connection to the port

Also **Malta** has identified projects on its TEN-T core road network aimed at increasing capacity and safety on the modal interconnection Marsaxlokk – Luqa - Valletta.[131] The include the following: Grade separation of Route 1, Upgrading of route 6 and implementation of ITS on Maltese roads.

4.3.3 Airports (Gruppo CLAS)

In general, airports of the core nodes aligned with the corridor suffer from timely completion, e.g. Berlin-Brandenburg (BER), sufficient access by rail (Helsinki) as wanted in the TEN-T corridor objectives, saturated road access at peak times and capacity enlargement plans which are disputed on a local level. Airport managers, industry representatives and residents impacted by the noise and other harmful emission of the airport and the resulting air and land traffic are discussing whether and how the capacity can be increased in a sustainable way.

For the ScanMed airports of Helsinki, Stockholm, København, Berlin, Hamburg, München and Roma, the possibility and necessity for a connection to the high-speed railway network has to be analysed in a separate study by these airports and regional stakeholders.

It should be discussed with the airport managers whether airports as single installations would require a local, regional or national coordination (e.g. the German "Flughafenkonzept" = airport concept established in 2009 or in the framework of the Italian "Piano Nazionale degli Aeroporti" = national plan on airports), rather than or in addition to a European Corridor coordination, despite their "land" catchment areas are

[131] Feedback by Transport Malta, 31.10.2014.

crossing borders (e.g. København/Malmö). However, issuing an "Airport National Plan" could lead to incoherence between the Plan and the current definition of the core network. As an example, the latest version of Italian "Piano Nazionale degli Aeroporti"[132], which provides for a cluster of 10 "strategic" airports (one per "traffic basin"), and other 26 “airports of national interest”, identifies 3 "strategic" airports that are on ScanMed corridor but not part of the core network, namely Firenze/Pisa, Bari and Catania.

Within the area of airports the following critical issues, measures and resulting projects have been identified, jointly with the stakeholders concerned:

- Turku airport: Development of Turku airport: Renovation of the terminal building and paved areas, improvement of the passenger services;
- Helsinki airport: Development of Helsinki airport: The aim is to ensure that Helsinki Airport will be able to maintain its strong competitive position in transit traffic between Europe and Asia. The focus will be on increasing check-in and transit travel capacity and on improving traffic arrangements. An infusion of capital in which the Finnish government will invest a total of 200 million Euros in Finavia will allow the company to start the development programme. In addition to the development programme, Finavia will carry out repairs and maintenance at Helsinki Airport, at its most important provincial airports and in air navigation services. The work, which is expected to cost about 100 million Euros, will include paving of runways and terminal maintenance.
- Stockholm airport: Reach Compliance capacity-traffic: Improve passenger capacity to achieve the objective set for 2030 and other Deployment plans for Stockholm Arlanda
- Copenhagen airport: Reach Compliance: Improve technical parameter to achieve the objective set for 2030. Besides, the airport plans capacity expansions including new infrastructure for aircraft and passengers as well as improved connection between terminals, rail and metro station.
- Bremen: Study on new approaches of Environmental Airport Management: In depth analysis of solutions to improve airport environmental performance, including transport infrastructure analysis (landside and airside), airport management on sustainability issues, development of analogies with sustainable process management of other transport modes (e.g. seaports)
- Hannover, several measures:
    - Study on capacity improvement for airport terminals B and C: Study under consideration of EU VO 300/2008, VO 185/2010, 687/2014 and 278/2014. Re-design of the buildings in order to create new passenger and baggage security check facilities and in order to improve interconnectivity (access to the railway station).
    - Capacity improvement for airport terminals B and C

[132] Released by Italian Government on 30.09.2014.

  - o Improvement of road access to air cargo terminals: New road to the western part of Hannover Airport, where new cargo facilities are located.
- Berlin, several smaller measures on capacity improvement;
- Leipzig, several measures on the capacity improvement including Extension of the power supply facility (fuel cell technology): Improvement of sustainability
- Nürnberg: Improvement of road access: Better access to federal road 4 and motorway 3: Road from the western part of Nuremberg Airport to Federal Road B4. Individual transport as well as public transport (busses) will use the new road.
- München, several measures:
  - o Stationary supply units for pre-conditioned air: approx. 40 parking positions will be equipped with the units. Objective: CO2 reduction,
  - o Extension apron South: Increase of aircraft parking capacity. Beginning of operation 2019/20.
  - o Railway tunnel under terminal 2, apron terminal 2 (for the railway link to Erding): Cost estimated between 70 and 80 million €; Beginning of operation: 2021/22. Remark: Rail infrastructure not part of the investment.
  - o Extension apron North: Increase of aircraft parking capacity. Beginning of operation 2022/23. Remark: only needed, If 3rd runway will be built.
- Roma Fiumicino: A new road network layout crossing the Tiber river: A new road network layout crossing the Tiber river in order remove bottlenecks, generated by the inadequacy of existing bridges capacity, at the beginning of the Rome Fiumicino motorway from Rome city centre and on the road-axis connection between Ostia and the airport.
- For the international airport of Malta the wollowing projects are foreseen: New ATC Tower, primary surveillance radar, introduction of A-CDM (Airport Collaborative Decision Making) procedures, replacement of AODB (Airport Operations Database) system, enlargement of the Non-Schengen Departures Concourse and Aircraft Movement Area Rehabilitation.

4.3.4 Seaports (Uniconsult)

Most of the ScanMed core ports are equipped with access to rail, road and inland waterway network, unless the geographical and climate structure does not provide any inland waterways for freight transport, such as Italian and Maltese Ports.

In general, most of the ScanMed core ports are connected with railway access to the hinterland (except, understandably, Maltese ports of Marsaxlokk and Valletta). However, the number of railway tracks connecting the core ports with the hinterland does not represent the real infrastructure capacity. Even bigger ports such as the Port of Hamburg with an extensive number of tracks leading out of the port need additional attention and efforts to extend the capacity of the rail hinterland network towards the south of the ScanMed Corridor until 2030, making sure that the ports can fulfil their role in the TEN-T core network to the utmost extent (see also 'critical issue' railway infrastructure).

Specific problems have been identified on the seaside access to the ports in the Northern Baltic Sea to be equipped with additional icebreaking capacities to maintain navigation throughout the year (e.g. HaminaKotka, Helsinki, Turku/Naantali, Stockholm).

The Regulation (EU) 1315/2013 and other EC guidelines on sustainability, energy efficiency and CO2 reduction require publicly accessible Liquefied Natural Gas (LNG) refuelling points for maritime (and IWW) transport to be provided by all the maritime core ports by 2030. There seems to be "sufficient" time to achieving this objective but nevertheless the starting needs to be observed.

Operators of ferry lines are currently challenged by IMO conventions requiring lower emission vessels (scrubbers, LNG) and are dealing with the implementation deadlines given for the respective area (Baltic, North Sea, Mediterranean) - an issue which is not directly linked to the corridor approach since it targets at sea areas.

A first glance on the ScanMed ports indicates a wide range of frequencies of regular weekly freight and passenger ferry connections between Finland and Sweden (Turku/ Naantali and Stockholm), Denmark and Norway (København – Oslo), Southern Sweden/Germany (Malmö/Trelleborg/Göteborg to Lübeck-Travemünde / Rostock) as well as between Italian and Maltese ports (Taranto to Valletta and Palermo to Valletta).

While the numbers of ferry connections (short sea routes) are set by the market's demand and supply structure, the surrounding conditions on port infrastructure and hinterland access, administration, regulations and information systems play an additional role. The status of the current analysis, however, does not yet allow for specific comments on "critical issues" on the MoS conditions of the ScanMed Corridor.

Reform of the Italian Port system is ongoing. Article 29 of Decree no. 133 of September 12th, 2004 ("Decreto Sblocca Italia") issued by the Italian Government prescribes that the number of Port Authorities is reduced, in the framework of a "Strategic Plan of Ports and Logistics", to be issued in 90 days from the conversion of the Decree into Law. The foreseen reform may also have a significant impact on port accessibility and selection of projects of European added value: according to the Decree, Port Authorities have to inform the Government on relevant ongoing or programmed projects. The Ministry of Infrastructure will select projects to be included in the "Strategic Plan", in the same timeframe prescribed for publishing it. Italian Port reform aims at increasing traffic for Italian key ports, in particular for those that will be selected as "hubs" for international transport on the land side of the Corridor, and for deep sea traffic to/from Far East. This definition of "hub" does not fully correspond with the expert use of a “hub” which is part of a “hub-and-spoke” concept. In the case of maritime transport in the “hub” port transhipment between mother and feeder vessels takes place. The characteristic of a “hub” is thus high performance on quayside handlings but not necessarily a large exchange with the hinterland at all. Only a few ports in Europe are or will be “hubs” in the global shipping industry. Italy should therefore critically assess whether all their ScanMed ports, even those in short distance, shall become “hub” ports.

Within the area of seaports, the following critical issues, measures and resulting projects have been identified, jointly with the stakeholders concerned:[133]

- Naantali, several measures/projects:
  - Upgrading the port’s maritime access and intermodal services, removal of bottlenecks.
  - Reconstruction and automation of the ro-ro quays.
  - Works in the gate area of the port including automatic surveillance and automatic length measuring of vehicles, extension of the intersection for special transports.
  - Implementation of extensive traffic arrangements for ro-ro and ro-pax customers, extension of port yard for trailer transport.
  - Extensive reconstruction works in the old passenger terminal.
  - Implementation of automated identification tools and removable technical equipment of border checking processes.
  - Implementation of waste water reception facilities in the port, and building a connection to the municipal system.
  - Reception facilities for scrubber sludge, provision of onshore power, LNG bunkering.
  - Implementation of facilities and infrastructure for transportation and handling of alternative bio-based fuels.
- Turku: several measures/projects:
  - Upgrading the port’s maritime access and intermodal services, removal of bottlenecks.
  - Building of a project cargo quay in Pansio area. Extension of yard for Scandinavian freight transport needs. Modernisation of cranes for versatile and efficient cargo handling. Extension of a truck parking area with technical equipment and fuel filling station.
  - Developing the travel centre in the port.
  - Intermodal rail projects: modification and upgrade of rail-ferry berths and ramps, projects on more efficient logistics area.
  - Upgrade of rail infrastructure in the port area, building of tracks, renewal of rail-yard to enable intermodal loading.

[133] Information on Finnish ports according to feedback of Finnish Transport Agency via e-mail of 18.11.2014. Some of these measures have the maturity of a project and are thus included in the list of projects (Annex 3).

  - Building of a transit warehouse and a warm, roofed warehouse for exports.
  - Building a multimodal terminal in Pansio.
  - Renewal of port surveillance and administrative reporting systems, maritime ICT-system.
- Helsinki: several measures/projects:
  - Upgrading the port's maritime access: Deepening of the Vuosaari Harbour fairway and improvement of the sea basin.
  - Upgrade of port's intermodal services and removing of bottlenecks: Cruise quay to Hernesaari. Renovation and upgrade work on the Olympia quay.
  - Transition to One-gate system in Vuosaari Harbour (eFreight solutions).
  - Planning and implementation of port's environmental services related to SECA; decarbonisation: LNG infrastructure and services, bio-energy hub in Vuosaari.
  - Arrangements for Helsinki Energy new energy plant in Vuosaari.
- HaminaKotka: several measures/projects:
  - Upgrade works on port yards.
  - Upgrade of Härniemi quay.
  - Building of a pumping station for fire protection.
  - Extension of Mussalo Harbour Yards and port yard in Hailikari.
  - Upgrade works on Paksuniemi infrastructure and quay.
  - Connection from Kantasatama to local street network.
  - Upgrade of East quay ramp at Kantasatama.
  - Building of a new multimodal logistics center for mechanical forest industry logistics.
  - Extension of the container terminal.
  - Reconstruction and modernisation of a passenger terminal (Kantasatama Harbour).
  - Rail works at Palaslahti terminal to enable more efficient and fast loading and unloading. Alteration works on rail tracks.
  - Implementation of port's environmental services related to SECA and decarbonisation: building of an LNG terminal.
- Malmö: Planning and Implementation of an onshore power supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- Stockholm, several measures/projects:
  - o Extending the Värta Pier: Extending the Värta Pier with a new construction area of 85000 square meters. 5 berths with a total length of 1.200 m. OPS and port waste reception facilities are planned as well as railway connection.

  - o New pier with two berths at Kapellskär: Increasing the capacity with a new pier with two quay berths and a reconstructed ferry berth. Improved Logistics on the landside. Preparing OPS and PRF.
  - o New container and RoRo Port at Nynäshamn/ Stockholm Norvik: New container and RoRo Port with natural draught of 16,50 , enabling direct calls by the largest vessels in the Baltic Sea. Seven berths with a total length of 1.400 m. Railway connection, OPS and PRV as well as LNG terminal located within the proximity.
- Trelleborg: several Projects:
  - Construction of four ferry berths: The project is part of the move of the port area and will enable the reception of larger vessels. The berths will be equipped with OPS and with waste water reception facilities. One of the berths will be for LNG bunkering.
  - Trelleborg: Construction of a secure truck centre with a possibility to check in on the ferries, moving of an existing warehouse to an area close to the truck centre with an existing railway connection; construction of a new road entrance to the port from the new ring road;
- København, several projects:
  - o Planning and Implementation of an onshore power supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030[134].
  - o Establishment of a new container terminal: Due to the city development in the port areas in København, the present container terminal has to be laid down. A new area for establishing a new terminal is decided and land reclamation is taking place. The new terminal needs to be in operation earliest in 2019 and latest in 2021. Adjacent to the container terminal it will be possible to construct new RoRo facilities and other port related activities in a 45 ha area.
- Hamburg, several projects:
  - o Adaptation driveway Vorhafen: To ensure safety and ease of ship traffic, especially in the context of ship sizes, the widening of the entrance area of the North Elbe is urgently needed in the Vorhafen.
  - o Channel adjustments on the River Elbe: The planned channel adjustments of the Lower and Outer Elbe is to ensure that modern large container ships with max. drafts of 14.5 m can reach the port.
  - o New building Reiherstieg Lock: The Reiherstieg lock is the only southern access to Reiherstieg and must be renewed.
  - o smartPort Energy: Use of renewable energy and alternative fuels, reducing energy consumption and emissions in the port

[134] Even though København and Malmö are defined as two separate ports in the Regulation (EU) 1315/2013, they operate as one legal entity, Copenhagen Malmö Port (CMP). Therefore, the Danish Ministry of Transport stated that requirements have to be fulfilled for CMP and not necessarily for both parts of the port. (Feedback provided by e-mail of 28.11.2014.)

    - smartPort Logistics: Efficient use of existing infrastructure, improving traffic flow.
- Rostock: Expansion and deepening of the Sea Canal Rostock: Expansion and deepening of the Sea Canal (seaward entrance) of the port of Rostock on a water depth of 16.50m, which would allow for access of vessels with a permissible draft of up to 15.00m
- Lübeck, several projects:
    - New building of a LNG Terminal: New building of a LNG Terminal in the port of Lübeck
    - New construction of the berths in Travemünde: Construction of the berths 5 and 4a with implementation of 16 hectares port area at Travemünde
    - Implementation of a berth/vessel planning IT system: Implementation of a berth/vessel planning IT system
- Rostock: Planning and Implementation of an onshore power supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- La Spezia: WESTERN PORT EXTENSION: Construction of Canaletto yard and quay with buffer zone and preparatory works for the shifting of the marinas and the upgrading of Molo Pagliari (Pagliari Quay), Extension to head of Molo Fornelli (Fornelli Pier), Tracks reorganization - construction of 650 m new modular rail tracks and decommissioning of Fascio Italia, Dredging of seabed opposite Canaletto and Ravano wharves, Reclamation and dredging of seabed opposite Calata Artom (Artom Wharf), Arrangement work on seabed of Molo Italia (Italia Wharf), works for the extension of Garibaldi pier
- La Spezia: EASTERN PORT EXTENSION: Construction of Terminal del Golfo yard and quay and buffer zone,
- La Spezia: PORT- CITY INTERACTION AND ENVIROMENTAL PROJECTS: Construction of new cruise terminal Calata Paita (Paita wharf) - quayside construction, Construction of cruise station Calata Paita (Paita wharf) - service structure, Underground link with the Levante terminal (East Terminal), Construction of a green zone between port area and city, On shore power supply, LNG projects"
- La Spezia: THE LOGISTIC PROJECT: A dry port area in Santo Stefano Magra A new railways company - La Spezia Shunting Railways, Pre-clearing and e-custom procedures, New Port Community System AP NET, WiderMoS project, implementing an IT Corridor Management Platform, "
- Ancona, several measures and projects
    - Improving nautical accessibility: Adaptation of the port basins to reach the draft of -14 meters, Completing the sottoflutto breakwaters and adaptation of the Northern wharf to protect the new line of quays"
    - Improving and increasing the port facilities for freight traffic and RO/PAX: Works for the building of the new line of quays, Adaptation of the former industrial areas to port logistics, New RO/PAX terminal and

new road access to the port and to the embarking quays, New RO/PAX moorings, Motorway link (road bottleneck);"
    - Development of intermodal transport: Works for a new rail-road terminal in the Scalo Marotti area,
    - Extension and electrification of the shunting track to the port terminal. New control system for the station of Ancona (rail bottleneck)
    - Extension of the terminal tracks to 600 metres;"
    - New passenger terminal: New passenger terminals in the old port
    - Planning and Implementation of an onshore power supply, and design and building of alternative clean fuel facilities: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- Livorno: Planning and Implementation of onshore power supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- Livorno: Piattaforma Europa: Land reclamation project, dredging, creation of a new access channel to the port area, breakwater facilities, new container terminals, relocation of old terminals and development of new rail and road links to cope with the increased capacity.
- Bari: Planning and Implementation of a LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- Taranto: Seaport Hub: The project aims at developing the Taranto seaport as a transshipment hub, and to the creation of an intermodal platform.
- Taranto: Planning and Implementation of a LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- Napoli: Seaport Hub: The project aims at developing the Napoli seaport as a hub, by improving the infrastructure and the road and rail connections.
- Napoli: Planning and Implementation of a LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assist the environmental performance of ships in ports to achieve the objective set for 2030.
- Palermo: Planning and Implementation of a LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- Gioia Tauro: Seaport Hub: The project envisages the upgrading of infrastructure in the Gioia Tauro transshipment hub
- Gioia Tauro: Planning and Implementation of a LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
- Augusta, several measures and projects:

- Seaport Hub: The project aims at developing the Augusta seaport as a transshipment hub, by the upgrading of existing infrastructure and equipment in order to allow container ships.
- Planning and Implementation of a LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.

- Valletta, inner harbour improvement
- Marsaxlokk, several measures including the following
  - planning and Implementation of a LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.
  - Breakwatersystem,
  - Crane Rail and Terminal 1, Quayside Cranes,
  - Masterplan measures of Malta Freeport Corporation,
  - Masterplan measures of Malta Freeport Terminals Ltd,
  - Land reclamation for oil terminal and jetty expansion for oil terminal.
- Development of Motorways of the Sea (MoS) with Core Ports of Valletta/Marsaxlokk and Palermo/Taranto and other possible maritime ports in Southern Italy.

In the second Corridor Forum meeting it has been noted that the Italian seaports should coordinate at national level to what extent their enlargement programmes could be aligned with the transport demand in a "multiport cooperation".

4.3.5 Rail-Road Terminals (KombiConsult)

With respect to rail-road terminals, critical issues are generally rail and road access as well as handling and intermediate storage capacity. However, recently completed enlargement programmes, which were initiated along the corridor by the Brenner Action Plan of 2003 and updated in the "Action Plan Brenner 2009" have resulted in sufficient capacity for the current traffic demand. Good practices applied were double sided, electrified rail access, e.g. in Hamburg-Billwerder and München-Riem, the replacement of old equipment by modern Rail Mounted Gantry Cranes e.g. in Stockholm-Arsta or Rostock to name but a few from recent completion.

In Germany[135] the „Entwicklungskonzept 2025 für den Kombinierten Verkehr (KV)" (Development concept 2025 for the intermodal transport in Germany) highlighted the

[135] Entwicklungskonzept KV 2025 in Deutschland als Entscheidungshilfe für die Bewilligungsbehörden, Aktenzeichen Z14/SEV/288.3/1154/UI32;UI32/3141.4/1, Abschlussbericht, Hannover, Frankfurt am Main, November 2012.

future capacity needs per location area (not single terminals) and suggested a continuation of the successful financial support of the infrastructure construction.

According to the Development Concept 2025, the growth of the intermodal market volume requires an increase of handling capacity in several terminal areas while leaving the decision on the exact terminal and improvement measure to the private sector.

The figures for 2008 and the most likely capacity needs for the year 2025 can be obtained from the “Development Concept 2025” report and is provided for the corridor specific areas in the following tables for rail-road terminals. Since terminals facilitating combined transport inland waterway – road were also treated in the concept and some of the selected terminals provide for “trimodal” connections, these data are provided herein as well, although inland waterways and inland ports are formally not included in the ScanMed Corridor.

In the 1st Corridor Forum meeting, the so called “Last Mile Connections” to ports, airports, rail-road terminals were discussed, and it was agreed upon to pay more attention to them in the detailed analysis of single ports, airports and RRT in the framework of work package 5 (characteristics), if such data are provided by the respective infrastructure manager, operator or user.

Critical issues related to single terminals could not be identified in the scope of the present study for all 44 terminals and should be identified at a later stage, as well as quality deficits of the railways impacting also the performance of the terminals when the respective stakeholders are involved in the process notably 2015.

In Finland, in the City of Kouvola, the rail-road terminal (KORARO) is scheduled to increase intermodal transports, remove technical and administrative bottlenecks, increase interoperability of the railway system (including Russia) and expand the logistics sector in the Kouvola region by extending the Kouvola railway yard, infrastructure extensions for multimodal operations, development of management and service models.[136]

In Sweden, very recently (May 2014), the terminal in the city of Stockholm (Arsta) has been completely renewed and converted from a reach stacker into a modern Rail Mounted Gantry Crane terminal by the owner Jernhusen. It is associated with warehouses providing for city logistics opportunities. In addition to that, in 2015, a new RRT will be opened in Stockholm Nord (Rosersberg). It is part of a logistics centre with warehouses and road and rail access[137, 138].

[136] Proposed CEF-Project abstract handed over at the Regions working group meeting on 01.10.2014: Kouvola Rail-Road Terminal (KORARO), 29.08.2014; an updated description, handed over during the 4th Corridor Forum meeting and an e-mail of the Mayor of the City of Kouvoloa of 26.11.2014 clarified the studies and works part of the project.

[137] TEN-T Annual Programme Sweden, 2012-SE-91084-P.

With respect to the terminal capacity and their connection to the rail tracks Trafikverket wants to analyse the market potential, capacity need and most efficient way of "last mile" operations in a study to prepare the grounds for detailed improvement activities with respect to terminals in their network. It is recommend to involve also terminals owned by Jernhusen and the ports into the analysis.

In Denmark, the terminals are operated by private operators under concession while the owner "Banedanmark" usually does the investment into the terminals. No enlargement plans could be identified in the scope of this study.

In Germany, additional capacity for terminals is needed in different federal states and terminal areas along the ScanMed Corridor. Even if we consider that some improvements have been realized since 2008, the base year of that analysis, it can be stated that additional capacity is required in the following terminal areas: Berlin, Bremen, Hamburg, Hannover, Kassel, Leipzig/Halle, Lübeck, München, Nürnberg, Rostock.

Location Area	2008		2025	2008-2025 Enlargement Need (LU)
	Handling Capacity (LU)	Handling Volume (LU)	Handling Capacity (LU)	
Berlin	212.500	134.000	335.000	122.500
Bremen	156.500	126.000	286.000	129.500
Hamburg	289.000	322.000	568.000	279.000
Hamburg-Hafen	1.139.500	1.148.000	2.792.000	1.652.500
Hannover	85.000	61.000	209.000	124.000
Kassel	72.000	44.000	87.000	15.000
Leipzig/Halle	233.000	135.000	376.000	143.000
Lübeck	213.000	126.000	250.000	37.000
München	240.000	271.000	737.000	497.000
Nürnberg	235.000	189.000	506.000	271.000
Rostock	105.000	73.000	181.000	76.000
Total ScanMed	2.980.500	2.629.000	6.327.000	3.346.500

Source: HaCon/KombiConsult analysis based on CT Development Concept 2025

Table 48: Handling capacity, volume and enlargement need 2008/2025 for rail-road terminal area in Germany

[138] Feedback from Swedish Transport Administration by e-mail of 17.10.2014.

Location Area	2008		2025	2008-2025 Enlargement Need(LU)
	Handling Capacity (LU)	Handling Volume (LU)	Handling Capacity (LU)	
Berlin	10.000	-	5.000	-
Bremen	22.000	21.000	60.000	38.000
Hamburg-Hafen	n.a.	81.000	167.000	-
Hannover	30.000	20.000	40.000	10.000
Nürnberg	30.000	-	-	-
Total ScanMed	92.000	122.000	272.000	48.000

Source: HaCon/KombiConsult analysis based on CT Development Concept 2025

Table 49: Handling capacity, volume and enlargement need 2008/2025 for Inland Waterway-Road Terminal area in Germany

In Austria, the terminal Wörgl has been enlarged including its rail access in the framework of a European funded project and became operational by end 2012. The further needs are depending mainly on the development and financial support of the unaccompanied rail/road traffic (RoLa services) across the Brenner and can hardly be assessed at this level.

In Italy, the terminal Verona Quadrante Europa has been enlarged and supplies sufficient capacity to the market currently. However, prior to the financial crisis, different plans for increasing the transshipment capacity in the region were discussed, such as the operations in Sommacampagna or Isola della Scala. For the other terminals in Italy replacement investment and studies for improving the performance were included in the Action Plan Brenner 2009. Their status of realization and conclusions need to be dealt with in the evaluation and update of the Action Plan Brenner 2009 in the framework of the Brenner Corridor Platform, which has not been done yet.

A concerted development concept for the improvement of intermodal transport and creation of sufficient terminal capacity at the national level is lacking in Italy, since also the infrastructure funding is project-related. There is also a clear dependency on the timely development of railway capacity and operational conditions geared to intermodal customers expectations (e.g. loading gauge, train length and weight, punctuality, to name but a few) on the Corridors' sections south of Bologna/Firenze (see the chapter on rail parameters).

In order to connect the Italian RRT of the ScanMed corridor to international rail freight transport via Brenner/Brennero it is essential that their access and the aligned rail infrastructure provides for the loading profile P/C 400. The upgrading to that standard should therefore start from the North (Bologna/Firenze) to the South so that respective sections will become effective to the market stepwise.

If a focus on domestics transports and seaport hinterland service is agreed upon in Italy the enlargement of the loading gauge is less important since ISO containers can be transported on flat wagon already and the terminals are equipped for handling.

Intermodal terminals are a key component to ensure road-competitive intermodal transport services throughout Europe since it has to ensure an efficient and safe interchange between road, rail and other transport modes (inland waterway, short sea shipping including ferries).

In some European countries, the terminals differentiate between the ownership of terminal infrastructure and superstructure on the one hand, and operation and management on the other hand. Ownership corresponds to the ownership of the land itself, typical infrastructure such as the rail tracks, and superstructures such as gantry cranes or reach stackers. The management is dealing with the daily operation of the terminal which might otherwise be done by the owner itself or a dedicated operational company. However, the common understanding of (intermodal) rail-road terminals is based on the following principles:

- Principle of non-discriminative access to terminals;
- Rail-side access for all licensed railway undertakings and other applicants (pursuant to Directive 2011/14/EC, Annex II no. 2 letters a) to h));
- Road-side access for all operators;
- Transparent capacity allocation and pricing;
- Bundling of different cargoes (maritime container, continental cargoes), and market segments (international and domestic relations) and thus improved capacity utilisation.

Intermodal terminals fulfill an interface position in the intermodal supply chain. The next figure shows both the so-called basic functions, which are related to the pure rail/road transhipment and any intermodal terminal is required to match, and additional services, which a terminal operator may or may not offer depending on the local demand for them. There is a smooth transition between the different functions and whether they are required from the intermodal terminal operator or whether they are offered from other parties in the supply chain (e.g. intermodal operators, trucking companies, or other).

Source: KombiConsult analysis

Figure 60: Basic functions and additional services of rail-road terminals

The capacity of a terminal is determined by several factors, all of which can not be influenced by the terminal manager. The primary influences are the position of the terminal within the rail and road network, the size and shape of the real estate, the length of the handling tracks, and the number and capabilities of the handling equipment. In recent years a modular shape of terminals has been developed which is made of:

- single – or better double-sided rail access, where signalling and train control allows for direct entry with momentum and direct departure of the train by the main line traction unit;
- three to five "train long" (length can vary between countries) handling or transhipment tracks, with
- rail-mounted gantry cranes (RMG) or reach stackers in less demanding cases;
- two to three interim storage or buffer lanes;
- one loading and one driving lane for the trucks;
- road side access to qualified roads with
- check-in / check-out area (gate) and sufficient parking space;
- terminal management and information system.

One can discuss if the existing and to be built transhipment tracks have to have a usable length of 740 m to be consistent with the targeted value for the permitted train length on the Trans-European core rail network by 2030 (see Article 39, number 2 lit a) ii of Regulation (EU) 1315/2013) or not. On the one hand it would be desirable if the "full" train could enter the terminal without further manipulation and if the terminal tracks could have the same length, though. On the other hand not each and every train will use the full length and the terminals tracks may be linked via a reception siding that allows to split the train into groups suitable for the maximum permitted handling track length. At this stage it can be recommended that at least new built terminals should argue carefully if their handling tracks are below the target value of 740 m.

One typical module of that kind should be able to handle about 120-150.000 loading units p.a. (rail-in and rail-out handlings). While a doubling or even trebling could improve the capacity accordingly.

Other factors are rather of an operational kind and can partly be directly influenced by the terminal manager. Such factors are e.g.

- market share of continental and maritime loading units;
- use of gateway transports;
- share and duration of interim storage of loading units;
- terminal opening and working hours per day;
- rail handling track flow factor, determining the use of tracks for a train per day.

Due to the variety and large number of factors that determine the capacity of an intermodal terminal, it is not possible to make a fully concrete and standardized prediction regarding the capacity and utilisation of all terminals on the corridor altogether in the given time-budget framework.

Indications on the improvement measures on the terminals capacity and operational efficiency other than building pure infrastructure (e.g. multiple use of the tracks, bonus malus systems, etc) can be obtained from the DIOMIS study performed by KombiConsult for the International Union of Railways (UIC) or the good practices summarized in the framework of the AGORA project by the European Terminal Interest Group AGORA.

Against that background on the ScanMed Corridor the following measures/projects on rail-road terminals could be identified in the scope of the study:

- Measures on RRT in Finland were noted one the one hand for Kouvola: The KORARO project, which includes land use, urban and technical planning for the new planned terminal area of Kouvola RRT, terminal area governance and sustainability as well as railway sector deregulation and technology studies; and on the other hand for Helsinki: Planning, development and building of intermodal termnals to serve the Helsinki node including the development of dry ports.
- Stockholm, Hallsberg, Malmö and other core RRT: Reach Compliance: Improve technical parameter to achieve the objective set for 2030, in particular last mile issues, ITS and greening measures.
- For the Danish RRT of Hoje Tastrup and Taulov: Reach Compliance: Improve technical parameter to achieve the objective set for 2030.

- In the German terminal areas relevant for the Corridor sufficient handling capacity shall be realized according to the development concept 2025, that might be reassessed and required to be extended to 2030.
- In the German terminals, too, measures to reach Compliance, namely improve technical parameter to achieve the objective set for 2030, in particular last mile issues, ITS and greening measures might be required after detailed analysis.
- In the core node Hannover a totally new RRT that is able to perform as a hub terminal for rail-rail transfer as well shall be built in the next years (Megahub Lehrte). It will get a double-sided, electrified rail access, six handling tracks and Rail Mounted Gantry Cranes. The terminal Hannover-Lehrte will partly replace the existing (older) terminals and provide new capacity in total.
- Lübeck: Expansion of the terminal for combined transport: Expansion of the terminal for combined transport in Lübeck-Travemünde.
- Lübeck: Baltic Rail Gate (2nd phase): Extent the capacity of the present intermodal terminal by a second module and Rail Mounted Gantry Cranes.
- Wörgl: Modification terminal Wörgl: Increasing the shipping capacity of the terminal Wörgl by new tracks.
- For the various Italian public and private RRT: Reach Compliance: Improve technical parameter to achieve the objective set for 2030.

Thus only the more detailed capacity analysis and detailed market assessment, like in the other countries, has been included as a "place holder" for identifying further project needs.

4.3.6 "Multimodal" Dimension (KombiConsult)

The TEN-T-Regulations defines, in Article 3 (n), "multimodal transport" as "the carriage of passengers or freight, or both, using two or more modes of transport" as part of a single journey. The TENtec Glossary defines "multimodal platform" is a virtual layer in which TENtec sections or nodes of different modes are connected with each other. Despite these definitions we have used the term to categorize critical issues and measures which are involving more than one mode, practically.

Road, Rail and Sea: Finland Nationwide: Renewal of road, sea and rail traffic control systems: The project of renewing the control systems comprises ICT system projects related to developing the road, sea and rail traffic control systems, as well as equipment and service procurements.

Multimodal passenger traffic: Helsinki: Long distance commuting: trip chains, smart transport, urban development of rail terminal areas (HHT)

Seaport and MoS:

- Ports of Naantali, Turku, Helsinki and HaminaKotka:: Joint project of the Finnish ScanMed ports including e.g. improvements of the maritime access as well as LNG-infrastructure and services, development of the intermodality and e-Freight

- Turku/Naantali - Stockholm: Pre-identified project: study and potential services for further port interconnections, serving the Ports of Stockholm and the Finnish ports;[139]
- Trelleborg - Malmö - Göteborg - NO border: Pre-identified project: Works, multimodal platforms and port hinterland connections: Several ongoing projects and planned studies on this section;[140]
- København: Planning and Implementation of a Logistics Platform in Port of Copenhagen: Improve the technical parameter on MoS for the Port of Copenhagen by setting up a central logistics platform or freight village to reach compliance with 1315/2013 EC objective set for 2030
- Lübeck: Planning and Implementation of a Logistics Centre in the Port of Lübeck: Improve the technical parameters on MoS for the Port of Lübeck by setting up a central logistics platform or freight village to reach compliance with 1315/2013 EC objective set for 2030
- Lübeck: Planning and Implementation of a Logistics Centre Lübeck: Planning and Implementation of a Logistics Centre Lübeck (Analysis of potentials and implementation)
- La Spezia: Reach Compliance by setting up a central logistics platform or FV: Planning and Implementation of a Logistics Intermodal Platform Port of Stefano, Improve the technical parameter on MoS for the Port of La Spezia to achieve objective set for 2030
- Palermo: Reach Compliance by setting up a central logistics platform or FV: Planning and Implementation of a Logistics Platform Port of Palermo, Improve the technical parameter on MoS for the Port of ´Palermo to achieve objective set for 2030
- Gioia Tauro: Reach Compliance by setting up a central logistics platform or FV: Planning and Implementation of a Logistics Platform Gioia Tauro, Improve the technical parameter on MoS for the Port of Gioia Tauro to achieve objective set for 2030
- Augusta: Reach Compliance by setting up a central logistics platform or FV: Planning and Implementation of a Logistics Platform Port of Augusta, Improve the technical parameter on MoS for the Port of Augusta to achieve objective set for 2030

Rail and Airport:

- Göteborg-Landvetter: Göteborg-Landvetter Airport connection: Göteborg-Landvetter Airport connection, new double track via Landvetter airport (Mölnlycke-Bollebygd)

[139] Feedback by Ports of Stockholm by e-mail of 28.11.2014.
[140] Feedback by Swedish Transport Administration by e-mail of 27.11.2014.

- Hamburg: Study on additional railway links to Hamburg Airport: Study on the creation of a railway link from the northern catchment area of Hamburg Airport. Technical feasibility study as well as cost-benefit analysis
- Airport Catania Fontanarossa: Nuova fermata: The project consists in the railway connection and new station for the Fontanarossa Airport
- Roma Fiumicino: New metro link between Rome and the airport: The new link should also serve the urban areas between the city and the coast around Rome that generates much of the demand for connection to and from the airport
- Roma Fiumicino: Upgrading of the rail link to Roma Fiumicino airport: The measure aims at improving the rail accessibility to Rome Fiumicino Airport
- Roma node and Roma Fiumicino: Completion of Northern Ring and accessibility to Roma Fiumicino airport: The project aims at the completion of Northern Ring of Rome rail node and improving the rail accessibility to Rome Fiumicino Airport

Rail and Port:

- Göteborg Port line (upgrade to double track) and new Marieholm bridge project;
- København: Establishing a tunnel from Nordhavnsvej to Nordhavn, connecting container terminal, cruise terminal and future ro-ro terminal;
- Hamburg: New Bridge Kattwyk: The project includes the construction of one of the largest rail vertical-lift bridges of the world crossing the Southern Elbe and optimizing the important crossing point for ship, rail and road."
- Hamburg: Converted train station Waltershof 2nd stage: Converted train station Waltershof 2nd stage.
- Hamburg: Southern railway connection Altenwerder: Construction of a two-pronged connection between Vorstellgruppe Altenwerder East and New Railroad Bridge Kattwyk
- Hamburg: Construction of 4 tracks and 2 full length main tracks in the Hohe Schaar station: Four new tracks Bf Hohe Schaar including 2-track connection of the new railway bridge Kattwyk according to two axes concept
- Hamburg: Locomotive service point Port West: Construction of a parking area for locomotives
- Hamburg: Track doubling Nordkurve Kornweide: Construction of a new track and adaptation of crossing structures to link on the two tracks Nordkurve Kornweide
- Lübeck: Expansion of the railway connection to and from the terminals in Lübeck: Northern railway connection Skandinavienkai and Seelandkai / CTL / Lehmannkai II to the route Lübeck-Puttgarden
- Livorno: New station on Darsena Toscana and connection to Tyrrhenian line: The measure consists in the construction of a new station at Darsena Toscana terminal in the port area, and its direct connection to the Tyrrhenian line.
- Taranto: Upgrade of railway connections and infrastructure in the Port of Taranto: The project is divided in two lots: 1. upgrading of railway equipment for the link of Cagioni station to the port area (Molo polisettoriale); 2. new

tracks for the logistic platform, connection with national railway line (I and IV sporgente)"

- Napoli: Upgrade of Napoli port railway connection: The measure consists in the upgrade of the connection of the port of Napoli to the main north-south railway line
- Gioia Tauro: Upgrading rail link and rail facilities at Gioia Tauro seaport: The measure consists in the upgrade of line and equipment for the connection between the Gioia Tauro port and the railway line
- Bari: Rail link to Bari seaport: Construction of new railway connections to the ports
- Palermo: Rail link to Palermo seaport: Construction of new railway connections to the ports
- Augusta: Rail link to Augusta seaport: Construction of new railway connections to the ports
- Livorno: New station on Darsena Toscana and connection to Tyrrhenian line: The measure consists of the construction of a new station at Darsena Toscana terminal in the port area, and its direct connection to the Tyrrhenian line.
- "Livorno: RACCORDO Project - Rail Access from Coast to Corridor: The Action “RACCORDO”, (funded by TEN-T Programme Call 2013) targets the completion of a set of studies (preliminary and final design), for: - the restoration of the rail overpass of the “Tyrrhenian Line” and for the completion of small scale rail hinterland connections towards Florence and the Core Network, in order to achieve a full integration of the Livorno Logistic Node to the Scandinavian-Mediterranean Corridor"

Rail and Road

- Kouvola-Kotka/Hamina: Improvement of service level on railway section Kouvola–Kotka/Hamina: Several improvement measures for the railway yards as well as different railway and road sections
- Øresund: Øresund Bridge: According to the prognosis there will be some expected challenges for the capacity on the Øresund Bridge in 2035, which will depend on the economic trends in the market. Therefore investigation studies are required to derive measures and their timing.
- Fehmarn Belt: The Fehmarn Belt Fixed Link realises a fixed, close, and direct connection between Scandinavia and continental Europe. The duration of a train journey between Hamburg and København will be cut short from about four and a half to less than three hours (2:40). In the future, freight trains will be able to avoid the 160 km longer detour via the Great Belt. This will create a strong transport corridor between the Øresund region in Denmark/Sweden and Hamburg in Germany.
- Hamburg: Transport links Burchardkai (planning and construction): Renovation and redesign of road and rail connections of the container terminal Burchardkai (CTB).

Rail and RRT:

- Stockholm Nord (Rosersberg), rail connection to RRT: Rosersberg (Stockholm Nord), rail connection to RRT
- New public siding in Bari Lamasinata: The project consists in the railway connection to Bari-Lamasinata Freight village
- Improvement of Verona Quadrante Europa terminal: Project aimed at improving the capacity of RRT Verona Quadrante Europa and the connection with the rail network

Road and Port:

- København: Establishing a tunnel from Nordhavnsvej to Nordhavn, connecting container terminal, cruise terminal and future ro-ro terminal;
- Augusta, Bari and Gioia Tauro: Enhancement (ring) road enabling a better last mile connection to the port

4.3.7 Two Pre-identified Border Crossing Projects (KombiConsult)

Besides monitoring of the implementation of the measures and projects included in Annex 3, mostly by the respective stakeholder and/or Member State concerned, the realisation of the large scale projects already highlighted in the Commission's communication[141] of 7 January 2014 require thorough monitoring by the European Coordinator. Two of the six "major EU cross border projects" mentioned there are assigned to ScanMed Corridor, namely the Fehmarn Belt Fixed Link and the Brenner Base Tunnel.

Fehmarn Belt Fixed Link

The Fehmarn Belt Fixed Link is a project aiming at creating a direct fixed link between the Danish regions of Lolland and Falster and the German region of Schleswig-Holstein. The central segment is the 18 km long Fehmarn Belt tunnel. Running between Rødbyhavn on Lolland and Puttgarden on Fehmarn will be two double-lane motorway tubes with an emergency lane and two rail tubes with electrified rail tracks. The infrastructure is solely owned by the Danish state and realized by Femern A/S, a subsidiary of Sund & Bælt Holding A/S who have gained experience with implementing the Great Belt and Öresund fixed links already. Like these projects, the construction costs will be user financed according to the "Danish model".[142]

That means that the project will be financed by the future earnings from tolls. Denmark is responsible for financing the coast-to-coast section and the Danish landworks. To this end, the state owned company Femern A/S obtains loans on the

[141] European Commission COM(2013)940 final of 07.01.2014.
[142] For more information see Sund & Bælt Holding A/S, The Danish State Guarantee Model, 9/2014.

international financial market for which the Danish government is providing state guarantees. As a result of these guarantees, the loans can be obtained by Femern A/S at the same terms and conditions available to the state.

Based on immense preparatory work, a state treaty was effected between Denmark and Germany in the year 2008, it is now in the phase that the construction act is to be presented by end of 2014. If the construction act is approved and German regulatory approval obtained, contracts with successful tenderers will be signed already in 2015 and the Fehmarn Belt Fixed Link will be completed after 6.5 years construction time already in 2021.[143]

The main arguments for realizing the project are both related to transport and the creation of regional growth:

- The new fixed link will save nearly two hours travel time each way;
- There will be no waiting time and no ticket reservations required;
- It shall create new opportunities for commuters locally;
- It demonstrates increased Danish interest in Germany;
- New growth axis between the Øresund Region and Hamburg;
- Running trains on the about 160 km shorter route saves energy and reduces GHG and other emissions.[144]

Figure 61: Cross section of Fehmarn Belt Fixed Link tunnel (Source: Femern AS 2014)

According to DB Netz[145], on the København – Hamburg rail connection the journey time for rail freight will be reduced from about six hours (via Great Belt fixed link, 500 km) to about four hours (via Fehmarn Belt Fixed Link, 340 km). The corresponding times for passengers on the 340 km route via Rødby – Puttgarden will be reduced from four and a half hour to less than three hours (2:40).

[143] Femern A/S presentation to Pat Cox on 14.10.2014.
[144] Fehmarnbelt Fixed Link – The European Message, 26.11.2012
[145] DB Netz presentation on Fehmarnbelt Days, 02.10.2014.

Planning and construction phases are as shown in the following table: [146]

State Treaty Denmark - Germany	2008
EIA process and commencement of preparations for construction act, including start of tender process with prequalified contractors and submission of overall application to Germany	Until 2013
Presentation of Construction Act	By end of 2014 [147]
Construction Act approved and German regulatory approval obtained; contracts with successful contractors signed, start of constructions	In 2015
Fehmarn Belt Fixed Link completed	By 2021

Table 50: Planning and construction phases Fehmarn Belt Fixed Link

Construction of the tunnel and its direct connection to rail and road is essential for making the project a success. In addition to that it requires improved infrastructures on the northern and southern access lines.

The Brenner Base Tunnel (BBT)

The Brenner Base Tunnel (BBT) is a double-tubed tunnel between Austria and Italy to enable underpathing the Brenner pass and allow “flat” railway operation (“Flachbahn”). The new tunnel will run from Innsbruck to Franzensfeste/Fortezza for a distance of 55 km. Including the railway bypass Innsbruck, which has already been built and will be upgraded with an emergency tunnel, the entire railway tunnel system of BBT is 64 km long. Thus, it will be the longest underground rail link in the world. Together with the other access and logistic tunnels and the exploratory tunnel, necessary to explore the rock and to optimise the excavation methods of the main tunnels, the total length of the tunnel system will be more than 200 km.

The BBT is meant primarily for rail freight transport, allowing a modal shift of traffic from road to rail. Passenger trains can also travel through the tunnel. Thanks to the very low gradient, trains will no longer have to contend with the steep up- and downhill slopes on the current Brenner railway line, whose alignment is by now over 140 years old.

Main features with respect to rail traction will be a maximum permitted speed of 250 km/h for passenger trains and 120 km/h for freight trains, electric power supply of 25 kV 50 Hz and ETCS Level 2 equipment.

The main arguments for realizing the project are:

- To supply sufficient additional rail capacity for alpine crossing transport in order to support the modal shift objectives of the Alpine area, which are – in brief -

[146] Femern A/S presentation to Pat Cox on 14.10.2014.
[147] According to information from the Danish Ministry of Transport via e-mail of 28.11.2014, the Construction Act will be presented to the Danish Parliament in February 2015.

to reduce the impact of transport on the local population and the environment in the sensitive alpine region,

- To reduce the travel time Innsbruck –Bolzano (Bozen) from two hours to one and for the 425 km distance between München and Verona from 5.5 to three hours, in order to make those stretches more attractive for passenger and freight services,

  To improve efficiency of rail freight transport, since longer and heavier trains will be able to run with less locomotives, so that the competitive advantage of rail transport can be improved.

Freight trains	Length	Locomotives	Length of the trains	Max transportable mass	Travel time
Existing line	75km	2 - 3	450 m	1200 t	1h 45'
New line	**55km**	**1**	**750 m**	**1600 t**	**35'**

Figure 62: Longitudial section and basic train parameters of Brenner (Source: BBT SE 2014)

The tunnel is realized by "Galleria di base del Brennero – Brenner Basistunnel BBT SE", an Austrian/Italian joint venture company ("Societas Europaea") having the mandate to design and realise the Brenner Base Tunnel railway line according to a state treaty between Austria and Italy.

Planning and construction phases are as follows[148]:

Phase I: preliminary project and prospection	1999–2003
Phase II: final project and Environmental Impact Assessment	2003–2010
Phase IIa: exploratory section	2007–2013[149]
Phase III: main tunnel	2011–2025

[148] Feedback of BMVIT by e-mail of 17.10.2014.
[149] According to information provided by BBT SE via e-mail of 28.11.2014, phase IIa will last until 2020.

The works on the tunnel have been started and are progressing according to schedule, with the aim to put the railway line in operation by end of 2026.[150]

The foreseen total costs over the entire design and construction phase of the BBT project are 7,941 Million € (price basis 01.01.2012). If a provision for not yet identified risks is included, the total costs are 8,585 Million €. Recent figures say that the costs (including not yet identified risks and bringing into service) would be about 8.5 billion € at 2014 prices and about 10 billion € if inflation until 2026 is taken into account.[151]

Analysis made in preparation of the 'Action Plan Brenner 2009' demonstrated that the stakeholders engaged in the process are convinced that realizing the tunnel is mandatory, but only one of the pre-conditions for contributing to a solution for a more environmental friendly transport. Other elements that have been agreed at that time and to be realized are the so-called "accompanying measures" which will enable the efficient shift from road to rail in the Brenner corridor. These measures, in a broader sense, are related to improving the efficiency of the rail freight services on the existing Brenner line until the tunnel railway line supplies its full capacity. Main measures, among others, are the following:

- Environmental Monitoring: joint and coordinated measurement of air emissions and noise along the corridor and comparison of the evolution over time;
- Traffic management systems: analysis of different traffic management systems and their application on the corridor; these traffic management systems shall also take into account environmental effects of the heavy goods vehicles;
- Road tolls differentiated by emission class and occupation rate;
- Cross financing of transport infrastructure.

4.4 Objectives for the Corridor (Snizek + Partner)

Article 4 of the Regulation (EU) 1315/2013 describes the objectives of the trans-European transport network, which shall strengthen the social, economic and territorial cohesion of the European Union. The aim is to create a single European transport area, which is efficient and sustainable, to increase the benefits for its users and to support inclusive growth. The four categories (cohesion, efficiency, sustainability and increasing the benefits for its users) shall be implemented by a list of specific objectives. The requirements of Article 4 represent the basis for the objectives of the Scandinavian-Mediterranean core network corridor, which are listed in the sub-chapters below.

[150] Presentation of BBT SE during the 2nd Corridor Forum meeting.
[151] Interview Konrad Bergmeister, Der Brenner Basistunnel Ein Europäisches Projekt, ETR October 2014

The methodology applied to develop the objectives of ScanMed Corridor is the following:

- Analysis of the Regulations with respect to quantitative and qualitative objectives that „must" be met;
- Analysis of the findings from previous corridor analyses with respect to removal of bottlenecks and missing links and other regulative, administrative, operational or technological obstacles;
- Analysis of pre-selected projects with respect to their objectives;
- Proposal of (draft) objectives to the 2nd Corridor Forum;
- Request feedback from the 2nd Corridor Forum participants;
- Integration of the respective feedback into the final draft objectives.

The objectives described below in detail have been adopted by the Member States representatives after the 2nd Corridor Forum meeting; no additional objectives were seen to be necessary. Thus they are the final objectives for the corridor.

After the 3rd Corridor Forum meeting only one KPI was added upon Austrian initiative, and contractor consortium included the objective to realize the measures and projects agreed upon in the final version of the work plan within the time frame under the conditions set by the legal framework, in particular Article 1 (4) of Regulation (EU) 1315/2013.[152]

4.4.1 Qualitative Objectives

„Core network corridors should also address wider transport policy objectives and facilitate interoperability, modal integration and multimodal options."[153] These corridors should ensure a seamless national and international transport by all kinds of transport modes, minimise environmental impacts and increase competitiveness.

To achieve these general objectives, several detailed objectives and measures are recommended.

One of the major goals within the core network is the removal of bottlenecks and the bridging of missing links particularly at border-crossing sections. The extension of the transport infrastructure shall be done both within the Member States and between them.

Regions along the corridor shall be adequately supplied with traffic infrastructure.

[152] The intention to include this objectives was already discssed by the Member States in the 1st Corridor Forum meeting and is included by the contractor consortium into the progress only at the stage.
[153] Regulation (EU) 1315/2013, Article 4

The core network shall be shaped to such an extent that at all border crossing points a seamless traffic flow, border checks, border surveillance and other border control procedures are ensured for all kinds of transport modes.

The core network shall guarantee an optimal integration of all transport modes and multimodality. The interoperability shall be ensured for national and trans-European transport networks by removing technical and administrative barriers.

Maritime transport and Motorways of the Sea shall be promoted by the Union.

Within the core network, the implementing and the deploying of telematic applications and promoting innovative technological development shall be supported significantly.

Environmental protection measures by using alternative clean fuels and propulsion systems as well as promoting low-carbon transport should result in the relevant Union CO_2 reduction targets. In consequence, this will lead to a reduction of other pollutant's emissions and the external costs. Additionally, at the ecologically sensitive parts of the corridor like the Alpine crossing sections, specific attention has to be given to meeting the environmental goals defined by EU law. An efficient rail infrastructure in combination with an appropriate framework will provide the main pillar to reach these goals.

Against this background, mode specific objectives are as follows:

4.4.2 Rail

Member States shall ensure[154] that the railway infrastructure of the core network fulfils the following requirements by the year 2030:

- **Full electrification.** If the rail operation requires sidings they also have to be electrified [Reg. 1315/2013, Art. 12-2d, Art. 39-2a(i)].
- Axle load (for freight lines): 22.5 t [Reg. 1315/2013, Art. 39-2a(ii)].
- **Line speed (for freight lines): 100 km/h** [Reg. 1315/2013, Art. 39-2a(ii)] (NB: no speed requirement for passenger lines).
- Enabling operation of 740 m freight trains [Reg. 1315/2013, Art. 39-2a(ii)].
- **Full ERTMS equipment** [Reg. 1315/2013, Art. 12-2a, Art. 13a, Art. 39-2a(iii)].
- New lines to be built in **standard gauge (1435 mm)**, except in certain circumstances [Reg. 1315/2013, Art. 13b, Art. 39-2a(iv).

Priorities for railway infrastructure development are:

[154] "Without prejudice to Directive 2008/57/EC, at the request of a Member State, .., exemptions may be granted by the Commission in duly justified cases in relation to the train length, ERTMS, axle load, electrification and line speed."

- The impacts of noise and vibration caused by railway transport have to be reduced. This objective should be achieved by measures
  - for the rolling stock and
  - for the infrastructure as well as
  - by noise protection barriers.
- Seamless transport beyond national borders shall be guaranteed by increasing the interoperability (e.g. European Directive 2008/57/EC and its related documents).

4.4.3 Road

Member States shall ensure for the core network roads by the year 2030 that:

- roads are either an express road or motorway (Reg. 1315/2013, Art. 18a) - exact definition of the requirement is contained in Regulation (EU) 1315/2013, Article 17-3[155];
- "intelligent transport system"[156] and tolling systems are provided which are compatible with other systems (Reg. 1315/2013, Art. 17-4, Art. 19b);
- sufficient parking areas are provided with an appropriated level of safety - at least every 100 km (Reg. 1315/2013, Art. 39-2c);
- alternative clean fuels (defined in Reg. 1315/2013, Art. 3w) and thereto necessary infrastructure are available to the sufficient necessary (Reg. 1315/2013, Art. 39-2c).

Priorities for road infrastructure development are:

- Appropriate measures shall increase the road safety. The goal is to cut road casualties in half by 2020 and drop to zero by 2050.
- The introduction of new technologies and innovations shall enable sustainable low-emission road traffic. The goal is to reduce greenhouse gas emissions minimum to 60% by 2050.
- The use of information and traffic management systems as well as communication systems shall increase road safety, mitigate congestions on roads and reduce pollutant emissions.

4.4.4 Airports

Member States shall ensure, generally by 2030, that:

[155] "At the request of a Member State, ..., exemptions from the provisions of points (a) [motorway] or (b) [express road] of Article 17(3) may be granted by the Commission in duly justified cases as long as an appropriate level of safety is ensured." (Regulation (EU) 1315/2013, Article 39 (3).

[156] ITS = „intelligent transport system", means a system as specified in Directive 2010/40/EU.

- any airport offers at least one terminal which is open to all operators in a non-discriminatory way and which applies transparent, relevant and fair charges (Reg. 1315/2013, Art. 25-1);
- infrastructure for air traffic management permits the implementation of the Single European Sky in accordance with Regulations (EU) 549/2004 to 552/2004 (Reg. 1315/2013, Art. 25-3);
- infrastructure with sufficient capacities must exist to make alternative clean fuels for aviation available (Reg. 1315/2013, Art. 39-2d).

For main airports, the Regulation foresees the connection to TEN-T rail and road networks **by 2050**, where physical circumstances allow this. Depending on sufficient potential traffic demand, these airports should be integrated into the high-speed rail network, wherever possible (Reg. 1315/2013, Art. 41-3). According to Annex II Part 2 of Reg. 1316/2013, these main airports are:

- Helsinki (Vantaa),
- Stockholm (Arlanda),
- København (Kastrup),
- Berlin-Brandenburg,
- Hamburg,
- München,
- Roma (Fiumicino).

Priorities for airport infrastructure development are:

- Airport capacities shall be increased.
- Air traffic management systems, in particular those deploying the SESAR system, shall be implemented.
- The extension of multimodal interconnections between airports and infrastructure of other transport modes – in particular to the infrastructure of public transport – shall lead to an increased accessibility of airports and shall make a contribution to sustainability.

4.4.5 Maritime Transport, Ports, Motorways of the Sea

Member States shall ensure that core maritime ports by the year 2030:

- Are connected to rail network, inland waterways (where possible) and road network (Reg. 1315/2013, Art. 22-1a, Art. 41-2);
- make available alternative clean fuels for maritime transport (Reg. 1315/2013, Art. 23d, Art. 39-2b). The goal is to reduce CO_2 emissions from maritime bunker fuels by 40% until 2050;
- are well-provided with reception facilities for ship generated waste;
- Implementation of VTMIS (VTS), SafeSeaNet (SSN) systems and e-Maritime services shall be completed.
- Motorways of the Sea as the maritime dimension of the core network (Commission White Paper on Transport, item 53) are developed further.

4.4.6 Multimodal Transport

According to Regulation (EU) 1315/2013, Article 4n "multimodal transport" means the carriage of passengers or freight, or both, using two or more modes of transport.

The Member States shall ensure (Reg. 1315/2013, Art. 28) that:

- transport modes are connected to each other at freight terminals, passenger stations, airports and maritime ports, in order to allow multimodal transport of passengers and freight;
- freight terminals and logistic platforms, maritime ports and airports handling cargo are equipped for the provision of information flows within this infrastructure and between the transport modes along the logistic chain. Such systems are in particular to enable real-time information to be provided on available infrastructure capacity, traffic flows and positioning, tracking and tracing, and ensure safety and security throughout multimodal journeys;
- continuous passenger traffic across the comprehensive network is facilitated through appropriate equipment and the availability of telematic applications in railway stations, coach stations, airports and maritime ports.
- Freight terminals shall be equipped with cranes, conveyors and other devices for moving freight between different transport modes and for the positioning and storage of freight.

Priorities for multimodal transport infrastructure development (Reg. 1315/2013, Art. 29) are:

- providing for effective interconnection and integration of the infrastructure of the comprehensive network, including through access infrastructure where necessary and through freight terminals and logistic platforms
- removing the main technical and administrative barriers to multimodal transport
- developing a smooth flow of information between the transport modes and enabling multimodal and single-mode services to be provided across the trans-European transport system.

4.4.7 Realization of Agreed Projects of the Final Work Plan

Stakeholders having participated to the Corridor Forum meetings shall do their utmost to realize the quantitative and qualitative objectives of the ScanMed Corridor, in particular by realizing the measures and projects that are part of the indicative list of projects of the work plan. Member States are responsible for implementing the projects included in the Final version of the work plan in their responsibility within the time frame and under the conditions set by the legal framework, in particular Article 1 (4) of Regulation (EU) 1315/2013. This objective applies only for projects explicitly proposed by the Member States and not for those projects that are in the responsibility of the Member States but were proposed by other stakeholders.

4.4.8 Key Performance Indicators

The improvement of the goal attainment must be measurable and visible. Therefore, key performance indicators have to be defined. These indicators must be determined on corridor level. If this is not achievable, indicators on national level have to be used. The problem by using indicators on national level is that the effects of the corridor cannot be displayed explicitly. Some objectives, especially the qualitative objectives are not measurable thus no key performance indicators can be defined.

The evaluation of the goal attainment must be carried out at least every five years. The results will be indicated as the degree of target fulfilment [%]. The results will be figured in tabular form.

Some objectives can be quantified on corridor level quite easily. For this purpose, the status quo must be assessed and every five years the progress has to be evaluated (target-performance comparison). The following table contains the objectives defined for the Scandinavian-Mediterranean core network corridor, which can be evaluated by a target-performance comparison. The first version provided with the 3rd Progress report was generally accepted[157].

[157] According to feedback provided from BMVIT the last KPI was added for discussion among the Member States in the forth Forum Meeting

		year			
mode	objective	2015	2020	2025	2030
Rail	Full electrification				
	Axle load 22.5 t				
	Line speed 100 km/h				
	740 m freight trains				
	ERMTS equipment				
	Standard gauge 1435 mm for new lines				
Road	Express road or motorway				
	Intelligent transport systems (ITS) / tolling systems				
	Parking areas every 100 km, minimum				
	Infrastructure for alternative clean fuels				
Airports	Terminal open to all operators				
	Infrastructure for air traffic management, SESAR				
	Infrastructure for alternative clean fuels				
	Main airports connected to (high-speed) rail network				
Maritime transport, Ports, MoS	Connection to rail, road, IWW (where possible)				
	Infrastructure for alternative clean fuels				
	Facilities for ship generated waste				
	VTMIS, SafeSeaNet, e-Maritime services				
Multimodal transport	All transport modes connected at freight terminals, passenger stations, airports, maritime ports				
	Real time information on freight terminals, maritime ports, cargo airports				
	Sufficient transhipment equipment on freight terminals				
	Continuous passenger traffic through equipment and telematic applications in railway stations, coach stations, airports, maritime ports				
Environmental targets	Specific target values more detailed than those mentioned in the TEN-T Regulation could be identified for specific sections of the corridor by the Member States concerned in accordance with European legislation				

Table 51: Assessment of the performance of the objectives

Another group of objectives, which are not formal TEN-T or CEF-objectives but mentioned in the Regulations recitals[158] or the Commission's 'White Paper' cannot be evaluated by this way because the basic data only exist on national level. In particular, following objectives associate this group:

- To cut road casualties by half by 2020 and drop to zero by 2050 (based on 2010 level).
- To reduce greenhouse gas emissions minimum 60% by 2050 (based on 1990 level).
- To reduce maritime bunker fuels by 40% until 2050 (based on 2008 level).

For the evaluation of these objectives on corridor level two different methods can be used. First, the indicators can be calculated from national statistics. Therefore key figures like the mileage (vehicle-kilometres, train-kilometres) or the flow (passenger-

[158] Recitals 13, 23 and 31 of Regulation (EU) 1315/2013 and recital 35 of Regulation (EU) 1316/2013.

kilometres, tonne-kilometres) have to be well known both on national level and on corridor level. In further consequence, the objectives can be calculated on corridor level.

The second method would be the measurement of the objective effects in the corridor area. This method would be much more exact especially by the evaluation of the greenhouse gases. The disadvantage of this approach is the high effort for the establishment of a measuring station network. More exact details have to be worked out in an extensive study since this is not possible as part of this project.

4.5 Implementation (HaCon/KombiConsult)

4.5.1 List of Projects

The contractor consortium collected projects aiming at infrastructure improvements for all nodes and modes of transport on the whole corridor by analysis of studies and documents as well as by contribution of the Member States' ministries and stakeholders involved in the Corridor Forum meetings. In addition, pre-identified sections and projects and those measures or projects arising from the compliance analysis as well as the bottlenecks and missing links analysis and projects for the implementation of traffic management systems are part of the list of projects.

Interaction with the stakeholders when establishing the list has demonstrated that the definition of projects and measures is rather heterogeneous for the different modes and groups of stakeholders. We have had to cope with a variety of issues regarding maturity (covering the entire cycle from “idea” to “works almost completed”), size (from a single measure in a port or airport up to nationwide programmes, e.g. ETCS implementation) and costs (from no information or estimates up to contracted building costs or checked invoices, and their conversion into Euro or valorisation over time).

The presentation of the list follows the structure provided by the European Commission for all nine CNC[159]:

[159] Initial structure provided by European Commisison by e-mail in June 2014, small amendment and good examples by e-mail of 21 October 2014.

Parameter / title of the column	Definition according to contractor consortium
Transport Mode	Mode (rail, road, ...) or node (airport, seaport, RRT, ...) of transport, includes also combinations thereof, MoS and Multimodal Transport
Location	Section or node of the CNC
Studies or Works	Characteristics of the scope
Description of the project	Free text describing the project in brief
Project promoter	Term used by INEA for the body applying for funding; in some cases also the infrastructure manager or implementing body; in no cases a lobbyist
Timing	Year – Year or earliest start year or latest end year of the project
Costs (in MEUR)	Costs of the measure according to cited document or project description provided by Member State or project promoter (no common price level defined, no requirement on maturity of calculation by Commission)
Financing sources	Partly formalised text indicating the public or private funds, loans, guarantees, and/or (possible) EU or other co-financing, in particular CEF
Critical issue	Marked “x”, if at least one of the characteristics provided in the list of critical issues explained and included in chapter 4.3 is valid
CEF pre-identified section	Marked “x”, if included in the list of pre-identified sections according to Regulation (EU) 1316/2013, Annex I, Part 1

Table 52: Descriptors used in the list of projects included in annex

This list, provided in Annex 3, is a long list collected and consolidated for further analysis and evaluation by the Member States. It may include projects which are not fully supported by Member States or where political discussions are ongoing, or which do not (entirely) fulfill the priority criteria of the EU-Regulation for potential CEF funding. For example, placeholder measures for Norway are included since Norway is part of the ScanMed corridor, but not able to benefit from the “normal” CEF funding of course. However, the involvement of Norway in the 2014 study was to observe the progress rather than actively contributing with measures on the Oslo – Göteborg section.

As explained by the European Commission in the 3rd and 4th Corridor Forum meeting, the list is the final result of the study, while it is up to the Member States to approve the work plan to be delivered by the European Coordinator, and it is up to the structured evaluation process of those projects which are finally proposed by stakeholders in the present[160] (and future) calls for proposal. There is no guarantee that projects included in the studies' list of projects or the final work plan will be funded by CEF, since the funding decision is subject to a variety of checks and validations that cannot be simulated in the framework of the present study.

The draft final list was presented to the stakeholders and Member States as well as Norway to be discussed in the 4th Corridor Forum meeting. Feedback and change

[160] http://inea.ec.europa.eu/en/cef/cef_transport/apply_for_funding/cef_transport_call_for_proposals_2014.htm

requests received by 28.11.2014) have been included in the final version, if the comments were not conflicting or would have required another discussion loop.

As presented in the Figure below, the current project list includes 394 projects and measures related to the ScanMed Corridor.[161]

For less than one third of the projects (112 projects/measures, 28%) no information on the planned completion year is given. For the remaining projects, a large number (191, 49%) is to be completed by 2020, the end of the current financing period in many countries. The same tendency is recognized for 2030 (the target year of the current Regulation) which was chosen as the "latest" year for fulfilling the target compliance criteria and thus to terminate the respective projects, where remaining 91 projects (23%) have to be completed.

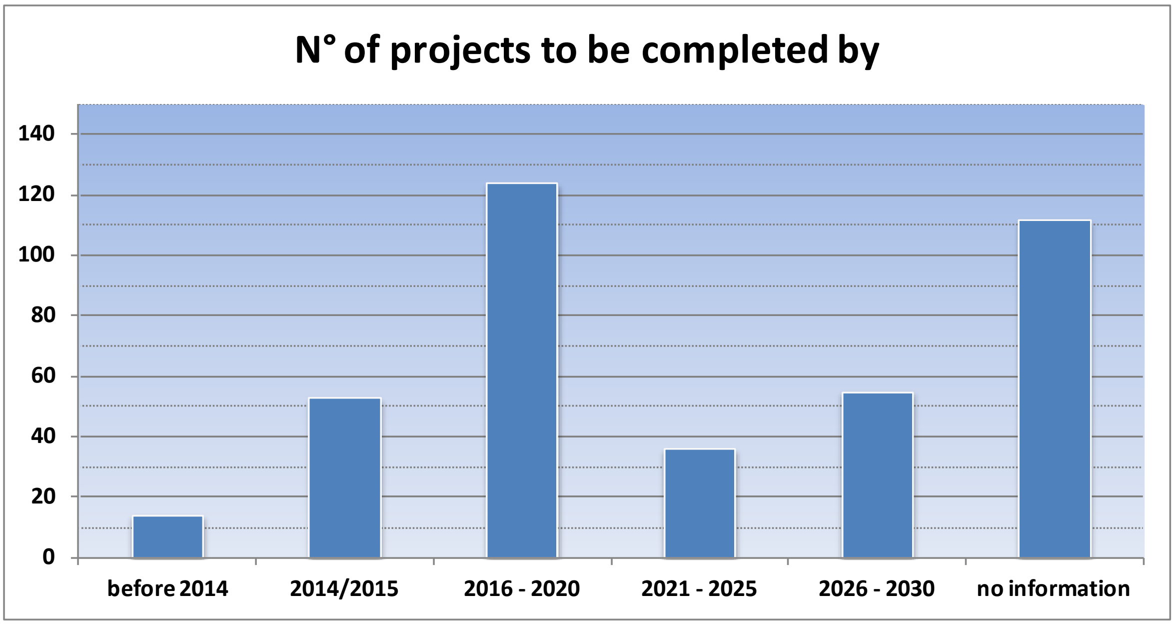


Figure 63: Number of projects by envisaged completion time frame

A analysis of the number of projects by mode and country, including "border crossing" projects is provided in Table 53. Some of the projects are very large, while other smaller, focused measures are at airports or ports or just "place holders" for a study clarifying future need in detail.

The final project list of the ScanMed corridor includes about 394 ongoing or planned projects and measures with a total estimated cost of about 144.6 billion €. Only the

[161] The initial list included more than 450 entries of which some were deleted, because they were not fitting to the corridor alignment, were detailed measures or phases of a larger project, or they were placeholders for reaching compliance which became finally part of a larger project on the same section.

pre-identified sections account for 115 projects with a total cost of 76.3 billion €. The following table is proving an overview on the number of projects by section and mode.

Country	Rail	Rail + other	Road	Road + other	Sea-port	Sea-port + MoS	MoS	Air-port	RRT	Other	Total
FI	15	1	5	1	2	1		2	3	2	32
FI/SE						1					1
SE	22	3	15		4	2	1	2	1		50
SE/DK		1									1
DK	10		5	1	2	1		2	1		22
DK/DE		1									1
DE	29	9	31		10	1	1	26	6	1	114
DE/AT			1								1
AT	6		6						1		13
AT/IT	2										2
IT	62	13	13	3	21	4	1	1	1		119
IT/MT						1		6			1
MT			3		10						19
NO	1		1					1	1		4
Diverse							14				14
Total	147	28	80	5	49	11	17	40	14	3	394

Table 53: Number of projects by mode and country; ("Diverse" = multi-country projects; "other" = Multimodal and ITS)

Country	Rail	Rail + other	Road	Road + other	Sea-port	Sea-port + MoS	MoS	Air-port	RRT	Other	Total
FI	7.316	165	1.307	90	325	400		914	44	6	10.567
FI/SE		0		0							
SE	13.335	1115	7.112	0	745	130	75				22.511
SE/DK		0		0							-
DK	6.926	0	994	350	65						8.335
DK/DE		6174		0							6.174
DE	29.545	377,7	2.421	0	419			279	188		33.230
DE/AT		0	10	0							10
AT	4.907	0	85	0					35		5.026
AT/IT	10.000	0		0							10.000
IT	26.781	939,718	18.450	263,16	1.234		3	115			47.785
IT/MT				0							
MT					44			22			151
NO											
Diverse											844
Total	98.810	8.771,418	30.464	703,16	2.831	530	922	1.330	266	6	144.633

Table 54: Cost of projects by mode and country; ("Diverse" = multi-country projects; "other" = Multimodal and ITS) in million €

The Commission has also requested to analyse which projects a on the pre-identified section including projects identified in Regulation (EU) 1315/2013, Annex 1. If this criterion is applied a total of 115 of 394 projects (about 29%) are "pre-identified". Due to the nature of the priorities included in the Regulation the largest number are rail projects (83), followed by seaport and MoS-projects (21), while road and airport projects are not fulfilling this criterion.

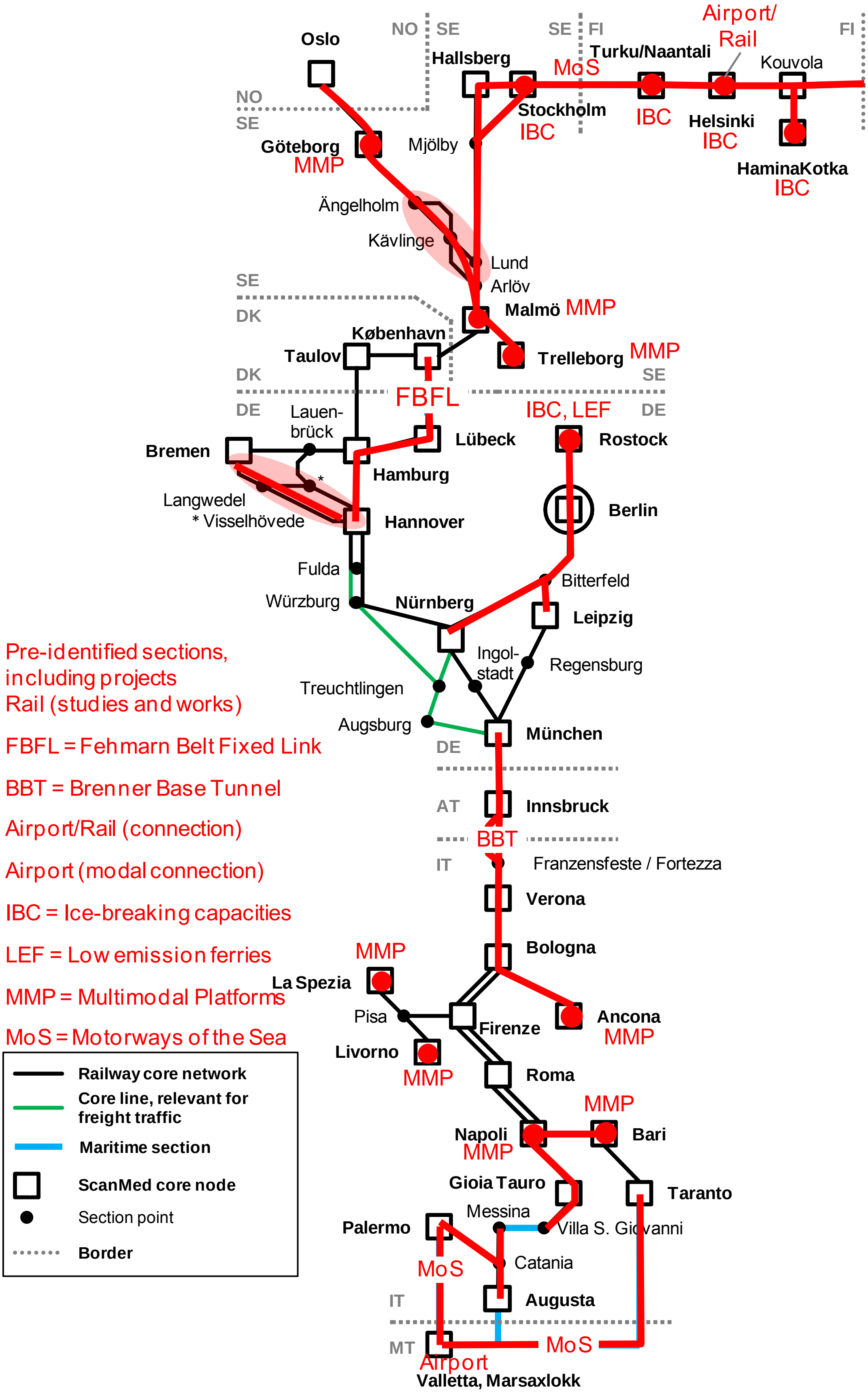


Figure 64: Pre-identified sections including projects according to Regulation (EU) 1316/2013

Country	Rail	Rail + other	Road	Sea-port	Sea-port + MoS	MoS	RRT	Total
FI	10	1		1			1	13
FI/SE					1			1
SE	22	1						23
DK	2							2
DK/DE		1						1
DE	18					1		19
AT	6							6
AT/IT	2							2
IT	23	5		14	2			44
IT/MT					1			1
MT			2					2
Diverse						1		1
Total	83	8	2	15	4	2	1	115

Table 55: Number of projects by mode and country; (“Diverse” = multi-country projects; “other” = Multimodal and ITS)

These pre-identified projects are cumulating to a total cost of 76.341 million € of wich the largest share is associated with rail projects (about 68 billion €). In detail the following picture appears.

Country	Rail	Rail + other	Road	Sea-port	Sea-port + MoS	MoS	RRT	Total
FI	6.836	165		275			5	7.281
FI/SE								
SE	13.335	370						13.705
DK	1.910							1.910
DK/DE		6.174						6.174
DE	18.798							18.798
AT	4.907							4.907
AT/IT	10.000							10.000
IT	12.427	84		852				13.362
IT/MT								
MT			81					81
Diverse						123		123
Total	68.212	454	81	1.127		123	5	76.341

Table 56: Costs of projects by mode and country; (“Diverse” = multi-country projects; “other” = Multimodal and ITS) in million €

For the "pre-identified" projects listed already in Annex I Part 1 of the Regulation (EU) 1316/2013 have been presented to the respective Member State and it could be identified which of the projects of the project list replies to it.

For one German pre-identified section "Seaport, MoS Rostock, low emission ferries; ice-breaking capacities" only one project could be gathered, namely the low emission ferries on Rostock – Gedser (outside of ScanMed corridor) but already in operation, while a particular need or project on ice breaking capacity could not be justified, yet.

Conclusion and next steps

The long list of projects concluded from the analysis of documents, reports, studies, national development plans, the compliance analysis and the identification of critical issues has been checked and completed by the Member States and stakeholders. Information received in due time (by 28.11.2014) and with respect to the required data fields, has been included by the Contractor Consortium into the list attached to this Final Report. The Contractor consortium checked the list against the characterisation criteria which elevated projects to "critical issues" and whether projects are among the "pre-identified sections and projects", and updated the list accordingly. Also the Member States and Norway were involved in the process to build-up the list of projects.

The List of Projects is submitted by the Contractor Consortium to the European Commission together with this Final Report.

The Commission and the European Coordinator will then draft their Corridor work plan and transmit the corridor work plan with the final study report, the list of projects and the TENtec maps to the Member States for comment and approval of the work plan.

It is recommended that stakeholders who have contributed to establishing the list of projects are seeking to implement their projects and apply for CEF funding eventually.

4.5.2 Deployment Plan for Traffic Management Systems

Rail: ERTMS

In 2014, only a very small part (4%) of the ScanMed Corridor is equipped with ETCS in operation:

- Austria: Kufstein - Wörgl/Kundl – Baumkirchen – bypass Innsbruck - Brenner,
- Italy: Bologna – Firenze, Roma – Napoli (HSL).

But the analysis of the different national “ERTMS Deployment Plans” and various additional sources (e.g. network statements) shows several investment programs for the next 10 to 15 years.

Finland is going to equip the railway lines Helsinki – Kerava – Lahti, Lahti – Kouvola and Kouvola – HaminaKotka with ETCS Level 2 between 2019 and 2025.[162] According to the Network Statement 2014/2015, also the lines Pasila – Kirrkonummi (near Helsinki) and Kouvola – Luumäki – Vainikkala (Border FI/RU) are planned to go into operation until 2025.

In Norway a pilot line (the 80 km electrified single track line “Østfoldbanen Eastern line” (ØØL)) is in operation since 2014 “to produce generic requirement specifications and gather sufficient experience to facilitate deployment of ERTMS level 2 systems for the whole network”.[163] According to the Norwegian Network Statement 2015, the line Oslo – Fredrikstad will be completed with ERTMS until 2023 and the line Fredrikstad – Kornsjø (Border NO/SE) until 2030 (both sections are part of the ScanMed Corridor).

In Sweden ERTMS Level 2 firstly has been implemented on some lines in the North (Bothnia line, Ådal line, Haparanda line). But also on the new line “City Tunnel Malmö” as part of the ScanMed Corridor ETCS is planned. The remaining Swedish ScanMed lines will follow gradually between 2015 and 2030[164]:

- Malmö C (Station, Level 1) until 2015,
- Öresund Fixed Link until 2015,
- Malmö – Hässleholm (Level 2) until 2015,
- Hallsberg (Station, Level 1) 2016 – 2019,
- Hässleholm – Hallsberg 2016 – 2019,
- Hallsberg – Järna – Stockholm (Level 2) 2016 – 2019,
- “Västkustbanan” Malmö – Göteborg 2020 – 2025 and
- “Norway/Vänern Line” Göteborg – Kornsjø (Border NO/SE) 2020 – 2025.

The Swedish Network Statement 2015 comprises proposals for the implementation of ERTMS in Sweden[165]:

- Mjölby - Alvesta until 2017,
- Alvesta – Lund and Järna – Mjölby (via Hallsberg and Norrköping) until 2019,
- Öresund Fixed Link and Malmö (“Lund – Pepperholmen”) and Älvsjö (Stockholm) – Järna until 2021[166].

[162] ERTMS Deployment Plan Finland 2006/2007
[163] Jarle Rasmussen: “ERTMS in Norway“, http://www.banekonference.dk/da/program/2012.
[164] Unife/ERTMS Factsheet No. 18, 2013, www.ertms.net and Swedish ERTMS Implementation Plan 2007.
[165] „Förslag till plan för införande av ERTMS på korridor B i Sverige TRV 2012/87263” (January 2013), http://www.trafikverket.se/Foretag/Bygga-och-underhalla/Jarnvag/Trafikstyrningssystemet-ERTMS/Planering-ERTMS/
[166] Feedback provided by Regeringskansliet Sweden, e-mail M. Fransson, 17.10.2014: Malmö – Älvsjö: date of ETCS Entry in Service: 2019 – 2023/24.

That means, that some differences to the Unife Factsheets and the 2007 ERTMS Implementation Plan have to be realised. Another source[167] shows some postponement also for the two remaining areas:

- "Västkustbanan" Malmö – Göteborg until 2025,
- "Norway/Vänern Line" Göteborg – Kornsjø (Border NO/SE) until 2030.

The whole Swedish Rail Network will be equipped with ETCS until 2035 (source: Trafikverket).

The Danish Parliament has decided to modernise the total rail network until 2024 including the replacement of the current signalling system with ETCS Level 2 (incl. GSM-R) until 2019/2020.[168] Relating to the ScanMed Corridor, the following lines will be affected (the dates in brackets relate to latest information of the Danish Ministry of Transport, provided by e-mail of 28.11.2014):

- Ringsted – Vordingborg – Nykøbing/F – Rødby until 2019 (2020),
- Fredericia – Tinglev – Padborg – Border DK/DE until 2019 (2018),
- Roskilde – Ringsted – Korsør – Odense – Fredericia until 2020 (2019),
- København – Roskilde until 2020 (2018),
- København Gb – Hvidovre Fjern – Kalvebod until 2020 (2020) and
- København H - Peberholm – Border DK/SE until 2020 (2019/2020).

Newer publications are indicating the "replacement of all signalling in the entire state railway network with ERTMS by the end of 2021".[169,.170]

The "Trafikplan for den statslige jernbane 2012 – 2027"[171] shows similar dates[172]:

- Ringsted – Vordingborg – Nykøbing/F – Rødby until 2020,
- Fredericia – Tinglev – Padborg – Border DK/DE until 2018,
- Roskilde – Ringsted – Korsør – Odense – Fredericia until 2019,
- København – Roskilde until 2018,
- København Gb – Hvidovre Fjern – Kalvebod until 2020 and
- København H - Peberholm – Border DK/SE until 2019/2020.

Germany has also published an ERTMS Deployment Plan 2006/2007.[173] Because of the financial framework and the infrastructural conditions the implementation until 2020

[167] "Trafikverket: Stora projekt – ERTMS, Extern hearing 12 mars 2013", http://www.trafikverket.se/Foretag/Bygga-och-underhalla/Jarnvag/Trafikstyrningssystemet-ERTMS/Planering-ERTMS/

[168] ERTMS Deployment Plan Denmark 2009 / Trafikstyrelsen: Dansk ERTMS Implementeringsplan 2009

[169] Jesper Rasmussen: "Major railway projects in Denmark – shifting to a new approval process", European Railway Review, Volume 20, Issue 3, 2014

[170] Feedback provided by the Danish Ministry of Transport, e-mail, Th. Rousing-Schmidt, 28.11.2014.

[171] Source: Trafikstyrelsen – Danish Transport Authority: "Trafikplan for den statslige jernbane 2012 – 2027, Februar 2013"

[172] Also stated in the Feedback provided by Danish Ministry of Transport on draft report", e-mail, 30.09.2014

was only planned for two main freight corridors (Emmerich – Basel and Aachen – Frankfurt (Oder)/Horka). Other corridors should follow gradually later than 2020. This includes the corridor Flensburg – Kufstein as part of the ScanMed Corridor. Besides the former ETCS pilot line Berlin – Jüterbog – Halle/Leipzig, where the existing LZB system is used for trains with speed between 161 and 200 km/h, there are two new High Speed Lines, which will be put into operation with ETCS Level 2 without any conventional signalling in the next years:

- HSL Halle/Leipzig – Erfurt: December 2015,
- HSL Erfurt – Ebensfeld (– Nürnberg): December 2017.

Additionally, the implementation of ETCS Level 2 is planned on the following lines which are part of the ScanMed Corridor (but without any information about the intended start of operation):[174]

- ABS Berlin – Rostock,
- ABS/NBS Nürnberg – Ingolstadt – München,
- third track Stelle – Lüneburg.

Some more projects were addressed at the UIC ERTMS World Conference 2012:[175]

- Puttgarden – Hamburg (2027) and
- Hamburg – Nürnberg (2027).

In addition to the above-quoted plans, DB Netz made the following general statement[176]: *„ERTMS is included in all infrastructure projects of DB Netze ("Bedarfsplanprojekte"). But there is at the moment no actual deployment plan including timelines. With exception of the VDE 8.2 project (Erfurt – Leipzig/Halle), which is baseline 2.30 d, all other lines will be equipped with ETCS level 1 LS ("Limited supervision") or level 2, baseline 3.0.*"

In addition, DB Netz[177] gave the statement

"The time creating of the ERTMS equipment on the sections that are not the subject of ongoing new construction and expansion projects are defined in the context of the review of the Euorpean implementation plan. Therefore DB Netz AG currently will not give further assessment of the "Annex 4: ERTMS deployment plan" for the year 2030."

[173] "Nationaler Umsetzungsplan für die TSI Zugsteuerung, Zugsicherung und Signalgebung des konventionellen transeuropäischen Eisenbahnsystems im Rahmen der Richtlinie 2001/16/EG in der Bundesrepublik Deutschland"

[174] Deutscher Bundestag, Drucksache 17/7618, 08.11.2011: Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Dr. Anton Hofreiter, Dr. Valerie Wilms, Stephan Kühn, weiterer Abgeordneter und der Fraktion BÜNDNIS 90/DIE GRÜNEN – Drucksache 17/7421, http://dipbt.bundestag.de/doc/

[175] UIC ERTMS World Conference in Stockholm – 25th April 2012: "Stockholm – Naples, State of play in ERTMS Corridor B"

[176] TEN-T Corridor study meeting DB Netz/HaCon, 21.07.2014, Frankfurt am Main

[177] Feedback provided by DB Netz („Bewertung des Draft Final Report"), 28.11.2014

and the following information about several lines which will be put into operation between 2021 and 2026:

- Kavelstorf – Nassenheide (Rostock – Berlin): 2021
- Stelle – Lüneburg (Hamburg – Hannover): 2021
- Nürnberg – Ingolstadt – München: 2021
- Puttgarden – Lübeck: 2026[178]

The Austrian part of the ScanMed Corridor with the lines

- Kufstein – Wörgl/Kundl,
- Wörgl/Kundl – Baumkirchen,
- Baumkirchen – Anschluss Umfahrung Innsbruck and
- Anschluss Umfahrung Innsbruck – Brenner

is equipped with ETCS level 2.[179] Firstly the new line Kundl – Baumkirchen ("Unterinntal") started with operation in December 2012.[180] The same source remarks that the section "Kufstein – Kundl" is part of the "implementation plan until 2015"[181]. But the existing line Kufstein – Kundl – Brenner was put into operation already in August 2013[182]. The Brenner Base Tunnel will also be equipped with ETCS and will be put into operation 2026 – according to the actual planning.

In Italy the following parts of the ScanMed Corridor have been equipped with ETCS Level 2:[183]

- HSL Roma – Napoli (In operation since December 2005),
- HSL Bologna – Firenze (In operation since December 2009).

Additionally, the implementation of ETCS is planned on the Brennero – Verona line (2015)[184]. The Italian Ministry for Infrastructures and Transport announced "12/2016" for the start of works for ERTMS on the section Brennero – Fortezza – Verona and

[178] See Annex 4 ERTMS Deployment Plan
[179] http://www.oebb.at/infrastruktur/de/_p_3_0_fuer_Kunden_Partner/3_3_Schieneninfrastruktur/3_3_8_ETCS/index.jsp (Status: April 2014)
[180] Manfred Pisek, Stefan Gaider: "Status of ETCS in Austria", European Railway Review, Volume 20, Issue 2, 2014
[181] http://www.oebb.at/infrastruktur/en/_p_Network_Access/ETCS/index.jsp, information (Oct. 2014) "ETCS Upgrading Programme": Kufstein – Brenner is in operation without Innsbruck Hbf
[182] Manfred Pisek: „ETCS in Österreich", presentation at 14. Int. Signal&Draht-Congress, Fulda, 6.11.2014
[183] ERTMS Deployment in Italy, ERTMS Level 2 in operation", Factsheets ERTMS No. 4, UNIFE/www.ertms.net, 2014; "Blocco Automatico A Correnti Codificate E ERTMS", RFI, Network Statement 2014, http://www.rfi.it/cms/v/index.jsp?vgnextoid=f47db8d4507d2410VgnVCM1000008916f90aRCRD#10
[184] UIC ERTMS World Conference in Stockholm – 25th April 2012: "Stockholm – Naples, State of play in ERTMS Corridor B"; "Migration Strategy in Italy, National plan to develop and implement ERTMS for the railway infrastructure" (http://ec.europa.eu/transport/modes/rail/interoperability/ertms/edp_map_en.htm

"12/2018" for the end of works.[185] Another source, provided by RFI in July 2014, shows slightly other information:

- HSL Firenze – Roma, Upgrading and ERTMS until **2020**,
- Roma – Napoli, Upgrade to standard 2.3.0d until **2020**,
- Brennero – Verona, first stage ETCS until **2020**[186],
- Catania – Palermo, ERTMS until **2030**.

The section Verona – Bologna that has not been mentioned so far is planned to go into operation by 2020[187]; since 2013, the approval process for this section has been under way. But due to slight sliding in the programme timetable, ERTMS on Verona-Bologna line will be completed by **2023**.[188]

Additional comments from October 2014 on the draft Progress Report provided by RFI led to new findings regarding the begin of operation on the planned ETCS lines in Italy including the above mentioned sections Brennero – Verona and Catania – Palermo: "*The implementation of ERTMS on the other Italian sections of the corridor is set in the National Plan for the Deployment of ERTMS updated as a result of negotiations with the Italian Ministry of Transport, with particular reference to the commitments in 2015 and is still in discussion with MIT regarding the obligations ERTMS over that date.*"[189] According to the latest information from RFI[190] the following time course is planned:

- Brennero – Verona: **2018**
- Verona – Bologna: **2030**
- Napoli – Palermo/Taranto: **2030**
- Firenze – La Spezia/Livorno: **2030**

In summary, the following time course could be derived on the data basis which was described above (see also maps for illustration of the deployment status for the years 2014, 2016, 2018, 2021, 2026 and 2030 in Annex 4):

- The current state of ETCS lines in operation relating to the ScanMed Corridor (**2014**) only comprises the Austrian line Kufstein – Wörgl/Kundl – Brenner and the Bologna – Firenze and Roma – Napoli lines in Italy, added by the German Pilot Line Berlin – Halle/Leipzig.
- The new German HSL Erfurt – Halle will be opened in December 2015 and may be displayed in the **2016** map.

[185] Roberto Ferrazza, Ministry for Infrastructures and Transport, Rome, Italy: "Intermodality along the Scan-med Corridor", Presentation Innsbruck, 25.06.2014

[186] Or 12/2018 (?), according to Ministero delle Infrastrutture e dei Trasporti, 23.12.2013, "Integrazioni Al Piano Nazionale Italiano Di Sviluppo Ed Implementazione Dell´ERTMS Sull´Infrastrutture Ferroviaria"

[187] RFI, Giorgio Bonafè, Fabio Senesi: "Applicazioni ERTMS/ETCS su line convenzenionali RFI", Presentation, 28.10.2013

[188] RFI, G. Costagli, e-mail 01.09.2014

[189] RFI, G. Costagli, e-mail 10.10.2014

[190] Feedback provided by RFI, G. Costagli, e-mail, 28.11.2014

- The **2018** map shows the next German HSL Erfurt – Ebensfeld (– Nürnberg), which is planned to be put into operation in December 2017, and in Italy the section Brennero - Verona.
- Even if the ETCS lines in 2018 look like a “patchwork”, there can be seen some bigger steps until **2021**: In Sweden the first ETCS section of ScanMed Corridor (Mjölby – Alvesta) is estimated to be put into operation until 2021.Denmark will renew the signalling in the whole network until 2021, including the ScanMed sections Öresund Fixed Link – København – Kolding – Padborg and Ringsted – Vordingborg – Nykøbing/F – Rødby. In Germany the lines Kavelstorf – Nassenheide (Rostock – Berlin), Stelle – Lüneburg (Hamburg – Hannover) and Nürnberg – Ingolstadt – München are added to the network. In Italy the HSL Firenze – Roma may be added.
- The prognosis for the year **2026** shows some more lines in Sweden (Göteborg – Malmö, Stockholm – Järna – Hallsberg – Mjölby, Alvesta - Malmö), Norway (Oslo – Fredrikstad) and Finland (Pasila – Kirrkonummi, Helsinki – Kouvola – HaminaKotka and – Border FI/RU). Considering Finland separately, in 2026 there will be a nearly completed ETCS network on the ScanMed Corridor north of Padborg/Rødby, supplemented by Puttgarden – Lübeck in Germany. Only a small Norwegian part (Fredrikstad – Kornsjø) and the following Swedish section Kornsjø – Göteborg will be added until 2030. In 2026 also the Brenner Base Tunnel is scheduled to be opened with ETCS.
- Naturally, the prognosis for **2030** will contain some uncertainties based on the today's view. In Germany a considerable part of the corridor (Puttgarden – Hamburg – Würzburg – Nürnberg – München, Rostock – Berlin (– Halle/Leipzig)) will be added, just as in Italy (Verona – Bologna, Napoli – Palermo/Taranto, Firenze – La Spezia/Livorno). But also the 2030-map shows some gaps based on the today´s view:
  - The Padborg – Hamburg line remains without ETCS, but this may be classified as non-critical because the main traffic will be transferred to the Fehmarn Belt Fixed Link some years earlier.
  - In the area Hamburg/Bremen/Hannover, today it is unclear how and when the new line Hamburg/Bremen – Hannover (Former “Y-Trasse”) will be put into operation. In 2014/2015 several alternatives will be analysed before a decision will come.
  - Studies are ongoing also for the München – Rosenheim – Kufstein (– Kundl) link in the northern access to the Brenner Base Tunnel.
  - In Germany also the eastern North-South axis Halle/Leipzig – Regensburg – München remains without ETCS.
  - In Italy the timeline for further ETCS implementation is still in discussion.

Airports: SESAR

The managers of airport infrastructures were invited for the 3rd Corridor Forum meeting and were provided with the 3rd Progress Report. The report highlighted the need for implementing SESAR system and the managers were notified that such measures are obviously in the European interest and may be subject to a financial support from CEF.

Neither the meeting nor the feedback provided after that brought any significant additional information on the SESAR implementation.

It can therefore be concluded that the SESAR implementation is coordinated by the European airport industry and does not require a coordination among only those airports assigned to ScanMed corridor.

It is however up to the individual airports to draw conclusions with respect to SESAR and decide upon submitting a project proposal in the current or future call for proposals.

Ports: VTMIS

The managers of port infrastructures were invited to a working group meeting only the day before for the 3rd Corridor Forum meeting and attended the Forum meeting itself. They were informed about the requirement to implement VTMIS and need to draw their conclusions.

It can therefore be concluded that the VTMIS implementation is coordinated by the European maritime industry and does not require a coordination among only those seaports assigned to ScanMed corridor.

It is however up to the individual seaports to draw conclusions with respect to VTMIS and decide upon submitting a project proposal in the current or future call for proposals.

4.5.3 Plan for Removal of Barriers and for the Enhancement of Efficient Multimodal Transport

The plan for removal of barriers and for the enhancement of efficient multimodal transport builds on the analysis of bottlenecks and critical issues. For their removal, projects have been identified or “place holders” have been included into the list of projects. The “place holders” articulate that an action is needed for a certain section or node by the respective infrastructure manager. Several of these “place holders” were appreciated, in particular by the Finnish Authorities, who have turned them into respective projects.

Project promoters did also add the information of the timing of activities into the list of projects so that the list – if ordered by time and project promoter – becomes the implementation plan. That arrangement will be made after the missing information have been added by the project promoters and the acceptance of the draft list in the 4th Corridor Forum meeting.

4.5.4 Other Elements referred to in Article 47 (1) of Regulation (EU) 1316/2013

Administrative and technical capacity

"Measures to improve the administrative and technical capacity to conceive, plan, design, procure, implement and monitor projects of common interest" are to be taken according to Article 47 (1c), where appropriate.

These types of measures are mainly relevant for Member States. A separate communication was announced by INEA in the 1st Corridor Forum meeting to be addressed to the Member States.

There was no feedback reported to the contractor consortium on whether the communication was made and whether the Member States will apply for this instrument and to what extent.

We will therefore not report on this issue further.

Impact of climate change on the infrastructure

The relation between transport and the environment is bi-directional which means that transport impacts the environment but also transport infrastructure is effected by the changed environment. In this chapter projects are summarised which take into account the possible impact of climate change on the transport infrastructure. According to information included into the project list the following could be mentioned:

Typical projects included by stakeholders in the list of projects are: Supply modern and increased ice-breaking capacity, e.g. in the Baltic Sea. It is interested to know that the use of the waterways during the winter month can be realized by ships with sufficient strong bodies and powerful machines – which are not needed during other periods of the year – or ice breakers or both. The trade-off needs to be examined carefully. It seems that currently there are intentions to supply ice breaking capcity by the public in order to allow ship owners to drive with lower classified ships and become more efficient.

Increase the length and height of breakwater in ports, e.g. in the Baltic Sea and Mediterranean Sea.

Ground frost damage will be repaired at the most critical sites, for example by building supporting embankments, by stabilisation and constructing retaining steel walls beside the track (Finland).

Negative environmental impacts of transport

"Measures to be taken in order to mitigate greenhouse gas emissions, noise and, as appropriate, other negative environmental impacts in particular local emission" (Article 47 (1e)) are the reverse of the previous type of measure since they are targeting at mitigating the impact of transport (infrastructure and operation) on the environment.

The following examples from the list of (current and future) projects shall be mentioned:

- Rail, ÖBB Infrastruktur AG: Rehabilitation of lines including noise protection in Brixlegg and Schwaz;
- Road, ASFINAG: Rehabilitation of carriage way surface for noise protection, safe rest areas, between the junctions Innsbruck Ost and node Amras - measures to increase the traffic safety and the environmental protection like the construction of an underpass and noise barriers were realised.
- Rail, BBT SE: Environmental protection during the creation of the Brenner Base Tunnel;
- Seaport, Hamburg: Different projects like "smartPort Energy"; Lübeck and other ports: LNG terminals; participating in projects of ship builders and shipping lines (primarily in the Baltic) on low emission ships;
- Airports, Bremen, Leipzig and München: environmental airport management, alternative fuels;
- MoS in Baltic sea: Variety of measures like considering LNG, methanol, scrubbers for ships;
- Rail: electrification of rail to be able to use renewable energies;
- Road: traffic management systems;
- Rail: low noise brakes;
- BMViT/Tirol: Concerted actions to lower local emissions from transport.

Details of public consultations

According to Article 46 of the Regulation (EU) 1315/2013, for each of the core network corridors the European Coordinator shall be assisted by a secretariat and by a consultative forum (the Corridor Forum). In the year 2014, in the framework of this study, four Corridor Forum meetings have been performed.

The first meeting involved the Member States, only.

The second meeting involved the Member States, Norway, the infrastructure managers of rail and ports as well as two pre-identified cross-border projects, Fehmarn Belt Fixed Link and Brenner Base Tunnel, as well as representatives of the ScanMed Rail Freight Corridor (RFC 3).

The third meeting involved the previous groups of stakeholders, managers of airports, roads and regional authorities, in addition.

It was agreed upon that the fourth meeting shall involve the same stakeholder groups as the previous meeting and that the representatives of the rail-road terminals and infrastructure users would clearly exceed the capacity. It has been recommended to put their involvement on the agenda for the year 2015.

Beginning with the second meeting, Progress Reports were provided to the stakeholders who were invited to the respective meetings. They could not only discuss the respective progress in the meetings but also provide additional information in writing after the meetings.

In addition to the Corridor Forum meetings, for the ScanMed Corridor, an ad-hoc working group on ports and another one for regions was organised on the day before the third Corridor Forum meeting.

The Corridor Forum meetings were complemented by meetings restricted to the European Commission and Member States.

The European Commission involved relevant staff from the different units, INEA and EIB.

All meetings were performed according to an agenda that was provided in the advance and were minuted by the Contractor Consortium. The respective Minutes of Meeting are provided in Annex 6 to this report.

The Commission announced that the draft final report will be provided to the public through the Commission's website by the European Commission.

Analysis of the investment required

The final step of the work plan is the analysis of the investment required. It requires that costs for all the projects and measures are included in the list of projects and eventual financial resources are marked by the project promoters/implementation bodies.

If these information were provided to the contractor consortium in due time (28.11.2014) the contractor consortium had analysed the financial resources whether they are

- Funding from Member States
- Co-financed by the instruments of the European Union, in particular if a potential co-finance from the CEF is possible
- Finance by international financial institutions, such as the EIB, e.g. by means of project bonds
- Private financing and other sources if any are included in the list of projects

The information and data provided by the respective stakeholders until the deadline of 28.11.2014 did not totally fulfil these criteria, so that a thorough analysis is hardy possible at corridor level. For 281 of the 394 projects at least a cost figure was provided while for the remaining 113 projects (29%) no cost was given at all.

In the light of the before mentioned quantity and quality of the cost information provided by the project promoters the survey on project cost included in the previous chapter may be criticised but it is nevertheless presented to provide a survey on the quantity of finance required for realising the projects included in the list.

Significant improvement to the analysis of the financial situation would have required a more detailed definition of

- The total costs
- The price level[191]
- A separation of past and future costs
- A separation of past and future financing

A definition on whether the future financing is “secured”, e.g. by indication that the respective financing is included in respective national investment plans or budgets, grant or other financial agreements have been proposed, are under negotiation or have been concluded.

[191] E.g. Danish projects are priced on 2014 level.

Annexes

Annex 1: List of Stakeholders

Annex 2: List of Reviewed Studies and Other Sources

Annex 3: List of Projects

Annex 4: ERTMS Deployment Plan

Annex 5: Multimodal Transport Market Study

Annex 6: Minutes of Meeting of Corridor Forum Meetings

Annex 1:

List of Stakeholders

Country	**Stakeholder Group**	**Stakeholder Name**	**Invited to Corridor Forum meetings**			
			1st	**2nd**	**3rd**	**4th**
AT	National Government/ Authority	Federal Ministry of Transport, Innovation and Technology (BMVIT)	x	x	x	x
DE	National Government/ Authority	Federal Ministry of Transport and Digital Infrastructure (BMVI)	x	x	x	x
DK	National Government/ Authority	Ministry of Transport (Transportministeriet)	x	x	x	x
FI	National Government/ Authority	Finnish Transport Agency (Liikennevirasto)	x	x	x	x
IT	National Government/ Authority	Ministry of Infrastructure and Transport (MIT)	x	x	x	x
MT	National Government/ Authority	Transport Malta	x	x	x	x
NO	National Government/ Authority	Ministry of Transport (Samferdselsdepartementet)		x	x	x
SE	National Government/ Authority	Ministry of Enterprise, Energy and Communications (Näringsdepartementet**)**	x	x	x	x
AT	Regional Authority	Province of Tyrol			x	x
DE	Regional Authority	Ministerium für Infrastruktur und Landwirtschaft des Landes Brandenburg			x	x
DE	Regional Authority	Senatsverwaltung für Stadtentwicklung und Umwelt			x	x
DE	Regional Authority	Oberste Baubehörde im Bayerischen Staatsministerium des Innern, für Bau und Verkehr			x	x
DE	Regional Authority	Senator für Umwelt, Bau und Verkehr, Bremen			x	x
DE	Regional Authority	Hessisches Ministerium für Wirtschaft, Energie, Verkehr und Landesentwicklung			x	x
DE	Regional Authority	Behörde für Wirtschaft, Verkehr und Innovation der Freien und Hansestadt Hamburg			x	x

Country	Stakeholder Group	Stakeholder Name	Invited to Corridor Forum meetings			
			1st	2nd	3rd	4th
DE	Regional Authority	Ministerium für Energie, Infrastruktur und Landesentwicklung des Landes Mecklenburg-Vorpommern			x	x
DE	Regional Authority	Niedersächsisches Ministerium für Wirtschaft, Arbeit und Verkehr			x	x
DE	Regional Authority	Ministerium für Wirtschaft, Arbeit, Verkehr und Technologie des Landes Schleswig-Holstein			x	x
DE	Regional Authority	Sächsisches Staatsministerium für Wirtschaft, Arbeit und Verkehr			x	x
DE	Regional Authority	Ministerium für Landesentwicklung und Verkehr des Landes Sachsen-Anhalt			x	x
DE	Regional Authority	Thüringer Ministerium für Bau, Landesentwicklung und Verkehr			x	x
DK	Regional Authority	Capital Region of Denmark			x	x
DK	Regional Authority	Region Zealand			x	x
DK	Regional Authority	Region Southern Denmark			x	x
FI	Regional Authority	Uusimaa: ELY-keskus - Transport			x	x
FI	Regional Authority	Helsinki-Uusimaa Region			x	x
FI	Regional Authority	Varsinais-Suomi: ELY-keskus - Transport			x	x
FI	Regional Authority	Regional council of Southwest Finland			x	x
FI	Regional Authority	Kaakkois-Suomi: ELY-keskus - Transport			x	x
FI	Regional Authority	Päiijät-Häme Region			x	x
FI	Regional Authority	Regional council of Kymenlaakso; City of Kouvola			x	x
FI	Regional Authority	Regional council of South Karelia			x	x
IT	Regional Authority	Calabria Region			x	x
IT	Regional Authority	Campania Region			x	x
IT	Regional Authority	Apulia Region			x	x
IT	Regional Authority	Sicilia Region			x	x
IT	Regional Authority	Marche Region			x	x

Country	Stakeholder Group	Stakeholder Name	Invited to Corridor Forum meetings			
			1st	2nd	3rd	4th
IT	Regional Authority	Toscana Region			x	x
IT	Regional Authority	Lazio Region			x	x
IT	Regional Authority	Emilia Romagna Region			x	x
IT	Regional Authority	Veneto Region			x	x
IT	Regional Authority	Regione Trentino Alto Adige			x	x
IT	Regional Authority	Liguria Region			x	x
IT	Regional Authority	Lombardia Region			x	x
IT	Regional Authority	Umbria Region			x	x
IT	Regional Authority	Basilicata Region			x	x
SE	Regional Authority	Länsstyrelsen Stockholm			x	x
SE	Regional Authority	Regionförbundet Sörmland			x	x
SE	Regional Authority	Örebro Regional Development Council			x	x
SE	Regional Authority	Regionförbundet Östsam			x	x
SE	Regional Authority	Regionförbundet Jönköpingslän			x	x
SE	Regional Authority	Regionförbundet Södra Småland			x	x
SE	Regional Authority	Region Skåne			x	x
SE	Regional Authority	Region Halland			x	x
SE	Regional Authority	Västra Götalandsregionen			x	x
SE	Regional Authority	Region Värmland			x	x
AT	Rail Infrastructure Manager	ÖBB Infrastruktur AG		x	x	x
AT/IT	Rail Infrastructure Manager	BBT SE		x	x	x

Country	Stakeholder Group	Stakeholder Name	Invited to Corridor Forum meetings			
			1st	2nd	3rd	4th
DE	Rail Infrastructure Manager	DB Netz AG		x	x	x
DK	Rail Infrastructure Manager	Rail Net Denmark (BaneDanmark)		x	x	x
DK	Rail/Road Infrastructure	Femern Bælt A/S		x	x	x
FI	Rail Infrastructure Manager	Finnish Transport Agency		x	x	x
IT	Rail Infrastructure Manager	RFI		x	x	x
NO	Rail Infrastructure Manager	Jernbaneverket		x	x	x
SE	Rail Infrastructure Manager	Trafikverket		x	x	x
EU	Rail Infrastructure Manager	Rail Freight Corridor 3		x	x	x
AT	Road Infrastructure Manager	ASFiNAG			x	x
DE	Road Infrastructure Manager	BMVI			x	x
DK	Road Infrastructure Manager	Sund & Bælt Holding A/S			x	x
DK	Road Infrastructure Manager	Vejdirektoratet			x	x
DK/ SE	Road Infrastructure Manager	Øresundsbro Konsortiet			x	x

Country	Stakeholder Group	Stakeholder Name	Invited to Corridor Forum meetings			
			1st	2nd	3rd	4th
FI	Road Infrastructure Manager	Transport Agency			x	x
IT	Road Infrastructure Manager	ANAS - National Road Infrastructure Manager			x	x
IT	Road Infrastructure Manager	Struttura di vigilanza sulle concessioni autostradali (Ministerial Toll Road Monitoring Office)			x	x
IT	Road Infrastructure Manager	AISCAT - Associazione Italiana Società Concessionarie Autostrade e Trafori			x	x
MT	Road Authority	Transport Malta			x	x
SE	Road Authority	Swedish Transport administration			x	x
DE	Seaport Infrastructure Manager	bremenports GmbH & Co. KG		x	x	x
DE	Seaport Infrastructure Manager	Freie Hansestadt Bremen		x	x	x
DE	Seaport Infrastructure Manager	Hamburg Port Authority AöR		x	x	x
DE	Seaport Infrastructure Manager	Hafen-Entwicklungsgesellschaft Rostock mbH		x	x	x
DE	Seaport Infrastructure Manager	Hansestadt Lübeck, Lübeck Port Authority		x	x	x
DE	Seaport Infrastructure Manager	Hafen Lübeck / Baltic Rail Gate GmbH		x	x	x
FI	Seaport Infrastructure Manager	Port of HaminaKotka		x	x	x
FI	Seaport Infrastructure Manager	Port of Helsinki		x	x	x

Country	Stakeholder Group	Stakeholder Name	Invited to Corridor Forum meetings			
			1st	2nd	3rd	4th
FI	Seaport Infrastructure Manager	Port of Naantali		x	x	x
FI	Seaport Infrastructure Manager	Port of Turku		x	x	x
IT	Seaport Infrastructure Manager	Ancona Port Authority		x	x	x
IT	Seaport Infrastructure Manager	Augusta Port Authority		x	x	x
IT	Seaport Infrastructure Manager	Levante Port Authority (Bari)		x	x	x
IT	Seaport Infrastructure Manager	Gioia Tauro Port Authority		x	x	x
IT	Seaport Infrastructure Manager	La Spezia Port Authority		x	x	x
IT	Seaport Infrastructure Manager	Livorno Port Authority		x	x	x
IT	Seaport Infrastructure Manager	Napoli Port Authority		x	x	x
IT	Seaport Infrastructure Manager	Palermo Port Authority		x	x	x
IT	Seaport Infrastructure Manager	Taranto Port Authority		x	x	x
MT	Seaport Infrastructure Manager	Malta Freeport Corporation Ltd.		x	x	x
MT	Seaport Infrastructure Manager	Valletta Cruise Port		x	x	x
NO	Seaport Infrastructure Manager	Oslo Havn KF		x	x	x

Country	Stakeholder Group	Stakeholder Name	Invited to Corridor Forum meetings			
			1st	2nd	3rd	4th
DK/SE	Seaport Infrastructure Manager	Copenhagen Malmö Port AB		x	x	x
SE	Seaport Infrastructure Manager	Göteborgs Hamn		x	x	x
SE	Seaport Infrastructure Manager	Stockholms Hamnar AB		x	x	x
SE	Seaport Infrastructure Manager	Trelleborgs Hamn AB		x	x	x
DE	Airport Infrastructure Manager	Flughafen Berlin Brandenburg GmbH			x	x
DE	Airport Infrastructure Manager	Flughafen München GmbH			x	x
DE	Airport Infrastructure Manager	Flughafen Nürnberg GmbH			x	x
DE	Airport Infrastructure Manager	Flughafen Bremen GmbH			x	x
DE	Airport Infrastructure Manager	Flughafen Hamburg GmbH			x	x
DE	Airport Infrastructure Manager	Flughafen Hannover-Langenhagen GmbH			x	x
DE	Airport Infrastructure Manager	Flughafen Leipzig/Halle GmbH			x	x
DK	Airport Infrastructure Manager	Københavns Lufthavne			x	x
FI	Airport Infrastructure Manager	Finavia (Helsinki Airport)			x	x

Country	Stakeholder Group	Stakeholder Name	Invited to Corridor Forum meetings			
			1st	2nd	3rd	4th
FI	Airport Infrastructure Manager	Finavia (Turku Airport)			x	x
IT	Airport Infrastructure Manager	Aeroporti di Roma S.p.A.			x	x
IT	Airport Infrastructure Manager	Aeroporto Guglielmo Marconi di Bologna SpA			x	x
IT	Airport Infrastructure Manager	GESAP - Palermo Airport			x	x
IT	Airport Infrastructure Manager	GESAC - Napoli Airport			x	x
IT	Airport Authority	ENAC - Italian Civil Aviation Authority			x	x
MT	Airport Infrastructure Manager	Malta International Airport			x	x
MT	Airport Authority	Transport Malta - Civil Aviation Directorate			x	x
SE	Airport Infrastructure Manager	Swedavia			x	x

Annex 2:

List of Reviewed Studies and Other Sources

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
Studies																
Brenner Corridor																
Brenner Basistunnel – Report 2002: Begründung und Aussichten des Projektes, Geologie – Erkundungsarbeiten, Vermessung, Verkehrsprognosen – externe Kosten, Technisches Projekt, Betriebssimulation, Finanzierung Konzession, Pläne		x	- study outdated		x											
Brenner Basistunnel EWIV, 29 October 2004: Cost-benefit analysis Phase II		x	- study outdated		x											
D'Appolonia, 25 November 2005: Brenner Basistunnel - Preisuntersuchung		x	- ineligible thematic content		x											
Progtrans, 31 Juli 2006: Aktualisierung der Personen- und Güterverkehrsprognose für den Brenner 2015 und 2025		x	- no specific information concerning TENtec parameters	x	x								x			
ECORYS, Décembre 2006: Estimation des potentialités de trafic fret à travers les Alpes		x	- ineligible thematic content - no specific information concerning TENtec parameters	x	x								x			
ERNST & YOUNG, Dezember 2006: Neue Unterinntalbahn - Kosten-Nutzen-Analyse		x	- ineligible thematic content		x											
BBT SE, Juni 2007: Aktualisierte synthetische Darstellung der Verkehrsstudie, Aktualisierte synthetische Darstellung der Tarifstudie		x	- study outdated	x	x								x			
Consortium Transalp (CTA), Juni 2007: Finanzierungs- und Rechtsstruktur für das Projekt: vorläufige Empfehlung PPP von BBT SE, Zwischenstand		x	- ineligible thematic content		x											
Progtrans, 30. Mai 2008: Prognosen zur Nachfrageentwicklung im Schienengüterverkehr am Brenner: Vergleich verschiedener Studien		x	- no specific information concerning TENtec parameters		x								x			
ALPENCORS – Alpen Corridor South (2002 - 2005)		x	- study outdated - no specific information concerning TENtec parameters	x												
BRAVO - Brenner Rail Freight Action Strategy Aimed at Achieving a Sustainable Increase of Intermodal Transport Volume by Enhancing Quality, Efficiency, and System Technologies (2004 – 2007)		x	- no specific information concerning TENtec parameters		x								x			

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
Fehmarn Belt Corridor																
Copenhagen – Ringsted Line EIA-report and CBA-report		x	- future developement / capacity		x						x		x			
The Ringsted-Fehmarn hinterland line CBA-report of speed upgrade to 200 km/h relative to 160 km/h and EIA-report		x	- future developement / capacity		x						x		x			
The Fehmarn Belt fixed link: CBA-report and forecasts		x	- forecast 2002 and annexes: Outdated information	x	x	x					x		x			
The 'Storstrøms' bridge: Summary report (including CBA) concerning actions for the bridge on the Ringsted-Fehmarn hinterland line	x		- future development / capacity - passenger / freight traffic counts 2010	x	x						x		x			
Vamdrup-Vojens (in southern Jutland, along the Padborg-Øresund corridor): EIA-report and 'fact-sheet' about the project		x	- no specific information concerning TENtec parameters		x						x					
Capacity improvements on the Øresund line: EIA-report		x	- no specific information concerning TENtec parameters	x	x						x					
Transport studies																
European Commission (2010): Towards an integrated transport system - freight focus		x	- no specific information concerning TENtec parameters	x	x	x	x	x	x	x		x				
European Commission (2009): Traffic management for land transport		x	- no specific information concerning TENtec parameters	x	x				x	x		x				
RNE Corridor 4																
RNE Corridor 4	x		- general information about train length, train weight, trains speed between sections and type of node		x											
Existing Cooperations																
Austria-Italy Intergovernmental Commission (CIG)		x	- no specific information concerning TENtec parameters													
Brenner Corridor Platform		x	- no specific information concerning TENtec parameters	x	x				x	x						
Action Community Brennerbahn		x	- no specific information concerning TENtec parameters													
SoNorA - SOuth-NORth Axis, Improving transport infrastructure and services across Central Europe		x	- data outdated - no recent information on TENtec parameters	x	x						x		x			
Scandria - The Scandinavian-Adriatic Corridor for Innovation and Growth		x	- no specific information concerning TENtec parameters	x	x		x				x		x			
Transalpine Transport Architects (TRANSITECTS) – Improving intermodal solutions for transalpine freight traffic		x	- no specific information concerning TENtec parameters	x	x				x		x		x			
iMonitraf!		x	- no specific information concerning TENtec parameters	x									x			
Alpine Convention		x	- no specific information concerning TENtec parameters	x	x											
TEN-T Priority Projects - EU co-funded since 2005																
Overview																
TEN-T Priority Projects 2010 – A Detailed Analysis		x	- no elevant information for TENtec Information system - works scheduled and financial issues	x	x	x	x	x	x	x	x	x				

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
Single Priority Projects																
PP1: Railway Axis Berlin – Palermo																
PP1 Annual Report http://ec.europa.eu/transport/themes/infrastructure/ten-t-policy/priority-projects/doc/progress-reports/2012-2013/pp1_en.pdf		x	- works scheduled and technical parameters for the BBT		x							x				
2012-IT-60018-P Upgrade of Roma-Napoli high speed line in order to ensure compatibility with ERTMS baseline 2.3.0d (PP1)		x	- rail infrastructure current/project situation (ETCS Level 2, baseline 2.3.0d)		x					x		x				
2012-EU-01098-S Priority Project TEN no. 1 Brenner Base Tunnel – Studies (PP1)		x	- studies		x							x				
2012-EU-01092-S Pre-study for the Northern Access Line to the Brenner Base Tunnel between Munich (Germany) and Radfeld (Austria) (PP1)		x	- studies concern rail infrastructure future situation		x							x				
2011-IT-93098-P Bologna AV/AC rail node: construction of a rail section between the node and the Venice line to streamline traffic (PP1)		x	- rail infrastructure future situation		x							x				
2011-DE-93033-P VDE 8.1, 4-track extension of the Eltersdorf-Paul Gossenstraße section (PP1)		x	- rail infrastructure future situation (upgraded & new build section)		x							x				
2011-DE-60004-P Upgrade of the Berlin-Halle/Leipzig (VDE 8.3) track from ETCS Level 2, SRS 2.2.2+ to ETCS Level 2, SRS 2.3.0d (PP1)		x	- rail infrastructure future situation (ETCS upgrade)		x					x		x				
2010-AT-91134-P Intermodal Terminal Wörgl (PP1)	x		- upgrade of rail access, parking area and handling capacity - RRT Wörgl RoLa (AT), number of lanes		x				x		x	x				
2009-DE-01075-E New railway line (NBS) Ebensfeld-Erfurt: sections in Bavaria (BA 3121 Füllbachtal bridge, BA 3122 Fornbach bridge) (PP1)	x		- rail infrastructure current situation (new High speed line)		x						x	x				
2007-IT-01030-M Southern access line to Brenner (PP1)		x	- rail infrastructure current situation (new double track railway Line)		x							x				
2007-EU-01190-S Priority Project TEN no. 1 Brenner Base Tunnel - Studies (PP1)		x	- Studies concern the rail infrastructure furture situation (Two new low-gradient parallel railway tunnels - Brenner)		x							x				
2007-EU-01180-P Priority Project TEN no. 1 Brenner Base Tunnel - Works (PP1)		x	- rail infrastructure future situation (Two new low-gradient parallel railway tunnels)		x							x				
2007-DE-01050-P Works for the construction of the section between Erfurt and Halle/Gröbers (PP1)	x		- rail infrastructure current situation (new High speed line); partly completed		x							x				
2007-AT-01130-P Works for construction of new high speed line between Kundl/Radfeld and Baumkirchen (PP1)	x		- rail infrastructure current situation (new double track railway Line)		x							x				
2006-DE-101f-P North-South high speed line Berlin-Palermo, section between Nuremberg and Ebensfeld, part Nuremberg-Fürth (PP1)	x		- rail infrastructure current situation (expanding from two to four tracks)		x							x				
2006-DE-101a-P North-South high speed line Berlin-Palermo, nodal point Berlin: Main and Südkreuz railway stations (PP1)	x		- rail infrastructure current situation (construction of Berlin Main station and upgrade of Berlin-Südkreuz station)		x							x				

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
PP11: Öresund bridge																
PP11: Oresund bridge http://inea.ec.europa.eu/en/ten-t/ten-t_projects/30_priority_projects/priority_project_11/priority_project_11.htm		x	- no specific information concerning TENtec parameters	x	x						x	x				
PP12: Nordic Triangle railway/road axis																
2012-SE-12033-S Design studies for expansion to four tracks of Nordic Triangle at Flackarp-Arlöv in Sweden (PP12)		x	- studies on rail infrastructure future situation (expanding from two to four tracks)		x							x				
2012-FI-91032-S Planning of the railway section Luumäki–Imatra–Russian border (PP12)		x	- rail infrastructure future situation (electrified double track line)		x							x				
2011-SE-93049-S Western link - railway tunnel in Gothenburg (PP12)		x	- rail infrastructure future situation (double track railway tunnel)		x							x				
2009-SE-92605-P Nordic Triangle-Malmö C - Completion works (PP12)	x		- rail infrastructure current situation (reconstruction of Malmö C and completion of Malmö Citytunnel)		x						x	x				
PP 20: Railways axis Fehmarn belt																
2012-DK-20013-S Upgrading the section from Ringsted to Rødby (second phase of detailed planning studies) - upgrading the railway access lines to the future Fehmarn Belt fixed link (PP20)		x	- study concern rail infrastructure future situation (Line upgrade)		x							x				
2012-DK-20010-S New railway line Copenhagen-Ringsted (detailed planning phase): access lines to the future Fehmarn Belt fixed link (PP20)		x	- study concern rail infrastructure future situation (electrified double track line)		x							x				
2012-DE-20012-S Planned activity for the unbundling of rail-bound traffics regarding the Fehmarn-Belt-Hinterland-Connection at the traffic junction Hamburg (TEN-T-Axis 20) (PP20)		x	- study concern rail infrastructure future situation (Upgrade, new track parallel to existing)		x							x				
2011-DK-93122-S First phase of detailed planning studies - programme phase - for upgrading the railway access lines to the future Fehmarn Belt fixed link - from Ringsted to Roedby (PP20)		x	- advanced studies		x							x				
2011-DK-93109-S Detailed planning phase studies of removing the bottleneck of the railway section between Vamdrup and Vojens		x	- studies concern rail infrastructure future situation (upgrading to electrified double track Line)		x							x				
2012-DK-91020-P Works to remove the bottleneck on the Vamdrup-Vojens railway section		x	- rail infrastructure future situation (upgrading to electrified double track line)		x							x				

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
PP21: Motorways of the Sea																
2012-EU-21023-S Sustainable Traffic Machines - On the way to greener shipping		x	- no TENtec parameter on MoS			x								x		
2012-EU-21007-S MONALISA 2.0		x	- no TENtec parameter on MoS			x								x		
2012-EU-21008-M Winter Navigation Motorways of the Sea, WINMOS		x	- no TENtec parameter on MoS			x								x		
2012-EU-21009-M LNG Bunkering Infrastructure Solution and Pilot actions for Ships operating on the Motorway of the Baltic Sea		x	- no TENtec parameter on MoS			x								x		
2012-EU-21010-S PILOT SCRUBBER – New Generation Lightweight Pilot Scrubber Solution installed on a Ro-Ro Ship operating on the Motorway of the Baltic Sea		x	- no TENtec parameter on MoS			x								x		
2012-EU-21017-S Methanol: The marine fuel of the future		x	- no TENtec parameter on MoS - no specific information concerning TENtec parameters			x	x				x			x		
2012-EU-21019-S ANNA - Advanced National Networks for Administrations		x	- no TENtec parameter on MoS			x								x		
2012-EU-21020-S Business to Motorways of the Sea		x	- no TENtec parameter on MoS			x								x		
2012-EU-21021-S WiderMoS		x	- no TENtec parameter on MoS			x								x		
2011-EU-21010-M Green Bridge on Nordic Corridor		x	- no TENtec parameter on MoS - no specific information concerning TENtec parameters			x	x				x			x		
2011-EU-21005-S LNG in Baltic Sea Ports		x	- no TENtec parameter on MoS - no specific information concerning TENtec parameters			x	x				x			x		
2010-EU-21108-P The Baltic Sea Hub and Spokes Project		x	- no TENtec parameter on MoS - no specific information concerning TENtec parameters			x	x							x		
2010-EU-21109-S MonaLisa		x	- no TENtec parameter on MoS			x								x		
2011-EU-21007-S COSTA		x	- no TENtec parameter on MoS			x								x		
2012-EU-21003-P LNG Rotterdam Gothenburg		x	- no TENtec parameter on MoS - no specific information concerning TENtec parameters			x	x				x			x		
ERTMS																
2011-IT-60002-P Upgrading of ERTMS system on Trenitalia fleet to 2.3.0.d version (ERTMS)		x	- rail infrastructure parameter project situation (upgrade of 188 ERTMS onborad units on 94 locomotives)		x					x	x	x				
2011-IT-60001-P Deployment of ERTMS trackside equipment on the Railway Corridor B Stockholm-Naples/Subpart Fortezza to Verona of the Italian Corridor B part (Brennero-Verona-Naples) (ERTMS)		x	- rail infrastructure parameter current/project situation (ETCS Level 2, baseline 2.3.0d)		x					x	x	x				
2009-IT-60149-P Deployment of ERTMS trackside equipment on the Railway Corridor B Stockholm-Naples: Sub-part from Brenner to Verona of the Italian Corridor B part (Brenner-Naples) (ERTMS)		x	- project cancelled		x					x		x				
2008-IT-91401-P Removal of the bottleneck of Cattolica tunnel to allow the transit of high-cube container trains along the Adriatic Corridor		x	- completed, but no relevance for ScanMed corridor		x					x						
2012-DE-17022-S Planning the construction of a new railway connection between Munich Airport and the European railway corridor TEN PP 17 between Munich and Salzburg (PP17)		x	- rail infrastructure parameter current/project situation (new railway connection)		x					x	x	x				

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
Additional Sources of Information																
Network Statement for Rail Infrastructure																
Finnish Transport Agency (2013): Finnish Railway Network Statement 2015. http://portal.liikennevirasto.fi/sivu/www/e/professionals/network_statement	x		- relevant for rail infrastructure		x						x					
Swedish Transport Administration (Trafikverket) (2012): Network Statement 2014. http://www.trafikverket.se/Om-Trafikverket/Andra-sprak/English-Engelska/Railway-and-Road/Network-Statement1/Network-Statement-2014/	x		- relevant for rail infrastructure		x						x					
Norwegian National Rail Administration (Jernbaneverket) (2013): Network Statement 2014. http://www.jernbaneverket.no/no/Marked/Informasjon-for-togselskapa/Network-Statement-2014/	x		- relevant for rail infrastructure		x						x					
Rail Net Denmark (banedanmark) (2013): Network Statement 2014. http://uk.bane.dk/visArtikel_eng.asp?artikelID=18216	x		- relevant for rail infrastructure		x						x					
DB Netz AG (2013): Network Statement 2014. http://www.db-netz.de/fahrweg-en/start/network_access/network_statement/	x		- relevant for rail infrastructure		x						x					
DB Netz AG (2014): Interaktive Karte des Infrastrukturregisters. http://stredax.dbnetze.com/ISRViewer/public_html_de/svg/index.html	x		- relevant for rail infrastructure		x						x					
ÖBB-Infrastruktur AG (2013): Network Statement 2014. http://www.oebb.at/infrastruktur/en/_p_Network_Access/NetworkStatement/index.jsp	x		- relevant for rail infrastructure		x						x					
Gruppo Ferrovie Dello Stato Italiane (2013): Network Statement 2014. http://www.rfi.it/cms/v/index.jsp?vgnextoid=df15b5849a70b110VgnVCM1000003f16f90aRCRD	x		- relevant for rail infrastructure		x						x					
Railway Atlases																
Hans Schweers, Henning Wall and Thomas Würdig (2011): Eisenbahnatlas Deutschland. 8. Auflage. Schweers + Wall GmbH. ISBN 978-3-89494-140-6.	x		- relevant for rail infrastructure		x						x					
Lucia Clemens, Hans Schweers, Henning Wall and Manfred Wessels (2013): Eisenbahnatlas EU. 2. Auflage. Schweers + Wall GmbH. ISBN 978-3-89494-142-0	x		- relevant for rail infrastructure		x						x					
Hans Schweers, Henning Wall and Thomas Würdig (2010): Eisenbahnatlas Österreich. 2. Auflage. Schweers + Wall GmbH. ISBN 978-3-89494-138-3.	x		- relevant for rail infrastructure		x						x					
Hans Schweers, Henning Wall and Thomas Würdig (2010): Eisenbahnatlas Italien und Slowenien. 1. Auflage. Schweers + Wall GmbH. ISBN 978-3-89494-129-1.	x		- relevant for rail infrastructure		x						x					
Karl-Wilhelm Koch (2011): Eisenbahnatlas Europa. GeraMond Verlag GmbH. ISBN 978-3-86245-120-3.	x		- relevant for rail infrastructure		x						x					

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
Timetables and Other Information on Rail																
Swedish Transport Administration (Trafikverket). Timetables. http://www.samtrafiken.se/tjanster/tidtabeller/	x		- relevant for rail infrastructure		x						x					
Swedish Transport Administration (Trafikverket).Timetables. http://www.trafikverket.se/Foretag/Trafikera-och-transportera/Trafikera-jarnvag/Att-skapa-tidtabeller-for-tag/Tagplan-2014/Dagliga-grafer-2014/	x		- relevant for rail infrastructure		x						x					
Norwegian National Rail Administration (Jernbaneverket). Timetables. Grafiske togruter f.o.m 15. desember 2013. http://www.jernbaneverket.no/no/Marked/Informasjon-for-togselskapa/Grafiske-togruter-fom-15-desember-2013/	x		- relevant for rail infrastructure		x						x					
RailNetEurope. RNE Corridor Management. http://www.rne.eu/corridor-info/items/Corridor_1.html	x		- relevant for rail infrastructure		x						x					
RailNetEurope. RNE Corridor Management. http://www.rne.eu/corridor-info/items/Corridor_4.html	x		- relevant for rail infrastructure		x						x					
Eurostat (2010). Traffic data. http://epp.eurostat.ec.europa.eu/portal/page/portal/transport/data	x		- relevant for number of trains		x						x		x			
Road																
Ramböll Finland - minor corrections to TENtec	x		- project partners knowledge / experience	x												
Ramböll Denmark - one link missing in TENtec	x		- project partners knowledge / experience	x												
Ramböll Sweden - minor corrections to TENtec	x		- project partners knowledge / experience	x												
Storebælt http://www.storebaelt.dk/english/toll-charges	x		- stora Belt toll	x												
Autobahnatlas-Online www.autobahnatlas-online.de (2014)	x		- most data in Germany was missing from TENtec. internet-site used to obtain compatible data for whole country. - source included most data fields.	x							x					
Toll Collect http://www.toll-collect.de/en/all-about-the-toll/toll-rates.html (2014)	x		- latest information regarding the kilometer charges for trucks in the MAUT system in Germany.	x												
Go Maut https://www.go-maut.at/portal/portal (2014)	x		- latest information regarding the kilometer charges for trucks in the MAUT system in Austria.	x												
Swedish Transport Agency https://www.transportstyrelsen.se/en/road/Congestion-tax/Congestion-tax-in-gothenburg/	x		- congestion tax in Gothenburg - congestion tax in Stockholm	x												
Svinesundsforbindelsen http://www.svinesundsforbindelsen.no/english/	x		- Svinesund Bridge toll	x												
Øresundsbrons http://se.oresundsbron.com/page/1324	x		- Öresund Bridge toll	x												
Autostrade per l'Italia. www.autostrade.it	x		- relevant for road parameters IT (e.g. length, lanes)	x							x					

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages																
Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
GrupoClas (GC) - minor corrections to TENtec	x		- project partners knowledge / experience	x												
Airports																
Information on aviation http://www.flightglobal.com		x	- airport passenger and freight traffic data are updated 2012 only. - anyway, comprehensive source to enhance homogeneity					x								
Flughafenverband http://www.adv.aero/fileadmin/pdf/statistiken/2013/12.2013_ADV-Monatsstatistik.pdf	x		- airport passenger and freight traffic data for German airport updated 2013.					x			x					
http://www.azworldairports.com/	x		- integration of data on capacity					x				x	x			
Associazione Italiana Gestor Aeroporti www.assaeroporti.it	x		- airport passenger and freight traffic data for Italian airport updated 2013.					x								
Various airports websites	x		- integration of passenger and freight traffic data where not updated 2013 by comprehensive databases. - useful to check information on rail connection availability at airports. Information more updated than comprehensive sources found for Hannover (HAJ) and Malta (MLA) airports.					x					x			
Finavia - Finnish Airports https://www.finavia.fi/en/finavia-corporation/statistics/statistics-2013/	x		- information for Finnish airport traffic 2013					x			x					
Swedavia - Swedish Airports		x	- information on Swedish airports traffic are outdated					x								
http://www.swedavia.com/malmo/about-malmo-airport-/about-malmo-airport/jarnvag-till-flygplatsen/	x		- information on rail link project to connect MMX and CPH					x					x			
Ports																
European Sea Ports Organisation (ESPO) http://www.espo.be/images/stories/statistics/espo%20-%20q4-2012.pdf (port statistics for 2011/2012, not all ports included)	x		- freight traffic - port statistics for 2011 / 2012				x									
Direct Ferries http://www.directferries.co.uk/port.htm (used for almost all MoS connections)	x		- used for almost all MoS sections - sailings weekly				x						x			
Port of Helsinki http://www.portofhelsinki.fi/port_of_helsinki/port_statistics	x		- freight / passenger traffic - MoS connection				x									
Port of Haminakotka http://www.haminakotka.fi/sites/default/files/public/header_images/12.13%20eng.pdf (2012 & 2013)	x		- freight traffic				x									
Port of Naantali http://www.naantali.fi/satama/liikenne/en_GB/Traffic/ http://www.naantali.fi/satama/fi_FI	x		- freight / passenger traffic				x									
Port of Turku http://www.port.turku.fi/portal/en/traffic/cargo_traffic/statistics	x		- freight / passenger traffic				x									

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
http://www.stockholmshamnar.se/Documents/Trycksaker/%C3%85rsredovisning/Annual_Report_2012.pdf	x		- freight / passenger traffic				x									
Port of Gothenburg http://goteborgshamn.se/Om-hamnen/Kort-om-Goteborgs-Hamn/	x		- freight / passenger traffic				x									
Port of Trelleborg http://www.trelleborgshamn.se/filearchive/3/3729/THAB_arsredovisning_2012.pdf	x		- freight traffic				x									
Port of Oslo http://www.ohv.oslo.no/filestore/PDF/2013/OsloHavnstatistikk2012.pdf	x		- freight / passenger traffic				x									
Copenhagen Malmö Port http://www.cmport.com/news-and-media/pressreleases/2013/2013-02-04	x		- freight / passenger traffic				x									
Bremische Häfen http://www.bremenports.de/standort/statistiken/bremische-haefen-in-zahlen	x		- freight traffic				x									
Columbus Cruise Center in Bremerhaven (CCCB) http://www.weser-kurier.de/startseite_artikel,-Mehr-Passagiere-in-Bremerhaven-_arid,682263.html	x		- passenger traffic				x									
Niedersächsische Häfen http://www.weser.de/index.php?id=30	x		- freight traffic (Wilhelmshaven)				x									
Wasser- und Schifffahrtsamt Wilhelmshaven http://www.wsa-whv.wsv.de/wasserstrassen/seeschleuse/index.html	x		- maritime chamber lock measurements Wilhelmshaven				x									
Port of Wilhelmshaven http://www.seafarerslife.com/index.php?p=search&sub=spf&pl=2&pid=531&pli=1	x		- passenger traffic (Wilhemshaven)				x									
Port of Hamburg http://www.hafen-hamburg.de/figures/facts	x		- freight traffic				x									
Hamburg Cruise Center http://www.presseportal.de/pm/83100/2595354/hamburg-als-erster-deutscher-kreuzfahrthafen-mit-ueber-500-000-passagieren-foto	x		- passenger traffic				x									
Lübecker Hafen-Gesellschaft mbH http://www.lhg.com/index.php?id=61	x		- freight traffic Lübeck				x									
Lübecker Hafen-Gesellschaft mbH http://www.lhg.com/index.php?id=61	x		- passenger traffic Lübeck				x									
Projekt Lübeck 2050 http://www.luebeck2050.de/index.php?option=com_content&view=category&layout=blog&id=20&Itemid=29	x		- additional information MoS Connection Lübeck				x									
Rostock Port http://www.rostock-port.de/aktuelles/meldung/leichter-aufwaertstrend-in-rostock.html?cHash=ecddd1dd2b0fd1e8ea24eafbdcc98924	x		- passenger & freight traffic - additional MoS Connection information				x									

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages

Document /Source	Relevance for completion of TENtec Information system (WP3)			Transport modes / node							Relevance for other WP's					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
Wasser- und Schifffahrtsamt Stralsund http://www.wsv.de/wsa-hst/Schiff-WaStr/Wasserstrasse/Schleuse_und_Wehr_Rostock/index.html	x		- maritime chamber lock measurements Rostock				x									
Port of Livorno http://www.porto.livorno.it/en-us/homepage/theport/statistics.aspx	x		- freight / passenger traffic				x									
MedCruise - the Association of Mediterranean Cruise Ports http://www.medcruise.com/index.php/members/port-members-mcms?view=member&member_id=33	x		- passenger traffic				x									
Port authority of Ancona http://www.autoritaportuale.ancona.it/files/RAPPORTO%20STATISTICO%202013.pdf	x		- passenger / freight traffic				x									
Port authority of Naples http://www.porto.napoli.it/en/statistiche/stat1.php	x		- freight / passenger traffic				x									
Porto Palermo e termini imerse http://www.portpalermo.it/it/home/autorita-portuale/gestione-allegati/doc_download/359-modexpoportidipalermoeterminiimereseanno2013gennaiogennaio	x		- freight / passenger traffic				x									
Transport Statistics 2012 – Valletta: National Statistics Office, 2013 http://www.nso.gov.mt/statdoc/document_file.aspx?id=3681	x		- freight / passenger traffic				x									
Transport Statistics 2012 – Valletta: National Statistics Office, 2013 http://www.nso.gov.mt/statdoc/document_file.aspx?id=3681	x		- passenger traffic cruise terminal Port of Valletta				x									
Port of Naantali http://www.naantali.fi/satama/en_GB/?flush Maximum Draught Naantali	x		- maximum draught Naantali				x									
Port of Hamburg http://www.hafen-hamburg.de/en/content/elbe-river	x		- maximum draught Hamburg				x									
Port of Livorno http://www.porto.livorno.it/en-us/mobilehome/theport.aspx Maximum Draught Livorno	x		- maximum draught Livorno				x						x			
Port of La Spezia http://www.porto.laspezia.it/en/il-porto-uk	x		- maximum draught La Spezia				x									
Port of Bari (Port directory) http://www.port-directory.com/ports/bari	x		- maximum draught Bari				x									
Port Authority of Naples http://www.porto.napoli.it/en/informazioni/posizione.php Maximum Draught Napoli	x		- maximum draught Napoli				x									

Assessment of core network corridor specific documents stated in Appendix 1 of the tender specification (MOVE/B1/2012-573) and additional sources relevant for the completion of the TENtec Information System and other project work-packages																
Document /Source	**Relevance for completion of TENtec Information system (WP3)**			**Transport modes / node**							**Relevance for other WP's**					
	yes	no	remarks	Road	Rail	MoS	Port	Airport	RRT	ERTMS	WP5	WP6	WP7	WP8	WP9	WP10
Rail/Road Terminals (RRT)																
AGORA website http://www.intermodal-terminals.eu	x		- identification of RRT and location of RRT						x							
Various rail / road terminal websites	x		- identification of location of RRT, access lanes and handling capacity / volume						x		x					
Direct contact to terminal operators via telephone and e-mail	x		- enquiry of handling capacity / volume						x		x					
HaCon, KombiConsult, November 2012: Erstellung eines Entwicklungskonzeptes KV 2025 in Deutschland als Entscheidungshilfe für die Bewilligungsbehörden		x	- no information on respective RRT (only aggregated data)						x			x	x			
Google Maps https://maps.google.com/	x		- number of lanes / tracks						x		x					
TENtec Information System																
Open Method of Coordination - Geographical Information System, Glossary: Technical and Financial Data, Draft Update - Corridor Studies, 05/02/2014	x		- starting point for road data collection and evaluation (except Germany: missing data / separate collection)	x	x		x	x	x	x						
TENtec Relase / Version	x		- OMC Version 3.0	x	x	x	x	x	x	x						

Annex 3:

List of Projects

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
FI 1	Rail	Helsinki	Works	Ring Rail Line: A two-track urban line for passenger traffic to Helsinki Airport. It will have an 8-kilometre tunnel with two tubes, 5 surface stations in the first phase out of wich 2-3 underground stations	Finnish Transport Agency	2009-2015	736	Public funds and other sources.	X	X
FI 2a	Rail	Helsinki	Study & works	Central Pasila and metro: Center-Pasila new railway line	Finnish Transport Agency	2014-2017	40	Public funds and possible EU Co-funding (CEF)	X	
FI 2b	Rail	Helsinki	Study & works	Helsinki marshalling yard: Improvement of Helsinki marshalling yard	Finnish Transport Agency	2015-2020	60	Public funds and possible EU Co-funding (CEF)	X	
FI 2c	Rail	Helsinki	Study & works	Helsinki interlocking system: Updating of the Helsinki interlocking system	Finnish Transport Agency	2020-2025	90	Public funds and possible EU Co-funding (CEF)	X	
FI 3	Rail	Helsinki	Study & works	City Rail Loop: New railway to connect Helsinki Airport with rail (1st phase Ring Rail to be completed in 2015). City Rail Loop also improves the connection between the two CNCs that cross in the Helsinki node.	Finnish Transport Agency, city of Helsinki	2014-2020	1.000	Public funds and possible EU Co-funding (CEF)	X	X
FI 4	Rail	Espoo	Study & works	Espoo urban railway: Extension of Espoo urban rail to remove a major bottleneck between two CNCs in the Helsinki urban node.	Finnish Transport Agency, city of Espoo		290	Public funds and possible EU Co-funding (CEF)	X	
FI 5	Rail	Nationwide	Study & works	Repairs of areas with ground frost damage and soft soils on main railway lines: Ground frost damage will be repaired at the most critical sites, for example by building supporting embankments, by stabilisation and constructing retaining steel walls beside the track.	Finnish Transport Agency	2014-2019		Public funds and possible EU Co-funding (CEF)	X	
FI 6	Rail	Helsinki	Study & works	Rail Joker Line: Rail Joker Line 1st phase in a three-phase project to connect east-west urban rail to long-distance rail, Helsinki airport and port. Improves the connection between the two CNCs that cross in the Helsinki node.	Helsinki Regional Transport, municipalities	2018-2020	300	Public funds and possible EU Co-funding (CEF)	X	X
FI 7	Rail	Helsinki	Study & works	Airport line: A tunnel to connect long distance trains from north, west and east to airport and city centre.	Helsinki Regional Transport, city of Helsinki, Transport Agency		1.000	Public funds and possible EU Co-funding (CEF)	X	X
FI 7 a	Rail	Helsinki - Turku	Study & works	Railway yards improvement: Improvement of the railway yards on the section Turku - Helsinki - Vainikkala	Finnish Transport Agency	2014-2030	200	Public funds and possible EU Co-funding (CEF)	X	x
FI 7 b	Rail	Luumäki - Vainikkala	Study & works	Additional (2nd) track: Additional (2nd) track on the section Luumäki - Vainikkala	Finnish Transport Agency		250	Public funds and possible EU Co-funding (CEF)	X	x
FI 8a	Rail	Helsinki - Turku	Study & works	Improvement of the section Espoo - Karjaa:	Finnish Transport Agency		150	Public funds and possible EU Co-funding (CEF)	X	x
FI 8b	Rail	Helsinki - Turku	Study & works	Improvement of the section Salo - Turku:	Finnish Transport Agency		200	Public funds and possible EU Co-funding (CEF)	X	x
FI 8c	Rail	Helsinki - Turku	Study & works	Espoo - Lohja - Salo railway: New shortcut railway Espoo-Lohja-Salo in Helsinki-Turku section; cost estimated between 1400 and 1500 million Euro [higher value included in the cost column]	Finnish Transport Agency		1.500	Public funds and possible EU Co-funding (CEF)	X	X
FI 9	Rail	Helsinki - Turku - Tampere	Study	Helsinki - Turku - Tampere triangle: Investigation into the transport system of Helsinki – Tampere – Turku economic triangle.	Regional Councils		1.500	Public funds and possible EU Co-funding (CEF)	X	x
FI 10	Rail + Road	Kouvola - Kotka/Hamina	Study & works	Improvement of service level on railway section Kouvola – Kotka/Hamina: Several improvement measures for the railway yards as well as different railway and road sections	Finnish Transport Agency	2030	165	Public funds and possible EU Co-funding (CEF)	X	X
FI 11	Road	Hamina	Works	E18 Hamina bypass : The project includes a construction of a 15 km ring road for safe and smooth traffic on the north side of the city of Hamina.	Finnish Transport Agency	2011-2015	180	Financed from national budget and EU funds.	X	
FI 13	Road	Helsinki	Works	Ring Road III, the second phase : Ring Road III, which is part of E18, will be improved in the Lentoasemantie area and between Lahdenväylä and Porvoonväylä.	Finnish Transport Agency	2013-2016	150	Financed by national and regional/local funds.	X	
FI 14	Road	Hamina - Vaalimaa (RU border)	Study & works	E18 Hamina – Vaalimaa : The completion of the E18 highway between Hamina and Vaalimaa will provide a motorway-standard road from Turku to Vaalimaa, on the Russian border.	Finnish Transport Agency	2015-2018	660	Financed from national budget and EU funds.	X	
FI 16	Road	Helsinki	Study & works	Ring Road III, the third phase : Construction of new intersections and third lines for needed sections, improvement of existing intersections, parallel road connections as well as public transport and light traffic arrangements, implementation of the noise abatement.	Finnish Transport Agency		154	Public funds and possible EU Co-funding (CEF)	X	
FI 17	Road	Naantali - Kaarina	Study & works	E18 Naantali - Kaarina: Construction of additional line sections, new intersections and tunnel, improvement of existing intersections, parallel road network, light traffic system and traffic management system. [cost for 1st phase included in cost column]	Finnish Transport Agency		163	Public funds and possible EU Co-funding (CEF)	X	
FI 18	Road + Rail + Sea	Nationwide	Works	Renewal of road, sea and rail traffic control systems : The project of renewing the control systems comprises ICT system projects related to developing the road, sea and rail traffic control systems, as well as equipment and service procurements.	Finnish Transport Agency	2013-2018	90	Public funds and possible EU Co-funding (CEF)	X	
FI 23 a	Seaport	Helsinki	Study & works	Passenger Terminal to West Harbour: Terminal with efficient land connections, because of substantially increasing transport volumes between Helsinki and Tallinn. Passenger terminal (MoS application) to be built by 07/2017. Planning phase to be started to improve hinterland connections.	Port of Helsinki, City of Helsinki, Finnish Transport Agency	2014-2018	275	Public funds and possible EU Co-funding (CEF)	X	x
FI 23 b	Seaport	Helsinki	Study & works	Deepening of Vuossari Harbour fairway: Fairway depth from 11 m to 13 m and improvement of the sea basin to meet the needs created by growing vessel sizes in short sea shipping..	Port of Helsinki, City of Helsinki, Finnish Transport Agency	2016-2018	50	Public funds and possible EU Co-funding (CEF)		

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
FI 19	Seaport + MoS	Naantali, Turku, Helsinki and HaminaKotka	Study & works	The Finnish ScanMed Ports: Joint project of the Finnish ScanMed ports including e.g. improvements of the maritime access as well as LNG-infrastructure and services, development of the intermodality and e-Freight	Ports of Naantali, Turku, Helsinki and HaminaKotka	2014-2020	400	Public funds and possible EU Co-funding (CEF)	X	
FI 21	Airport	Turku	Works	Development of Turku airport: Renovation of the terminal building and paved areas, improvement of the passenger services	Finavia	2014	14	Financed by national budget	X	
FI 22	Airport	Helsinki	Study & works	Development of Helsinki airport: Several improvement, repairs and maintenance measures in a major development programme at Helsinki Airport	Finavia	2014-2020	900	Public funds and possible EU Co-funding (CEF)	X	
FI 20	RRT	Kouvola	Study & works	KORARO project (studies): The project includes land use, urban and technical planning for the new planned terminal area of Kouvola RRT, terminal area governance and sustainability as well as railway sector deregulation and technology studies.	City of Kouvola	2015-2017	4	Public funds and possible EU Co-funding (CEF)	X	
FI 20a	RRT	Kouvola	Study & works	KORARO project (works): The project includes extension of the rail yard, including infrastructure extension for multimodal operations, governance and service management model as well as extension of the basic infrastructures, cross border infrastructures and connectivity upgrades	City of Kouvola	2017-2020	35	Public funds and possible EU Co-funding (CEF)	X	
FI 23 c	RRT	Helsinki	Study & works	New Intermodal terminals: Terminals to serve the Helsinki node incl. development of dry ports	Port of Helsinki	2014-2020	5	Public funds and possible EU Co-funding (CEF)	X	x
FI 23	Multimodal	Helsinki	Study & works	Long distance commuting: Trip chains, smart transport, urban development of rail terminal areas (HHT)	Regional Councils, city of Helsinki	2014-2020	4	Public funds and possible EU Co-funding (CEF)	X	
FI 23 d	ITS	ScanMed Corridor	Study & works	Implementing of cooperative ITS: Nordic way; Next ITS, EIP++	Finnish Transport Agency	2014-2016	2	Public funds and possible EU Co-funding (CEF)		
FI/SE 19a	Seaport + MoS	Turku/Naantaki - Stockholm	Study	Pre-identified project: Port interconnection: Study and potential services for further port interconnections, serving the Ports of Stockholm and Finnish ports (Turku, Naantali, Helsinki, HaminaKotka).	Port Authorities and other	2030		Public funds and possible EU Co-funding (CEF)	X	x
SE 24	Rail	Stockholm - Malmö	Study & works	ERTMS Corridor B: Implementation of ERTMS on sections Stockholm - Malmö (to be completed 2023), Hallsberg - Katrineholm and Hallsberg - Mjölby (to be completed 2027) as part of Corridor B.	Swedish Transport Administration	2027	577	Public funds and possible EU Co-funding (CEF)	X	X
SE 25	Rail	Eastern Sweden	Study & works	Ostlänken: New double-track for high speed trains between Linköping and Järna via Skavsta airport. The investment will radically reduce travel time between Stockholm-Skavsta/Nyköping-Norrköping/Linköping and reduce travel time between Stockholm and Malmö. The new link will reduce capacity problems on the existing railway in the corridor	Swedish Transport Administration	2017-2028	3.871	Public funds and possible EU Co-funding (CEF)	X	X
SE 26	Rail	Stockholm	Study & works	Citybanan: Citybanan is a 6 km long commuter train tunnel under central Stockholm, with two new stations: Stockholm City and Stockholm Odenplan. It will double rail capacity in Stockholm.	Swedish Transport Administration	-2017	2.173	Financed by national funds and EU funds.	X	X
SE 27	Rail	Stockholm	Study & works	Stockholm C-Stockholm Södra, including Stream bridges: Renovation of the main railway bottleneck in Stockholm. The reconstruction will be made after Citybanan has opened.	Swedish Transport Administration	2020-2025	293	Public funds and possible EU Co-funding (CEF)	X	X
SE 28	Rail	Dunsjö - Degerön	Study & works	Dunsjö - Jakobshyttan - Degerön: Upgrade to double track along the routes Dunsjö-Jokobshyttan and Jakobshyttan-Degerön.	Swedish Transport Administration	2020-2025	212	Public funds and possible EU Co-funding (CEF)	X	X
SE 29	Rail	Hallsberg - Degerön	Study & works	Hallsberg - Degerön: Upgrade to double track and grade-seperations on parts of Hallsberg-Degerön.	Swedish Transport Administration	-2019	218	Public funds and possible EU Co-funding (CEF)	X	X
SE 30	Rail	Western Sweden	Study & works	Västsvenska paketet järnväg: West Swedish Agreement Rail, measures in the railway system in the Göteborg area. It includes the construction of the West Link - an 8 km long double-track city tunnel.	Swedish Transport Administration	-2026	2.598	Public funds and possible EU Co-funding (CEF)	X	X
SE 31	Rail	Göteborg	Study & works	Göteborg C Signalbox: Replacement of signalbox at Göteborg C. The new signal system makes it possible to increase the capacity for rail traffic in the Göteborg area.	Swedish Transport Administration	-2015	97	Financed by national funds and EU funds.	X	X
SE 32	Rail	Olskroken	Study & works	Olskroken, grade-seperation: Reconstruction of the track system in Olskroken including grade-seperated junctions.	Swedish Transport Administration	2017-2025	269	Public funds and possible EU Co-funding (CEF)	X	X
SE 34	Rail	Varberg	Study & works	Varberg double track: Just over 5 km new double track between Varberg and Hamra, of which approx 3 km in tunnel. A new travel centre with station will be constructed.	Swedish Transport Administration	2017-2025	379	Public funds and possible EU Co-funding (CEF)	X	X
SE 35	Rail	Hallandsås	Study & works	Tunnel through Hallandsås: A 8.7 km long double track railway tunnel that increases the capacity from 4-6 trains per hour to 24, enabling heavy freight trains and reduce travel times by 10-12 minutes.	Swedish Transport Administration	-2015	1.317	Financed by national funds and EU funds.	X	X
SE 36	Rail	Helsingborg	Study & works	Ängelholm-Maria: Upgrade to double track in existing alignment and grade-seperated crossings. Reconstruction of Maria station.	Swedish Transport Administration	2020-2025	228	Public funds and possible EU Co-funding (CEF)	X	X
SE 37	Rail	Flackarp - Arlöv	Study & works	Flackarp - Arlöv: The action involves two new tracks on the route Flackarp-Arlöv which constitute about 75 percent of the route Lund-Arlöv. The expansion is made in a way that minimizes disturbance on the surroundings.	Swedish Transport Administration	2020-2025	394	Financed by national funds and EU funds.	X	X
SE 38	Rail	Flackarp - Lund	Study & works	Flackarp - Lund (Högevall): Expansion from two to four tracks between Flackarp and Högevall. New signals along the route and new station for commuter trains to be built at Klostergården.	Swedish Transport Administration	2020-2025	119	Public funds and possible EU Co-funding (CEF)	X	X
SE 39	Rail	Skåne, Småland	Study & works	Pågatåg Nordost (Regional railway network improvement): Sixteen new stations are being built in the years 2011-2014 to improve commuting with regional trains in north eastern Skåne and southern Småland.	Swedish Transport Administration	2011-2014	85	Financed by national funds	X	X
SE 40	Rail	Åstorp - Teckomatorp	Study & works	Åstorp - Teckomatorp: Expansion of sidings, introduction of modern signalling systems and new stations for passenger services.	Swedish Transport Administration	2014-2020	85	Public funds and possible EU Co-funding (CEF)	X	X

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
SE 41	Rail	Skåne	Study & works	Capacity enhancments in Skåne: Efficiency measures like platform extensions, signalling measures and replacement of switches	Swedish Transport Administration	2014-2019	47	Public funds and possible EU Co-funding (CEF)	X	X
SE 42	Rail	Fosieby - Trelleborg	Study & works	Malmö Fosieby - Trelleborg: Improvements for increasing capacity and safety (construction of double track line) and new stations for passenger services.	Swedish Transport Administration	-2016	66	Public funds and possible EU Co-funding (CEF)	X	X
SE 43	Rail	Malmö - Jönköping	Study	Study for a high-speed link Malmö - Jönköping: A planned study to investigate possible solutions for a future high-speed link.	Swedish Transport Administration			not yet determined	X	X
SE 44	Rail	Hallsberg - Åsbro	Works	Hallsberg - Åsbro:	Swedish Transport Administration	-2025	222	Public funds and possible EU Co-funding (CEF)	X	X
SE 45	Rail	Göteborg - NO, Öxnered - Kornsjö	Study	Göteborg - NO, Öxnered - Kornsjö:	Swedish Transport Administration			not yet determined	X	X
SE 46	Rail	Teckomatorp - Arlöv	Study & works	Teckomatorp - Arlöv: Capacity enhancements and new stations for passenger service. Belong to the core freight (not core passengers)	Swedish Transport Administration	2017-2019	85	Public funds and possible EU Co-funding (CEF)	X	X
SE 47	Rail + Airport	Göteborg	Study & works	Göteborg-Landvetter Airport connection: New double track via Landvetter airport (Mölnlycke-Bollebygd)	Swedish Transport Administration	>2025	693	Public funds and possible EU Co-funding (CEF)	X	
SE 33	Rail + Port	Göteborg	Study & works	Göteborg Port Line and Marieholm bridge: Upgrade to double-track on the port line and new bridge just south of the existing Marieholms bridge.	Swedish Transport Administration	-2022	370	Financed by national funds and EU funds.	X	X
SE 74	Rail + RRT	Stockholm	Works	Stockholm Nord (Rosersberg), rail connection to RRT: Rosersberg (Stockholm Nord), rail connection to RRT	Swedish Transport Administration	-2014	52	Financed by national funds and EU funds.	X	
SE 48	Road	Stockholm	Study & works	E4 Stockholm Bypass: A 21 kilomter new road (18 km in tunnel) in the Western parts of Stockholm.	Swedish Transport Administration	-2025	3.500	Financed by national funds and EU funds.	X	
SE 49	Road	Stockholm	Study & works	E4/E18 Capacity enhancement, as a consequence of the Stockholm Bypass: Small-scale investments and ITS solutions for improved capacity and traffic management.	Swedish Transport Administration	2020-2025	390	Public funds and possible EU Co-funding (CEF)	X	
SE 50	Road	Essingelden - Södra länken	Study & works	E4/E20 Essingeleden - Södra länken: New access and exit ramps	Swedish Transport Administration	2017-2019	16	Public funds and possible EU Co-funding (CEF)	X	
SE 51	Road	Haga Södra - Kista	Study & works	E4 Norrtull, Haga Södra - Kista: Minor improvements of existing roads and traffic management measures	Swedish Transport Administration	-2015	31	Public funds and possible EU Co-funding (CEF)	X	
SE 52	Road	Tomteboda - Haga Södra	Study & works	E4 Tomteboda - Haga Södra: Measures for increased capacity along existing road (E4/E20), including bridges and new ramps	Swedish Transport Administration	-2019	79	Public funds and possible EU Co-funding (CEF)	X	
SE 53	Road	Ljungby - Toftanäs	Study & works	E4 Ljungby - Toftanäs: Reconstruction to motorway standard in existing alignment. The measures contribute to protect an important water reserve	Swedish Transport Administration	2014-2019	89	Financed by national funds and EU funds.	X	
SE 54	Road	Pålen - Tanumshede	Study & works	E6 Pålen - Tanumshede: A 7 kilometer new motorway and the final section of the motorway through Bohuslän. Passes a world heritage area	Swedish Transport Administration	-2015	77	Public funds and possible EU Co-funding (CEF)	X	
SE 55	Road	Söder/Västerleden	Study & works	E6.20 Söder/Västerleden, Sisjömotet: Construction of additional lanes on existing hard shoulders and ITS systems for increased traffic safety	Swedish Transport Administration	2017-2019	34	Public funds and possible EU Co-funding (CEF)	X	
SE 56	Road	Hisingsleden	Study & works	E6.20 Hisingsleden: Södra delen, four lane road, interchanges and measures for traffic safety.	Swedish Transport Administration	2020-2025	78	Public funds and possible EU Co-funding (CEF)	X	
SE 57	Road	Göteborg	Study & works	E6.21 Göteborgs hamn/Lundbyleden: Measures on existing road for increased road safety	Swedish Transport Administration	-2019	87	Public funds and possible EU Co-funding (CEF)	X	
SE 58	Road	Western Sweden	Study & works	Västsvenska paketet väg: West Swedish Agreement Road, includes measures for a better and more environmental friendly road transport system in West Sweden and the Marieholm Tunnel.	Swedish Transport Administration	-2020	1.684	Financed by national funds and EU funds.	X	
SE 59	Road	Flädie	Study & works	E6 intersection Flädie: Reconstruction of interchange including higher geometric standard and a new roundabout	Swedish Transport Administration	2017-2019	20	Public funds and possible EU Co-funding (CEF)	X	
SE 60	Road	Spillepengen	Study & works	E6 intersection Spillepengen: A grade-seperated junction in the form of a bridge over the existing roundabout so that the though-traffic bypass at an upper level	Swedish Transport Administration	2014-2015	30	Public funds and possible EU Co-funding (CEF)	X	
SE 61	Road	Trelleborg	Study	New E6 Ring road in Trelleborg: connecting E6 and the Port of Trelleborg.	Region Skåne			not yet determined	X	
SE 62	Road	Stockholm	Works	E20 Norra Länken, Värtabanan:	Swedish Transport Administration	2016-2019	997	Financed by national funds and EU funds.	X	
SE 63	Seaport	Malmö	Study & works	Planning and Implementation of an onshore power supply : Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Copenhagen Malmö Port	2030		not yet determined	X	
SE 64	Seaport	Stockholm	Works	Extending the Varta Pier: Extending the Vart Pier with a new construction area of 85000 square meters. 5 berths with a total length of 1.200 m. OPS and port waste reception facilities are planned as well as railway connection.	Port of Stockholm	2013-2016	308	Regional/Local funds and possible EU Co-financing (CEF)	X	
SE 65	Seaport	Stockholm	Works	New pier with two berths at Kapellskär: Increasing the capacity with a new pier with two quay berths and a reconstrcuted ferry berth. Imrpved Logistics on the landside. Preparing OPS and PRF.	Port of Stockholm	2013-2016	87	Private funds and possible EU Co-financing (CEF)	X	
SE 66	Seaport	Stockholm	Works	New container and RoRo Port at Nynäshamn/ Stockholm Norvik: New container and RoRo Portwith natural draught of 16,50 , enabling direct calls by the largest vessels in the Baltic Sea. Seven berths with a total length of 1.400 m. Railway connection, OPS and PRV as well as LNG terminal located within the proximity.	Port of Stockholm	2015-?	350	Private funds and possible EU Co-financing (CEF)	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
SE 68	Seaport + MoS	Trelleborg	Works	Construction of four ferry berths: The project is part of the move of the port area and will enable the receiption of larger vessels. The berths will be equipped with OPS and with waste water reception facilities. One of the berths will also be fore LNG bunkering.	Port of Trelleborg	> 2014	77	Private funds and possible EU Co-financing (CEF)	X	
SE 69	Seaport + MoS	Trelleborg	Works	Construction of truck centre, warehouse and ring road: The project covers the construction of a secure truck centre with the possibility to check-in onto the ferries (27 m€). Moving of an existing warehouse to an area close to the truck centre with an existing railway connection (5.5 m€). Construction of a new road entrance to the port from the ring road (10-20 m€). The configuartion and cost depend on the configuration of the ring road. The timing of all elements of this projects is linked to the implementation of the ring road project [see SE 61] and very time sensitive for the port.	Port of Trelleborg	> 2014	53	Private funds and possible EU Co-financing (CEF)	X	
SE 73	MoS	Baltic Sea	Study & works	LNG Bunkering Infrastructure Solution and Pilot actions for Ships operating on the Motorway of the Baltic Sea (2012-EU-21009-M): Three pilot actions for LNG, methanol and the use of scrubbers. Implementation of an LNG bunker supply infrastructure at Port of Brofjorden (SE). Studies aim at deployment of LNG in vessels in Baltic Sea nd North Sea.	Preem AB Skangass AB Rederi AB Donsötank AB Sirius Rederi AB Erik Thun AB Lloyds Register EMEA Furetank Rederi AB Öresund Drydocks AB SSPA Sweden AB Fartygskonstruktioner AB Sveriges Rederiservice AB	2012-2015	75	Financed by public and private funds and TEN-T MaP (MoS)	X	
SE 71	Airport	Stockholm airport	n.a.	Reach Compliance capacity-traffic: Improve passenger capacity to achieve the objective set for 2030.	Stockholm Airport	2030		not yet determined	X	
SE 72	Airport	Stockholm airport	n.a.	Deployment plans for Stockholm Arlanda : Deployment plans for Stockholm Arlanda	Stockholm Airport			not yet determined	X	
SE 70	RRT	Stockholm, Hallsberg, Malmö and other core RRT	Study	Reach Compliance: Improve technical parameter to achieve the objective set for 2030, in particular last mile issues, ITS and greening measures.	Swedish Transport Administration	2030		not yet determined	X	
SE/DK 75	Rail + Road	Øresund	Study	Øresund Bridge: According to the prognosis there will be some expected challenges for the capacity on the Øresund Bridge in 2035, which will depend on the economic trends in the market. Therefore investigation studies are required to derive measures and their timing.	Øresundsbro Konsortiet	2030	?	Co-financed by the EU. Øresundsbron is financed through loans and bond issues in the domestic as well as the international capital markets. These loans will be repaid through income from the Fixed Link, where users will pay a toll for passing the bridge. The financing of Øresundsbro Konsortiet (the legal entity raising money for Øresundsbron) is jointly and severally guaranteed by the Kingdom of Denmark and the Kingdom of Sweden, giving a very high credit rating on the bonds issued by Øresundsbro Konsortiet. . And possible EU-cofinancing (CEF).	X	
DK 76	Rail	Nationwide	Study & works	ERTMS 2 : ERTMS Level 2, Baseline 3. A total replacement of all signalling systems on the entire conventional railway network in Denmark with ERTMS by the end 2021 and all signalling systems on the Copenhagen S-line with CBTC by 2018 [Cost include 514 m€ for S-bane].	Banedanmark	2021	2.527	State Budget + cofinanced by the EU. And possible EU-cofinancing (CEF).	X	
DK 77	Rail	København	Study & works	Ny Ellebjerg Station (København): Increase the capacity of Copenhagen central station through development of Ny Ellebjerg station as the new nerve center for train connections between Øresund and København-Ringsted. € 47 m allocated to the establishment of a fly-over at Ny Ellebjerg. Enables greater traffic in the future and that "Øresundsbanen" can be operated with several direct trains	Banedanmark	2018	47	State Budget. And possible EU-cofinancing (CEF).	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
DK 78	Rail	Ringsted - Rødby (-Fehmarn)	Study & works	Ringsted - Fehmarn: From 2015 to 2021 Banedanmark will upgrade and renew the 115 km long railway line to a new, future-proof line. The project includes: Electrification Ringsted – Rødby, construction of new double track between Vordingborg and Rødby (except at the Storstrømsbridge), upgrading of top speed to 200 km/h, passing tracks for 1.000 meter long freight trains and a passenger train station at Holeby in the Southern part of Lolland. Financed by yields from Femern A/S according to the "Danish Model".	Banedanmark, but financed by the A/S Femern	2021	1.275	Co-financed by the EU. The Fehmarnbelt fixed link will be financed by the future earnings from tolls. Denmark is responsible for financing the coast-to-coast section and the Danish landworks. To this end, the state owned company Femern A/S obtains loans on the international financial market. The Danish government is providing state guarantees for these loans. As a result of these guarantees, the loans can be obtained by Femern A/S at the same terms and conditions available to the state.. And possible EU-cofinancing (CEF).	X	X
DK 79	Rail	Storstrømmen	Study & works	New Storstrøm bridge: Located on the Ringsted-Fehmarn railway line, the project removes a major bottleneck in the TEN-T-network. Primarily a railway project that also includes road and bicycle lanes.	The Danish Road Directorate	2021	635	State Budget + cofinanced by the EU. And possible EU-cofinancing (CEF).	X	X
DK 80	Rail	København - Ringsted	Study & works	New rail line between København and Ringsted: New high speed railway line between Copenhagen and Ringsted via Køge (up to 250 km/h for passenger trains). Will result in a better timetable with more departures, shorter travel times and fewer delays. Capacity will also be increased for freight trains.	Banedanmark	2018	1.552	State Budget + cofinanced by the EU. And possible EU-cofinancing (CEF).	X	
DK 81	Rail	Ringsted - Odense	Study & works	Ringsted - Odense speed increase: Speed increase Ringsted-Odense. It is the Danish Government's ambition to reduce the travel time between the larger Danish cities, including between Copenhagen and Odense, to one hour. Infrastructure investments are therefore required in order to increase train speed between Ringsted and Odense. This implies upgrades in Ringsted, Sorø, Slagelse, and at the Great Belt Bridge etc. [pending political decision on preferred technical solution as per 10/2014]	Banedanmark		83	State Budget. And possible EU-cofinancing (CEF).	X	
DK 82	Rail	Western Funen: Kauslunde - Odense	Study & works	New railway line on Western Funen: Kauslunde - Odense: New railway Kauslunde - Odense, about 35 km, 4 km shorter than the present line, thus saving travel time for passenger and freight trains.	The Danish Road Directorate	2023	670	State Budget. And possible EU-cofinancing (CEF).	X	
DK 83	Rail	Vamdrup - Vojens (Jutland)	Study & works	Double track Vamdrup and Vojens: Construction of double track in Southern Jutland in order to increase capacity and secure the current freight connection between Scandinavia and Germany.	Banedanmark	2015	92	State Budget + cofinanced by the EU. And possible EU-cofinancing (CEF).	X	
DK 84	Rail	Specific sections	n.a.	Reach Compliance by increasing freight train length to min. 740 m: Improve technical parameter to achieve the objective set for 2030. To be clarified, if part of a project or not.	Banedanmark			Public funds and possible EU Co-funding (CEF)	X	
DK 85	Rail	Øresund/København airport	Study & works	Capacity increase on the Øresund railway line to eliminate potential future bottleneck.: Capacity increase on the Øresund railway line to eliminate a potential future bottleneck. Establishment of a waiting track OR directional traffic near Copenhagen Airport. [Pending political decision]	Banedanmark		45	State Budget + cofinanced by the EU. And possible EU-cofinancing (CEF).	X	
DK 86	Road	Greve South - Køge	Works	Køgebugt Motorway: Expanding the motorway on this section South of Copenhagen from six to eight lanes, removing a bottleneck of 14 km. Northern section due to open in 2015, Southern by 2018.	The Danish Road Directorate	2015 - 2018	282	State Budget + cofinanced by the EU. And possible EU-cofinancing (CEF).	X	
DK 87	Road	South of Odense	Study & works	South of Odense Motorway: Expansion from 4 to 6 lanes (current bottleneck) [General political agreement, but funding not secured]	The Danish Road Directorate		242	Public funds and possible EU Co-funding (CEF)	X	
DK 88	Road	Odense West - Middelfart (Western Funen)	Study & works	Western Funen Odense West - Middelfart: Extension from 4 to 6 lanes, technically devide into three sections. [Funding not yet secured]	The Danish Road Directorate		349	Public funds and possible EU Co-funding (CEF)	X	
DK 89	Road	Fredericia - Kolding (West Jutland)	Study & works	Western Jutland Fredericia - Kolding: Extension from 4 to 6 lanes on a stretch of 19 km. The EIA has been concluded. [Funding not yet secured]	The Danish Road Directorate		121	Public funds and possible EU Co-funding (CEF)	X	
DK 90	Road	DK ScanMed Road Sections	n.a.	Reach Compliance: Improve technical parameter to achieve the objective set for 2030.	The Danish Road Directorate	2030		Public funds and possible EU Co-funding (CEF)	X	
DK 92a	Road + Port	København	Study & works	Establishing a tunnel from Nordhavnsvej to Nordhavn: The tunnel will connect the container terminal and cuise terminal and future RoRo terminal.	City and Port Development and City of Copenhagen	2014-2022	350	Public, private and possible EU Co-financing (CEF).	X	
DK 91	Seaport	København	Study & works	Planning and Implementation of an onshore power supply : Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Copenhagen Malmö Port	2030		Possible public and private funds as well as possible EU Co-financing (CEF)	X	
DK 92	Seaport	København	Works	Establishment of a new container terminal : Due to the city development in the port areas in Copenhagen, the present container terminal has to be laid down. A new area for establishing a new terminal is decided and land reclamation is taking place. The new terminal needs to be in operation earliest in 2019 and latest in 2021. Adjacent to the container terminal it will be possible to construct new ro-ro facilities and other port related activities in a 45 ha area.	City of Copenhagen, Copenhagen Malmö Port	2017-21	65	Public, private and possible EU Co-financing (CEF).	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
DK 93	Seaport + MoS	København	Study & works	Planning and Implementation of a Logistics Platform in Port of Copenhagen: Improve the technical parameter on MoS for the Port of Copenhagen by setting up a central logistics platform or freight village to reach comliance with 1315/2013 EC objective set for 2030 [no economical basis according to CMP 27.11.2014]	Copenhagen Malmö Port	2030		Possible public and private funds as well as possible EU Co-financing (CEF)	X	
DK 95	Airport	København	Study	Reach Compliance: Improve technical parameter to achieve the objective set for 2030.	Copenhagen Airport	2030		Possible public and private funds as well as possible EU Co-financing (CEF)	X	
DK 95a	Airport	København	Study	Expanding CPH: Development of CPH in accordance with the Expanding CPH vision for growth from 24 to 40 mio. annual pax. The aim is to support growth in Copenhagen Airport while being an attractive hub and maintaining the strong competitive position. This is done through expansion in adequate steps in accordance with demand. Capacity expansions include new infrastructure for aircraft and passengers – and improved connection between terminals and rail- and metro station.	Copenhagen Airport	2030		Possible public and private funds as well as possible EU Co-financing (CEF)	X	
DK 94	RRT	Hoje Tastrup, Taulov	Study	Reach Compliance: Improve technical parameter to achieve the objective set for 2030.	Banedanmark	2030		Possible public and private funds as well as possible EU Co-financing (CEF)	X	
DK/DE 96	Rail + Road	Fehmarn Belt	Study & works	Fehmarn Belt Fixed Link: The Fehmarnbelt fixed link realises a fixed, close, and direct connection between Scandinavia and continental Europe. The duration of a train journey between Hamburg and Copenhagen will be cut short from about four and a half to merely three hours. In the future, freight trains will be able to avoid the 160 km longer detour via the Great Belt. This will create a strong transport corridor between the Øresund region in Denmark/Sweden and Hamburg in Germany.	Femern A/S	2021	6.174	Co-financed by the EU. The Fehmarnbelt fixed link will be financed by the future earnings from tolls. Denmark is responsible for financing the coast-to-coast section and the Danish landworks. To this end, the state owned company Femern A/S obtains loans on the international financial market. The Danish government is providing state guarantees for these loans. As a result of these guarantees, the loans can be obtained by Femern A/S at the same terms and conditions available to the state.. And possible EU-cofinancing (CEF).	X	X
DE 100	Rail	Bremen	n.a.	Node Bremen ("Seehafen-Hinterlandverkehr"): Upgrade, works completed	DB Netz AG	2013	32	Financed by Federal Budget "Bedarfsplan" ("Requirement Plan")		X
DE 101	Rail	Hamburg/Bremen - Hannover	Study & works	ABS/NBS Hamburg/Bremen - Hannover: Upgrade and new line	DB Netz AG	> 2025	1.496	Public funds and possible EU Co-funding (CEF)	X	X
DE 102	Rail	Stelle - Lüneburg	Works	ABS Stelle - Lüneburg: Upgrade with 3. track	DB Netz AG	2014	350	Partly financed. Federal Budget "Bedarfsplan" ("Requirement Plan") EFRE. Possible Co-financing (CEF)	X	X
DE 103	Rail	Rotenburg - Verden - Nienburg - Minden	Study & works	ABS Rotenburg - Minden: Upgrade with 2./3. track	DB Netz AG	> 2015	357	Public funds and possible EU Co-funding (CEF)	X	X
DE 104	Rail	Berlin - Rostock	Works	ABS Berlin - Rostock: Expansion of rail routes from the port of Rostock to the steel plant Eisenhüttenstadt to an axle load of 25 tons (mainly the missing section Rostock Seaport -> Kavelstorf or the routes from Berlin via Frankfurt/O to Eisenhüttenstadt)	DB Netz AG / Port of Rostock	2015 Seaport >2015	855	"Berlin - Rostock (855 MEUR) partly financed. "LuFV" EFRE. Possible Co-financing (CEF)"	X	X
DE 105	Rail	Seaport Rostock	Works	Seehafen Rostock (LuFV): Upgrade	DB Netz AG	2009	37	Financed by Federal budget/"LufV"	X	X
DE 106	Rail	Berlin - Leipzig	Works	VDE 8.3 Berlin - Leipzig: Upgrade	DB Netz AG	2006	1.660	Financed by Federal Budget "Bedarfsplan" ("Requirement Plan")	X	X
DE 107	Rail	Halle	Works	Node Halle, ESTW (2. Stage): Upgrade	DB Netz AG	2018	464	Public funds and possible EU Co-funding (CEF)	X	X
DE 108	Rail	Leipzig	Works	Node Leipzig; Links to VDE 8.2/8.3: Upgrade/New lines	DB Netz AG	2015	399	Public funds and possible EU Co-funding (CEF)	X	X
DE 109	Rail	Erfurt	Works	Node Erfurt; Links to VDE 8.1/8.2: Upgrade/New lines	DB Netz AG	2017	187	Public funds and possible EU Co-funding (CEF)	X	X
DE 110	Rail	Erfurt - Halle/Leipzig	Works	VDE 8.2 Erfurt - Halle/Leipzig: New line/Upgrade	DB Netz AG	12/2015	2.967	Partly financed. Federal Budget "Bedarfsplan" ("Requirement Plan") TEN-T. Possible Co-financing (CEF)	X	X
DE 111	Rail	Nürnberg - Erfurt	Works	VDE 8.1 Nürnberg - Erfurt: New line/Upgrade	DB Netz AG	12/2017	5.281	Partly financed. Federal Budget "Bedarfsplan" ("Requirement Plan") TEN-T. Possible Co-financing (CEF)	X	X
DE 112	Rail	Nürnberg - Ingolstadt - München	Works	ABS/NBS Nürnberg - Ingolstadt - München: New line/Upgrade Ingolstadt - München to be finished in 2015	DB Netz AG	2006	3.676	Financed by Federal Budget "Bedarfsplan" ("Requirement Plan")	X	
DE 113	Rail	München - Rosenheim - AT border (Kufstein)	Study & works	ABS/NBS München - Rosenheim Grenze (Kufstein): Upgrade/New line	DB Netz AG		2.630	Partly financed. Federal Budget "Bedarfsplan" ("Requirement Plan") TEN-T. Possible Co-financing (CEF)	X	X

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
DE 114	Rail	München	Works	Node München (without "Walpertskirchener Spange"): Upgrade	DB Netz AG		368	Public funds and possible EU Co-funding (CEF)	X	X
DE 115	Rail	Markkleeberg-Gaschwitz - Großdeuben	n.a.	Reach Compliance by increasing operating speed for freight to 100 km/h: Improve technical parameter to achieve the objective set for 2030. To be clarified, if part of a project or not.	DB Netz AG			Possibly DB Netz / "LuFV" and possible EU Co-financing (CEF)	X	
DE 116	Rail	Altenburg - Paditz	n.a.	Reach Compliance by increasing operating speed for freight to 100 km/h: Improve technical parameter to achieve the objective set for 2030. To be clarified, if part of a project or not.	DB Netz AG			Possibly DB Netz / "LuFV" and possible EU Co-financing (CEF)	X	
DE 117	Rail	Hof - Regensburg Hbf	n.a.	Reach Compliance by electrification of about 180 km of track: Improve technical parameter to achieve the objective set for 2030. To be clarified, if part of a project or not.	DB Netz AG			Possibly DB Netz / "LuFV" and possible EU Co-financing (CEF)	X	
DE 118	Rail	Regensburg Hafen Abzw (RHA) - RHA	n.a.	Reach Compliance by electrification of about 0,2 km of track: Improve technical parameter to achieve the objective set for 2030. To be clarified, if part of a project or not.	DB Netz AG			Possibly DB Netz / "LuFV" and possible EU Co-financing (CEF)	X	
DE 119	Rail	Bremen, Hamburg, Hannover, Nürnberg, München	Study	Improve core nodes: Solve competition for valuable, market attractive train paths between far distance, high speed, regional passenger and freight trains on mixed lines in and around core nodes by detailed analysis and local mitigation measures.	DB Netz AG			not yet determined	X	
DE 120	Rail	Berlin	Works	Node Berlin: Detailed planning/Extension and upgrading of rail infrastructure including link to BER airport	DB Netz AG		6.526	Public funds and possible EU Co-funding (CEF)	X	
DE 121	Rail	Berlin	Study & works	Improvement of the rail connections to the terminals / freight villages (if located in the Urban Node of the Core Network Corridor) and intermodal freight capacities:	Region BB, local, private	2014-2020		Regional and local funds as well as private sources; not accepted for Federal Budget.	X	
DE 122	Rail	Berlin	Study & works	Improvement interoperability by creating new management structures and introduction of innovative technologies: (e.g. new freight train concepts, new transport technologies and communication structures for freight centres)	Region BB, local, private	2014-2020		Regional and local funds as well as private sources.	X	
DE 123	Rail	Berlin	Study & works	Improvement of the last mile, development of new concepts regarding greening transport in the Capital Region:	Region BB, local, private	2014-2020		Regional and local funds as well as private sources.	X	
DE 97	Rail	(Hamburg -) Lübeck - Puttgarden ("Hinterland connection" Fehmarn Belt Fixed Link)	Study & works	"Hinterlandanbindung" FBQ (1. Stage, 2. Stage): Infrastructure works for connection København - Hamburg; upgrade and/or optimisation of alignment (high speed). 1. Stage: electrification Puttgarden - Bad Schwartau until start of operation of the Fehmarn Belt Fixed Link, 2. Stage: double track line 7 years after the start of operation of the Fehmarn Belt Fixed Link	DB Netz AG	> 2015	817	Partly financed. Federal Budget "Bedarfsplan" ("Requirement Plan") TEN-T. Possible Co-financing (CEF)	X	X
DE 98	Rail	Hamburg - Lübeck	Works	ABS Hamburg - Lübeck: Upgrade and electrification	DB Netz AG	2012	223	Financed by Federal Budget "Bedarfsplan" ("Requirement Plan")	X	x
DE 98a	Rail	Hamburg - Lübeck	Study	Extension Hamburg - Lübeck: Multi-rails-extension between Hasselbrook and Bargteheide	Land Hamburg, Land Schleswig-Holstein	2020	630	Regional funds and possible EU Co-funding (CEF)	X	x
DE 99	Rail	Hamburg	Works	Node Hamburg ("Seehafen-Hinterlandverkehr"): Upgrade	DB Netz AG	2011-2030	545	Public funds and possible EU Co-funding (CEF)	X	
DE 99a	Rail	Hamburg	Works	Rail Corridor Wilhelmsburg: Measures on the rail line along the Wilhelmsburger Reichsstraße to upgrade the TEN-T corridor	DB Netz AG / BMVI / Land Hamburg	2020	45	State budget, Regional Budget and DB Netz AG	X	x
DE 124	Rail + Airport	Hamburg	Study	Study on additional railway links to Hamburg Airport: Study on the creation of a railway link from the northern catchment area of Hamburg Airport. Technical feasibility study as well as cost-benefit analysis	Flughafen Hamburg GmbH			not yet determined	X	
DE 125	Rail + Port	Hamburg	Works	New Bridge Kattwyk : The project includes the construction of one of the largest rail vertical-lift bridges of the world crossing the Southern Elbe and optimizing the important crossing point for ship, rail and road.	Hamburg Port Authority	> 2014	205	not yet determined	X	
DE 126	Rail + Port	Hamburg	Works	Converted train station Waltershof 2nd stage: Converted train station Waltershof 2nd stage.	Hamburg Port Authority	> 2014	9	not yet determined	X	
DE 127	Rail + Port	Hamburg	Works	Southern railway connection Altenwerder: Construction of a two-pronged connection between Vorstellgruppe Old Werder East and New Railroad Bridge Kattwyk	Hamburg Port Authority	> 2016	45	not yet determined	X	
DE 128	Rail + Port	Hamburg	Works	Construction of 4 tracks and 2 full length main tracks in the Hohe Schaar station: Four new tracks Bf Hohe Schaar including 2-track connection of the new railway bridge Kattwyk according to two axes concept	Hamburg Port Authority			not yet determined	X	
DE 129	Rail + Port	Hamburg	Works	Locomotive service point Port West : Construction of a parking area for locomotives	Hamburg Port Authority	> 2015	12	not yet determined	X	
DE 130	Rail + Port	Hamburg	Works	Track doubling Nordkurve Kornweide: Construction of a new track and adaptation of crossing structures to link on the two tracks Nordkurve Kornweide	Hamburg Port Authority	> 2015	3	not yet determined	X	
DE 131	Rail + Port	Lübeck	Works	Expansion of the railway connection to and from the terminals in Lübeck: Northern railway connection Skandinavienkai and Seelandkai / CTL / Lehmannkai II to the route Lübeck-Puttgarden	DB Netz / Lübeck Port Authority	> 2015		not yet determined	X	
DE 132	Rail + Road	Hamburg	Works	Transport links Burchardkai (planning and construction): Renovation and redesign of road and rail connections of the container terminal Burchardkai (CTB).	Hamburg Port Authority	> 2014	104	not yet determined	X	
DE 133	Road	German corridor sections	Works	DE ScanMed Corridor Programme Road - CPR 1: Safe parking: Development of safe and secure rest areas on motorways of CNC ScanMed, including provision of relevant information services	Road authorities of federal states	2014-2020	260	Public funds and possible EU Co-funding (CEF)	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
DE 134	Road	(Oldenburg -) Heiligenhafen - Puttgarden	Works	A 1/B 207 Southern access to Fehmarn Belt fixed link (Fehmarnsund bridge not incl.) [part of DE CPR 2]: Upgrade of A 1 Oldenburg - Heiligenhafen-Ost (finalised in 2012), upgrade (4 lanes) of B 207 Heiligenhafen - Puttgarden	Landesbetrieb Straßenbau und Verkehr Schleswig-Holstein	2015-2021	100	Public funds and possible EU Co-funding (CEF)	X	
DE 135	Road	Avendorf - Großenbrode	Study & works	B 207 Fehmarnsund bridge [part of DE CPR 2]: Rehabilitation, if necessary replacement of bridge as part of southern access to Fehmarn Belt fixed link	Landesbetrieb Straßenbau und Verkehr Schleswig-Holstein	2014-?		Public funds and possible EU Co-funding (CEF)	X	
DE 136	Road	Rendsburg	Study & works	A 7 Rader Hochbrücke (bridge crossing the North Sea and Baltic canal) [part of DE CPR 2]: Studies, if necessary replacement of bridge to cope with increase traffic volume and safety requirements.	Landesbetrieb Straßenbau und Verkehr Schleswig-Holstein	2014-?		Public funds and possible EU Co-funding (CEF)	X	
DE 137	Road	Hamburg	Works	A 7 Dreieck Hamburg-Nordwest - Hamburg-Stellingen [part of DE CPR 2]: Upgrade (8 lanes); partly tunneling for noise protection	Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)		192	Public funds and possible EU Co-funding (CEF)	X	
DE 138	Road	Hamburg	Works	A 7 Hamburg-Stellingen - Hamburg-Volkspark [part of DE CPR 2]: Upgrade (8 lanes) including new construction Langenfelder Brücke	Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)	2014-2018	80	Public funds and possible EU Co-funding (CEF)	X	
DE 139	Road	Hamburg	Works	A 7 Hamburg-Volkspark - Hamburg-Othmarschen [part of DE CPR 2]: Upgrade (8 lanes); partly tunneling for noise protection	Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)		192	Public funds and possible EU Co-funding (CEF)	X	
DE 141	Road	Malchow - Waren (Müritz)	Study & works	A 19 Replacement of bridge Petersdorfer See [part of DE CPR 2]: Replacement of brigde	Landesamt für Straßenbau und Verkehr Mecklenburg-Vorpommern	2014-2018	32	Public funds and possible EU Co-funding (CEF)	X	
DE 142	Road	Dreieck Havelland	Works	A 10 Reconstruction Dreieck Havelland [part of DE CPR 2]: Reconstruction and upgrade (6 lanes)	Landesbetrieb Straßenwesen Brandenburg	2012-2014	52	Partly financed. Federal Budget?, EFRE and possible EU Co-financing (CEF).	X	
DE 143	Road	Dreieck Havelland - Werder	Works	A 10 Dreieck Werder - Dreieck Havelland [part of DE CPR 2]: Upgrade (6 lanes)	Landesbetrieb Straßenwesen Brandenburg			Possible public funds subject to Federal Masterplan and budgetary decision as well as possible EU Co-financing (CEF).	X	
DE 144	Road	München	Works	A 99 Kreuz München-Nord - Kreuz München-Süd [part of DE CPR 2]: Upgrade (8 lanes)	Bayerische Straßenbauverwaltung (Oberste Baubehörde)			Possible public funds subject to Federal Masterplan and budgetary decision as well as possible EU Co-financing (CEF).	X	
DE 145	Road	München - Rosenheim	Works	A 8 Kreuz München-Süd - Dreieck Inntal [part of DE CPR 2]: Upgrade (8 lanes)	Bayerische Straßenbauverwaltung (Oberste Baubehörde)			Possible public funds subject to Federal Masterplan and budgetary decision as well as possible EU Co-financing (CEF).	X	
DE 146	Road	Bordesholm - Hamburg	Works	A 7 Dreieck Bordesholm - Hamburg [part of DE CPR 3]: Upgrade	Landesbetrieb Straßenbau und Verkehr Schleswig-Holstein; Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)	2014-2018		Financed by Federal Budget and EIB Project Bond (1st PPP Project on ScanMed corridor in DE)	X	
DE 146a	Road	Hamburg	Study	A 26 Interconnection A1-A7 with port: New Construction; removing missing link between A1 and A7	BMVI	2014-2017	15	not yet determined	X	
DE 147	Road	Salzgitter - Göttingen	Works	A 7 Seesen - Nörten-Hardenberg [part of DE CPR 3]: Upgrade (6 lanes)	Niedersächsische Landesbehörde für Straßenbau und Verkehr	2016-2019		Federal Budget, private bonds and possible EU Co-financing (CEF) (PPP Project)	X	
DE 148	Road	Lederhose - Rudolphstein	Works	A 9 Lederhose – Bavarian border [part of DE CPR 3]: Upgrade (6 lanes)	Thüringer Landesamt für Bau und Verkehr	2012-2014		Federal Budget, private bonds and possible EU Co-financing (CEF) (PPP Project)	X	
DE 149	Road	Hamburg	Works	A 1 Hamburg-SO - section influence system [part of DE CPR 4]:	Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)		7	Public funds and possible EU Co-funding (CEF)	X	
DE 150	Road	Hamburg	Works	A 1, A 7, A 21, B 205 - upgrade of network influence system [part of DE CPR 4]: part of traffic control and information concept (VLIK) for upgrade and extension of A 7 motorway	Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)	2015-2015	2	Public funds and possible EU Co-funding (CEF)	X	
DE 151	Road	Hamburg	Works	A 7 retrofitting of Elbe tunnel tubes 1-3 [part of DE CPR 4]: technical equipment and installations for increasing the road safety	Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)		71	Public funds and possible EU Co-funding (CEF)	X	
DE 152	Road	Hamburg - Pinneberg	Works	A 23 Section influence system, incl. ZRA [part of DE CPR 4]: technical equipment and installations for increasing the road safety on the section border Schleswig-Holstein/Hamburg - Pinneberg	Landesbetrieb Straßen, Brücken und Gewässer (Hamburg)		3	Public funds and possible EU Co-funding (CEF)	X	
DE 153	Road	Niedersachsen	Works	A 1, A 2, A 7, A 26, A 27, A 35 - network influence system [part of DE CPR 4]: Long Distance Corridor (Nord)	Niedersächsische Landesbehörde für Straßenbau und Verkehr	under construction	8	Public funds and possible EU Co-funding (CEF)	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
DE 154	Road	Hannover	Works	A 7 / A 2 traffic control system Hannover [part of DE CPR 4]: renewal of traffic control system	Niedersächsische Landesbehörde für Straßenbau und Verkehr		4	Public funds and possible EU Co-funding (CEF)	X	
DE 155	Road	Kassel	Works	A 5, A 7, A 44, A 49 - network influence system Kassel [part of DE CPR 4]:	Hessen Mobil Straßen- und Verkehrsmanagement	under construction	3	Public funds and possible EU Co-funding (CEF)	X	
DE 156	Road	Bremen	Works	A 27 Bremer Kreuz / Überseestadt - section influence system [part of DE CPR 4]:	Amt für Straßen und Verkehr, Bremen		3	Public funds and possible EU Co-funding (CEF)	X	
DE 157	Road	Potsdam - Niemegk	Works	A 9 Niemegk - Dreieck Potsdam - section influence system [part of DE CPR 4]:	Landesbetrieb Straßenwesen Brandenburg		4	Public funds and possible EU Co-funding (CEF)	X	
DE 158	Road	Bayern	Works	A 3, A 6, A 7, A 9, A 72 - dNet Bayern [part of DE CPR 4]: dynamic network control	Bayerische Straßenbauverwaltung (Oberste Baubehörde)	under construction	25	Public funds and possible EU Co-funding (CEF)	X	
DE 159	Road	Holledau - Neufahrn	Works	A 9 Dreieck Holledau - Kreuz Neufahrn - traffic influence system [part of DE CPR 4]:	Bayerische Straßenbauverwaltung (Oberste Baubehörde)	under construction	21	Public funds and possible EU Co-funding (CEF)	X	
DE 160	Road	München	Works	A 8, A 92, A 99, B 471 - dynamic sign-posting [part of DE CPR 4]: Kreuz München-Süd and Kreuz München-Nordwest	Bayerische Straßenbauverwaltung (Oberste Baubehörde)		6	Public funds and possible EU Co-funding (CEF)	X	
DE 161	Road	München	Works	A 8, A 99 - section influence system [part of DE CPR 4]: eastern sections of A 99 and A 8 - including temporary use of emergency lane	Bayerische Straßenbauverwaltung (Oberste Baubehörde)	2014-2020	14	Public funds and possible EU Co-funding (CEF)	X	
DE 162	Road	München	Works	A99 Safety measures in the Tunnel Allach [part of DE CPR 4]:	Bayerische Straßenbauverwaltung (Oberste Baubehörde)	2014-2020	14	Public funds and possible EU Co-funding (CEF)	X	
DE 163	Road	German corridor sections	Works	DE ScanMed Corridor Programme Road - CPR 5: Other Measures: Other actions to improve road safety by removing of bottlenecks, missing links and upgrading of federal motorway sections on ScanMed Corridor	Road authorities of federal states		1.315	Federal Budget; No EU Co-financing possible.	X	
DE 164	Seaport	Hamburg	Works	Adaptation driveway Vorhafen: To ensure safety and ease of ship traffic, especially in the context of ship sizes, the widening of the entrance area of the North Elbe is urgently needed in the Vorhafen.	Hamburg Port Authority	> 2014	98	not yet determined	X	
DE 165	Seaport	Hamburg	Works	Channel adjustments on the River Elbe: The planned channel adjustments of the Lower and Outer Elbe is to ensure that modern large container ships with max. drafts of 14.5 m can reach the port.	Hamburg Port Authority	> 2014	199	not yet determined	X	
DE 166	Seaport	Hamburg	Works	Newbuilding Reiherstieg Lock: The Reiherstieg lock is the only southern access to Reiherstieg and must be renewed.	Hamburg Port Authority	> 2014	22	not yet determined	X	
DE 167	Seaport	Hamburg	Works	smartPort Energy : Use of renewable energy and alternative fuels, reducing energy consumption and emissions in the port	Hamburg Port Authority	> 2015	75	not yet determined	X	
DE 168	Seaport	Hamburg	Works	smartPort Logistics: Efficient use of existing infrastructure, improving traffic flow.	Hamburg Port Authority	> 2015	25	not yet determined	X	
DE 169	Seaport	Rostock	Works	Expansion and deepening of the Sea Canal Rostock: Expansion and deepening of the Sea Canal (seaward entrance) of the port of Rostock on a water depth of 16.50m, which would allow for access of vessels with a permissible draft of up to 15.00m	Port of Rostock	> 2015		not yet determined	X	
DE 170	Seaport	Lübeck	Works	Newbuilding of a LNG Terminal: Newbuilding of a LNG Terminal in the port of Lübeck	Stadtwerke Lübeck/Lübeck Port Authority	> 2015		not yet determined	X	
DE 171	Seaport	Lübeck	Works	New construction of the berths in Travemünde: Construction of the berths 5 and 4a with implementation of 16 hectars port area at Travemünde	Lübeck Port Authority	> 2015		not yet determined	X	
DE 172	Seaport	Lübeck	Works	Implementation of a berth/vessel planning IT system : Implementation of a berth/vessel planning IT system	Lübeck Port Authority	> 2015		not yet determined	X	
DE 173	Seaport	Rostock	Study & works	Planning and Implementation of an onshore power supply : Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Port of Rostock	2030		not yet determined	X	
DE 174	Seaport + MoS	Lübeck	Study & works	Planning and Implementation of a Logstics Centre in the Port of Lübeck: Improve the technical parameter on MoS for the Port of Luebeck by setting up a central logistics platform or freight village to reach comliance with 1315/2013 EC objective set for 2030	Lübeck Port Authority	> 2015		not yet determined	X	
DE 207	MoS	Rostock	n.a.	Pre-identified projects: low emission ferries; ice-breaking capacity: Detailed description pending	not yet determined	2030		not yet determined	X	X
DE 181	Airport	Bremen	Study	Study on new approaches of Environmental Airport Management: In depth analysis of solutions to improve airport environmental performance, including transport infrastructure analysis (landside and airside), airport management on sustainability issues, development of analogies with sustainable process management of other transport modes (e.g. seaports)	Airport Bremen GmbH	2015	0	Possible public and private funds as well as possible EU co-financing (CEF)	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
DE 182	Airport	Hannover	Study	Study on capacity improvement for airport terminals B and C: Study under consideration of EU VO 300/2008, VO 185/2010, 687/2014 and 278/2014. Re-design of the buildings in order to create new passenger and baggage security check facilities and in order to improve interconnectivity (access to the railway station).	Flughafen Hannover-Langenhagen GmbH	2015-2017	2	Private funds and possible EU Co-financing (CEF)	X	
DE 183	Airport	Hannover	Works	Capacity improvement for airport terminals B and C: cost estimated between 15 and 50 million Euro [higher figure included in cost column]	Flughafen Hannover-Langenhagen GmbH	2018-2020	50	Private funds and possible EU Co-financing (CEF)	X	
DE 184	Airport	Hannover	Works	Improvement of road access to air cargo terminals : New road to the western part of Hannover Airport, where new cargo facilities are located.	Flughafen Hannover-Langenhagen GmbH	2015-2018	11	Private funds and possible EU Co-financing (CEF)	X	
DE 185	Airport	Berlin	Study	Study short-term capacity improvement BER: Analysis of short-termin measures in the BER terminal	FBB GmbH	2015	0	Private funds and possible EU Co-financing (CEF)	X	
DE 186	Airport	Leipzig	Works	Extension of the space for passenger and baggage security checks incl. creation of a single area for checks for Terminal A + B:	Mitteldeutsche Flughafen AG		1	Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 187	Airport	Leipzig	Works	Extension of aircraft maintenance facilities (hangar):	Mitteldeutsche Flughafen AG		25	Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 188	Airport	Leipzig	Works	Extension of the apron for cargo aircraft :	Mitteldeutsche Flughafen AG		60	Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 189	Airport	Leipzig	Works	Introduction of an Airport Colaborate Decision Making System : Remark: Among other software and consulting costs. Objective: Process optimization, reduction energy consumption, capacity increase.	Mitteldeutsche Flughafen AG		1	Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 190	Airport	Leipzig	Works	Extension of the power supply facility (fuel cell technology): Improvement of sustainability	Mitteldeutsche Flughafen AG		6	Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 191	Airport	Nürnberg	Works	Improvement of road access: Better access to federal road 4 and motorway 3: Road from the western part of Nuremberg Airport to Federal Road B4. Individual transport as well as public transport (busses) will use the new road.	Flughafen Nürnberg GmbH			Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 192	Airport	München	Works	Stationary supply units for pre-condioned air : approx. 40 parking positions will be equipped with the units. Objective: CO2 reduction.	Flughafen München GmbH	2014-2015	35	Financed (probably by private and public funds)	X	
DE 193	Airport	München	Works	Extension apron South : Increase of aircraft parking capacity. Beginning of operation 2019/20.	Flughafen München GmbH	2017/18-2019/20		Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 194	Airport	München	Works	Railway tunnel under terminal 2, apron terminal 2 (for the railway link to Erding).: Cost estimated between 70 and 80 million Euro [higher figure included in cost columns]; Beginning of operation: 2021/22. Remark: Rail infrastructure not part of the investment.	Flughafen München GmbH	2018-2021/22	80	Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 195	Airport	München	Works	Extension apron North: Increase of aircraft parking capacity. Beginning of operation 2022/23. Remark: only needed, If 3rd runway will be built.	Flughafen München GmbH	2020/21-2022/23		Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 196	Airport	Berlin	Study	Capacity and system study baggage handling: Simulation on measures to remove bottlenecks of the baggage handling facilities	FBB GmbH	2015	0	Private funds and possible EU Co-financing (CEF)	X	
DE 197	Airport	Berlin	Works	Mid-term capacity increase BER : Construction (independent from results planning: Refurbisment Schönefeld (terminal, aprons, taxiways, taxiways around North runway) or solution leight construction Midfield	FBB GmbH			Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 198	Airport	Berlin	Works	Mid-term capacity increase BER (extension apron Midfield): Plannung services	FBB GmbH	2018		Private funds and possible EU Co-financing (CEF)	X	
DE 199	Airport	Berlin	Study	Study on runway capacities: Study for the preparation of slot allocation before the opening of BER	FBB GmbH	2015	0	Private funds and possible EU Co-financing (CEF)	X	
DE 200	Airport	Berlin	Study	Study on taxiway infrastructure for Schönefeld terminal and General Aviation terminal: Study on safe taxiway operations (e.g. avoiding runway crossing)	FBB GmbH	2015	0	Private funds and possible EU Co-financing (CEF)	X	
DE 201	Airport	Berlin	Study	Study and concept development "OptiPax": Analysis for the improvement (acceleration) of all passenger-related processes including design of measures to improve processes	FBB GmbH	2015	0	Private funds and possible EU Co-financing (CEF)	X	
DE 202	Airport	Berlin	Study	Master plan and function plan BER : Development plan for the period 2035 and later, based on traffic forecasts	FBB GmbH	2015-2016	1	Private funds and possible EU Co-financing (CEF)	X	
DE 203	Airport	Berlin	Study	Study on terminal extension BER: Objective: Sustainable capacity increase Midfield	FBB GmbH	2015	0	Private funds and possible EU Co-financing (CEF)	X	
DE 204	Airport	Berlin	Works	Short term capacity increase baggage handling BER : Planning services	FBB GmbH	2015	2	Private funds and possible EU Co-financing (CEF)	X	
DE 205	Airport	Berlin	Works	Short term capacity increase baggage handling BER : Construction works	FBB GmbH	2016		Private funds and possible EU Co-financing (CEF)	X	
DE 206	Airport	Berlin	Works	Mid-term capacity increase BER : Planning services "double-roof operations" vs. extension Midfield	FBB GmbH	2015	5	Private funds and possible EU Co-financing (CEF)	X	
DE 175	RRT	Lübeck	Works	Expansion of the terminal for combined transport: Expansion of the terminal for combined transport in Lübeck-Travemünde	Lübeck Port Authority/ Lübecker Hafen-Gesellschaft mbH	> 2015		not yet determined	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
DE 176	RRT	Hamburg	Works	Rail-road terminal Hamburg-Billwerder (3. module): Upgrade	DB Netz AG	2009-2012	28	Financed by Federal Budget.	X	
DE 177	RRT	Lehrte (Hannover)	Study & works	Megahub Lehrte (Hannover): Construction of a hub site for combined transport rail/road comprising six tracks and three gantry cranes	DB Netz AG	2014-2016	136	not yet determined	X	
DE 178	RRT	München	Works	Rail-road terminal München-Riem (3. module): Upgrade	DB Netz AG	2009-2011	24	Financed by Federal Budget	X	
DE 179	RRT	DE RRT locations	Study & works	Reach Compliance: Improve technical parameter to achieve the objective set for 2030, in particular last mile issues, ITS and greening measures.	DB Netz AG, private owners	2030		Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 180	RRT	Lübeck	Study & works	Baltic Rail Gate (2nd phase): Extent the cpacity of the present intermodal terminal by a second module and Rail Mounted Gantry Cranes	Lübeck Port Authority	> 2015		Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE 208	Multimodal	Lübeck	Study & works	Planning and Implementation of a Logstics Centre Lübeck: Planning and Implementation of a Logstics Centre Lübeck (Analysis of potentials and implementation)	Lübeck Port Authority	> 2014		Possible public and private funds as well as possible EU co-financing (CEF)	X	
DE/AT 209	Road	Kiefersfelden - Kufstein	Study & works	A 93 Innbrücke Kiefersfelden [part of DE CPR 2]: Removal of bottleneck	Bayerische Straßenbauverwaltung (Oberste Baubehörde)	2017-2020	10	Public funds and possible EU Co-funding (CEF)	X	
AT 210	Rail	Kundl - Baumkirchen	Study & works	Unterinntalbahn - expansion first step: The already existing double-track rail line was added by a new double-track highspeed line on a length of 40 km to reduce travel time and to expand the capacity.	ÖBB Infrastruktur AG	1996 - 2012	2.300	Financed by Federal Budget and TEN-T	X	X
AT 211	Rail	Tirol	Works	Investment network 2013-2018: Rehabilitation point switches Safeguarding of level crossings Noise protection Rehabilitation railway stations Park & Ride sites	ÖBB Infrastruktur AG	2013 - 2018	270	Financed (notably by Federal funds)	X	X
AT 216	Rail	Schaftenau - Kundl/Radfeld	Study & works	Unterinntalbahn - expansion second step: The already existing double-track rail line will be added by a new double-track highspeed line on a length of 19 km to reduce travel time and to expand the capacity. [Finalisation of construction after 2030].	ÖBB Infrastruktur AG	2015 - after 2030	1.500	Public funds and possible EU Co-funding (CEF)	X	X
AT 217	Rail	Brixlegg	Works	Brixlegg - reconstruction railway station: Rehabilitation platforms and tracks Rehabilitation overhead lines Construction tunnel for people movement	ÖBB Infrastruktur AG	2011 - 2012	18	Financed by Federal Budget.	X	X
AT 218	Rail	DE/AT border - (Kufstein -) Schaftenau	Study & works	Capacity improvement for border crossing rail traffic: Unterinntalbahn - expansion second step; The already existing double track line will be added by a new double tracks line on the length of about 8 km to reduce the travel time and to expand the capacity (see also project of DB Netz north of the DE/AT border in Germany)	ÖBB Infrastruktur AG		800	Public funds and possible EU Co-funding (CEF)	X	X
AT 219	Rail	Schwaz	Works	Schwaz - reconstruction of railway station: Reconstruction of railway station Rehabilitation platforms and tracks Rehabilitation overhead lines Construction tunnel for people movement	ÖBB Infrastruktur AG	2015 - 2020	19	Public funds and possible EU Co-funding (CEF)	X	X
AT 220	Road	Wiesing	Works	A 12 Inntal Autobahn - reconstruction junction Wiesing Zillertal: Construction of a passing line	ASFiNAG	2012 - 2013	3	Financed by Federal Budget.	X	
AT 221	Road	Volders - Hall	Works	A 12 Inntal Autobahn - rehabilitation Volders - Hall: Rehabilitation of the carriageway surface	ASFiNAG	2014	8	Financed by Federal Budget	X	
AT 222	Road	Radfeld - Kramsach	Works	A 12 Inntal Autobahn - rehabilitation Radfeld - Kramsach: Rehabilitation of the carriageway surface	ASFiNAG	2013	8	Financed by Federal Budget	X	
AT 223	Road	Münster (Tirol)	Works	A 12 Inntal Autobahn - rest area Münster North and Münster South: Construction of two rest areas between the junctions Kramsach and Wiesing.	ASFiNAG	2010 - 2011	7	Financed by Federal Budget.	X	
AT 224	Road	Nösslach	Works	A 13 Brenner Autobahn - rest area Nösslach: Construction of a rest area close the junction Nösslach.	ASFiNAG	2011	5	Financed by Federal Budget.	X	
AT 225	Road	Innsbruck	Study & works	A 12 Inntal Autobahn - Innsbruck Amras: Between the junctions Innsbruck Ost and Knoten Amras measures to increase the traffic safety and the environmental protection like the construction of an underpass and noise barriers were done.	ASFiNAG	2009 - 2011	54	Financed by state and regional funds.	X	
AT 226	RRT	Wörgl	Study & works	Modification terminal Wörgl: Increasing the shipping capacity of the terminal Wörgl by new tracks	ÖBB Infrastruktur AG	2009 - 2013	35	Financed by Federal Budget.	X	
AT/IT 227	Rail	Innsbruck - Fortezza	Study & works	Brenner base tunnel (BBT): Railway tunnel between Innsbruck and Fortezza, made of different planning and construction lots; 2014 total cost information of BBT SE	BBT SE	1987 - 2025	10.000	Partly financed. State funds, regional funds, possible cross financing from A22 motorway and possible EU Co-financing (CEF).	X	X
AT/IT 228	Rail	Brenner/Brennero	Works	Improve interoperability by short term measures: Short term infrastructural, operational and regulatory measures to improve the quality of the service and the efficiency until the base tunnel is in operation	ÖBB Infrastruktur AG, RFI, railway undertakings	2015-2017		Public funds and possible EU Co-funding (CEF)	X	X
IT 229	Rail	Fortezza - Verona	Works	Southern access line to Brenner : Construction of double track line, parallel to the existing one, lot 1 Fortezza-Ponte Gardena	RFI	2020-2025	1.575	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 231	Rail	Fortezza - Verona	Study & works	Deployment of ERTMS trackside equipment: Corridor ERTMS (phase 1) and preparation works for level 2 on Brennero-Verona stretch [New project, after the Contract 2011-IT-60001-P was cancelled in June 2014].	RFI	2020	70	Possible public funds as well as possible EU Co-financing (CEF)	X	X

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
IT 231a	Rail	Brennero - Verona	Study & works	Technological Upgrade of Brennero - Verona line for the capacity: Technological Upgrade	RFI	2020-2025	70	Possible public funds as well as possible EU Co-financing (CEF)	X	x
IT 231b	Rail	Brennero - Verona	Study & works	Technological Upgrade of Brennero - Verona line for increasing speed: Technological Upgrade	RFI	2020	to be defined	Possible public funds as well as possible EU Co-financing (CEF)	X	x
IT 232	Rail	Verona	Study & works	Verona HS node: connection from north (1st phase): First phase of the connection between the Verona Porta Nuova station and the Verona-Padova HS line (double track along the access line)	RFI	2025	638	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 233	Rail	Verona	Study & works	Upgrading of Verona Porta Nuova station: Technological and infrastructural upgrading of the Verona Porta Nuova Station	RFI	2020	90	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 234	Rail	Bolzano	Study & works	South accessibility to Bolzano station: New double tracks for south acces to Bolzano station on Verona - Bolzano core section (Virgolo tunnel)	RFI	2020	50	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 235	Rail	Napoli - Bari	Study & works	Doubling Bovino-Cervaro line (Phase 1): Construction of a High Speed railway connection between Napoli and Bari. The present phase consist in the doubling of Bovino-Cervaro line	RFI	2020	260	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 236	Rail	Napoli - Bari	Study & works	Completamento itinerario Napoli - Foggia - Bari: Construction of a High Speed railway connection between Napoli and Bari through the construction of Napoli-Cancello and the completion of doubling of lines Cancello-Vitulano and Apice-Bovino	RFI	2020-2025	5.524	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 237	Rail	Messina - Catania	Study & works	Double track Giampilieri - Fiumefreddo: Construction of double track between Giampilieri and Fiumefreddo	RFI	2030	2.270	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 238	Rail	Palermo - Catania	Study & works	Double track Palermo - Catania: Construction of double track on the Catania Bicocca-Catenanuova-Raddusa stretch and the enhancement allowing higher speed of Roccapalumba-Marianopoli	RFI	2025	804	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 239	Rail	Palermo - Catania	Study & works	New line Palermo-Catania: Construction of the new line between Palermo and Catania (stretch Raddusa - Castelbuono)	RFI	2030	4.934	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 240	Rail	Palermo - Catania	Study & works	New line Palermo-Catania: Construction of the new line between Palermo and Catania (double track between Fiumetorto and Castelbuono)	RFI	2020	1.064	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 241	Rail	Napoli - Reggio Calabria	Works	Upgrading of railway line Napoli-Reggio Calabria: Upgrade of the railway connection between Battipaglia and Reggio Calabria	RFI	2020	230	State funds and EU Co-financing (ERDF)	X	X
IT 242	Rail	Bari	Works	Bari railway node: Technological and infrastructural upgrading of the Bari railway node (Bari Parco nord, Bari C.le, Bari Lamasinata)	RFI	2020	120	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 243	Rail	Palermo	Works	Palermo railway node: Urban node: the measure consist in the construction of a second track of the Palermo bypass and the provision of Computer Based Railway Control System in order to develop urban and suburban railway services and enhance the connection with Punta Raisi airport	RFI	2020	1.152	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 244	Rail	Firenze	Study & works	Technological upgrading of Firenze node: Technological upgrading of Firenze node by the implementation of the Multistation Computer Based Railway Control System, upgrading on the node and signalling on the Firenze - Empoli stretch	RFI	2020	100	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 245	Rail	Firenze	Study & works	Railway by-pass and Belfiore HS station: Building a railway by-pass dedicated to the Firenze HS node an a new station in Firenze Belfiore.	RFI	2020	1.286	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 246	Rail	Firenze - Roma	Study & works	Upgrade of Firenze-Roma HS section (linea DD): The Firenze-Roma HS section will be upgraded and equipped with ERTMS; a new interconnection is to be built in Borghetto.	RFI	2020	590	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 247	Rail	Falconara and Ancona	Study & works	Technological upgrade of Falconara and Ancona nodes: First phase of technological and infrastructural upgrading tof the Falconara and Ancona nodes (Computer Based Railway Control System)	RFI	2020	250	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 248	Rail	Roma	Study & works	Technological upgrade of the Roma node: Technological upgrading of the Roma node interests the stations of Tuscolana, Casilina, the freight connection and the distancing on the Tiburtina-Ostiense stretch	RFI	2020	350	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 249	Rail	Roma	Study & works	Rome Ring north, first phase: Realisation of the first phase of the northern stretch of the Rome railway ring	RFI	2020	120	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 250	Rail	Roma - Napoli (via Formia)	Study & works	Technological upgrade of the Roma-Napoli: Technological upgrading of the Roma-Napoli connection (via Formia, conventional line)	RFI	2020	150	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 251	Rail	Roma - Napoli AV	Study & works	Upgrade of traffic control system on Roma-Napoli HS line: Upgrade of the traffic control system and enhance ERTMS standard to 2.3.0d	RFI	2020	40	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 252	Rail	Napoli	Study & works	Technological and infrastructural upgrade of Napoli central station: Infrastructural technological upgrading of Napoli central station	RFI	2020	90	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 253	Rail	Napoli	Study & works	Technological and infrastructural upgrade of Napoli node: Infrastructural technological upgrading of Napoli node	RFI	2020	77	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 254	Rail	Napoli - Salerno	Study & works	Completion of TLC on the coast line: Completion of TLC on the coast line.	RFI		100	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 255	Rail	Napoli	Study & works	Napoli node: Afragola HS station and North-South connection: Development of the North-South connection in the Napoli HS node, and construction of the Afragola HS station	RFI	2020	230	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 256	Rail	Foggia	Study & works	Technological and infrastructural upgrade of Foggia station: Infrastructural technological upgrading of Foggia station (reactivation of freight connection and new controlling system)	RFI	2020	40	Possible public funds as well as possible EU Co-financing (CEF)	X	X

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
IT 257	Rail	Bari - Foggia	Study & works	Completion of FCCM and infrastructure : Completion of FCCM and infrastructure	RFI	2020	50	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 258	Rail	Salerno	Study & works	Salerno railway station plan: Definition and development of a new layout for the station infrastructure and equipment	RFI	2020	15	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 259	Rail	Bari - Taranto	Study & works	Second track on S.Andrea-Bitetto and technological equipment of Bari-Taranto line: Construction of the second track between S.Andrea and Bitetto and by the enhancement of technological equipment of Bari-Taranto line	RFI	2020	277	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 261	Rail	Bologna - Ancona / Bari - Taranto	Study & works	Upgrade to 750m module: Upgrading of the railway line to a 750m module	RFI	2020	60	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 262	Rail	Bologna - Ancona / Bari - Taranto	Study & works	Upgrade to P/C80 gauge: Upgrading of the railway line to P/C80 gauge	RFI	2020	30	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 262a	Rail	Bologna - Ancona / Bari - Taranto	Study & works	Technological Upgrade: Techological Upgrade to be defined in detail by RFI	RFI	2020	350	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 262b	Rail	Bologna - Castelbolognese (-Ancona)	Study & works	Upgrading of the rail line: Upgrading of the rail line Bologna - Castel Bolognese in order to increase the capacity of the railway in terms of train frequency and/or separation between slow and fast services [proposed by Emilia Romagna Region]	RFI		700	Possible public funds as well as possible EU Co-financing (CEF)		x
IT 263	Rail	Bologna - Firenze	Study & works	Upgrade to P/C80 gauge: Upgrading of the railway line to P/C80 gauge	RFI	2020	150	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 264	Rail	Bologna - Firenze - Pisa - Livorno/La Spezia	Study & works	Upgrade to 750m module: Upgrading of the railway line to a 750m module	RFI	2020	50	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 265	Rail	(Firenze) - Pisa - La Spezia	Study & works	Upgrade to P/C80 gauge: Upgrading of the railway line to P/C80 gauge	RFI	2020	10	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 266	Rail	Verona	Study & works	Verona HS node: connection from north (2nd phase): Second phase of the connection between the Verona Porta Nuova station and the Verona-Padova HS line, and the renewal of Verona Porta Vescovo station	RFI	2025	360	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 267	Rail	Catania	Study & works	Upgrading of Catania Node: Copmpleting the Catania underground by-pass in order to develop urban and suburban railway services. It includes a double track line and three new urban stations.	RFI	2030	626	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 268	Rail	Roma	Study & works	Rome freight line: Development of a freight dedicated connection to the main north-south line bypassing the node, in order to allow a more effective management of railfreight traffic.	RFI	2030	800	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 269	Rail	Firenze - Roma - Napoli - (Gioia Tauro)	Study & works	Completion of upgrading to 750m module Firenze-Roma-Napoli-(Gioia Tauro): Completion of upgrading to 750m module on the Firenze-Roma-Napoli-(Gioia Tauro) line	RFI	2025	to be defined	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 270	Rail	Firenze - Roma - Napoli and Napoli - Paola	Study & works	Gauge upgrade Firenze -Roma - Napoli - (Gioia Tauro): Upgrading of gauge on the Firenze-Roma-Napoli-(Gioia Tauro) line	RFI	2030	to be defined	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 271	Rail	Messina - Catania - Palermo	Study & works	ERTM System Catania-Palermo: Equipment with ERTM System of the Catania-Palermo line	RFI	2030	48	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 271a	Rail	Messina - Catania - Palermo	Study & works	Reach Compliance by increasing freight train length to min. 740 m: Upgrading the railway line to a 740/750 m module	RFI	2030	to be defined	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 271b	Rail	Messina - Catania - Palermo	Study & works	Reach Compliance for gauge: Upgrading the railway gauge	RFI	2030	to be defined	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 272	Rail	Bicocca - Augusta	Study & works	Higher speed on Catania-Augusta: Infrastructure upgrade works in order to ehance allowed speed on the Catania-Augusta section	RFI	2025	81	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 273	Rail	Various	n.a.	Reach Compliance by increasing freight train length to min. 740 m: Improve technical parameter to achieve the objective set for 2030, for lines not included in other detailed projects	RFI	2030	to be defined	not yet determined	X	
IT 274	Rail	Firenze - Roma - Napoli - (Gioia Tauro)	n.a.	Reach Compliance by upgrading to min P/C 400 or P/C 80 like on connected lines: Improve technical parameter to achieve the objective set for 2030, for lines not included in other detailed projects	RFI	2030	to be defined	not yet determined	X	
IT 275	Rail	Napoli	Study	Feasibility study on Napoli urban node: Feasibilty study on the intermodal node of Napoli in order to improve accessibility to strategic infrastructures, rationalising the system of services and to improve solutions for sustainable mobility.	RFI	2020	1	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 276	Rail	Brennero - Verona - Bologna	Study & works	Upgrade to 750m module: Upgrading of the railway line to a 750m module	RFI	2020	30	Possible public funds as well as possible EU Co-financing (CEF)	X	X
IT 277	Rail	Various	Study & works	Compliance to TSI in stations: Improving service quality in stations with specific actions to improve accessibility, service quality and compliance to TSI	RFI	2020	200	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 278	Rail	Various	Study & works	Elimination of level crossings: Improving safety on various lines in the core network through the elimination of existing level crossings	RFI	2020	300	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 280	Rail	Various	Study & works	Improving maximum axle weight to 22,5 tonne/axle: Improving the maximum axle weight on lines not included in other specific	RFI	2030	to be defined	not yet determined	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
IT 281	Rail	Various	Study & works	Deployment of ERTMS trackside equipment: Corridor ERTMS (phase 2) and preparation works	RFI	2025	to be defined	not yet determined	X	
IT 282	Rail	Various	Study & works	Improving maximum speed on HS "antenna" lines: Improving the maximum speed allowed on lines feeding the HS network on ScanMed Corridor	RFI	2025	to be defined	not yet determined	X	
IT 283	Rail	Various	Study & works	Compliance to TSI in stations (Phase 2): Improving service quality in stations with specific actions to improve accessibility, service quality and compliance to TSI. The project follows similar interventions foreseen before 2020 and pertain stations not comprised in other specific projects	RFI	2030	to be defined	not yet determined	X	
IT 284	Rail	Various	Study & works	Compliance to TSI in various lines: The measure aims at complying with TSI in lines not comprised in other specific projects	RFI	2030	to be defined	not yet determined	X	
IT 285	Rail	Various	Study & works	Elimination of level crossings (Phase 2): Improving safety on various lines in the core network through the elimination of existing level crossings. The measure follows the same programme made before 2020	RFI	2030	300	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 286	Rail	Various	Study & works	Increasing line speed: Reaching the compliance by increasing operating speed (for freight to 100 km/h according to Regulation EU 1315/2013)	RFI	2020	70	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 286a	Rail	Various	Study & works	Technological Upgrade: Technological upgrade to be defined and explained by RFI	RFI	2025	to be defined	Possible public and private funds as well as possible EU Co-financing (CEF)		
IT 288	Rail + Airport	Roma	Works	Roma Fiumicino: New metro link between Rome and the airport: The new link should also serve the urban areas between the city and the coast around Rome that generates much of the demand for connection to and from the airport	Local Authorities	2019	300	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 289	Rail + Airport	Roma	Study & works	Upgrading of the rail link to Roma Fiumicino airport: Improving the rail accessibility to Rome Fiumicino Airport	RFI	2020	to be defined	not yet determined	X	
IT 290	Rail + Airport	Roma	Study & works	Completion of Northern Ring and accessibility to Roma Fiumicino airport: Completion of Northern Ring of Rome rail node and improving the rail accessibility to Rome Fiumicino Airport	RFI	2030	500	Possible public funds as well as possible EU Co-financing (CEF)	X	
IT 292	Rail + Port	Taranto	Study & works	Upgrade of railway connections and infrastructure in the Port of Taranto: The project is divided in two lots: 1. upgrading of railway equipment for the link of Cagioni station to the port area (Molo polisettoriale); 2. new tracks for new logistics platform connection with the national railway line (I and IV sporgente)	RFI	2020	26	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 293	Rail + Port	Napoli	Study & works	Upgrade of Napoli port railway connection: Upgrade of the connection of the port of Napoli to the main north-south railway line	RFI	2025	30	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X
IT 294	Rail + Port	Gioia Tauro	Study & works	Upgrading rail link and rail facilities at Gioia Tauro seaport: Upgrade of line and equipment for the connection between the Gioia Tauro port and the railway line	RFI	2025-2030	30	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 295	Rail + Port	Bari	Study & works	Rail link to Bari seaport: Construction of new railway connections to the ports	RFI	2030	to be defined	not yet determined	X	X
IT 296	Rail + Port	Palermo	Study & works	Rail link to Palermo seaport: Construction of new railway connections to the ports	RFI	2030	to be defined	not yet determined	X	
IT 297	Rail + Port	Augusta	Study & works	Rail link to Augusta seaport: Construction of new railway connections to the ports	RFI	2030	to be defined	not yet determined	X	
IT 298	Rail + Port	Livorno	Study & works	New station on Darsena Toscana and connection to Thyrrenian line: Construction of a new station at Darsena Toscana terminal in the port area, and its direct connection to the Thyrrenian line.	RFI	2020	43	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X
IT 299	Rail + Port	Livorno	Study	RACCORDO Project - Rail Access from Coast to Corridor: The Action "RACCORDO", (funded by TEN-T Programme Call 2013) targets the completion of a set of studies (preliminary and final design), for: - the restoration of the rail overpass of the "Tyrrhenian Line" - the completion of small scale rail hinterland connections towards Florence and the Core Network, in order to achieve a full integration of the Livorno Logistic Node to the Scandinavian-Mediterranean Corridor	Livorno Port Authority Toscana Region Interporto Toscano Vespucci	2015	1	Public funds and possible EU Co-funding (CEF)	X	X
IT 343	Rail + RRT	Bari	Study & works	New public siding in Bari Lamasinata: Railway connection to Bari-Lamasinata Freight village	RFI	2020	10	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X
IT 344	Rail + RRT	Verona	Study & works	Improvement of Verona Quadrante Europa terminal: Improving the capacity of RRT Verona Quadrante Europa and the connection with the rail network	RFI	2030	to be defined	not yet determined	X	
IT 300	Road	Firenze - Bologna	Works	"Variante di valico" between Firenze and Bologna: The measure is a deviation of A1 motorway, 62.5 km long and with long stretches in viaduct and tunnel, running parallel to the central part of the Bologna-Florence section.	Autostrade per l'Italia SpA	> 2015	3.700	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 301	Road	Salerno - Reggio Calabria	Works	Salerno-Reggio Calabria motorway: Completion of the motorway between Salerno and Reggio Calabria	ANAS	> 2015	7.443	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 302	Road	Bologna	Works	Bologna motorway node: Construction of a northern by-pass for the Bologna node	Autostrade per l'Italia SpA	> 2015	1.430	Possible public and private funds as well as possible EU Co-financing (CEF)	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
IT 303	Road	Bologna	Works	Bologna-Casalecchio di Reno node: Upgrade of motorway connection between Bologna and Casalecchio	Autostrade per l'Italia SpA	> 2015	254	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 304	Road	Verona - Bologna	Works	Motorway link Campogalliano-Sassuolo: Connection between the Sassuolo industrial area and the A1 motorway by the construction of a road link.	Autostrade per l'Italia SpA	> 2015	506	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 305	Road	Roma - Napoli	Works	Roma-Latina Motorway: Construction of a new motorway stretch between Roma and Latina (68,3km) a by-pass in Latina and the upgrade of connections to the existing infrastructure.	Autostrade del Lazio SpA	> 2015	2.700	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 306	Road	Napoli - Salerno	Works	Salerno-Avellino motorway upgrading: Upgrading of the Salerno-Avellino existing road to motorway standards.	ANAS	> 2015	246	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 307	Road	Roma - Napoli	Works	Benevento Caianello motorway: Upgrading to 4 lanes of the Benevento-Caianello road (SS 372 Telesina)	ANAS	> 2015	588	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 310	Road	Roma	Study & works	Connection between Fiumicino Airport and A24 motorway: Preliminary and final planning of south-west quadrant exits and new parallel roads	ANAS		210	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 311	Road	Roma	Study & works	Upgrade of technological equipment and safety in galleries: Upgrade of technological equipment and safety in galleries	ANAS		9	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 312	Road	Palermo	Study & works	New Palermo ring road: Construction of a new ring road for the Palermo metropolitan area	ANAS		1.000	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 313	Road	Palermo - Catania	Study & works	Palermo-Catania maintenance and upgrade: Reinforcing of structures and installations of new safety barriers	ANAS		14	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 313a	Road	Catania	Study & works	Catania by pass RA15: Modernisation and upgrade of by pass	ANAS		350	Possible public and private funds as well as possible EU Co-financing (CEF)		
IT 345	Road + Port	Gioia Tauro	Study & works	Enhancement of SS 682 and SS 18: Enhancement of SS 682 and SS 18 enabling a better last mile connection to the port	ANAS		13	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 346	Road + Port	Augusta	Study & works	Enhancement of SS 193: Enhancement of SS 193 enabling a better last mile connection to the port	ANAS			not yet determined	X	
IT 347	Road + Port	Bari	Study & works	Enhancement of Bari ring road: Enhancement of Bari ring road enabling a better connection to the port	ANAS		250	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 299a	Seaport	Livorno	Study & works	Piattaforma Europa: The new "Piattaforma Europa" (Europa Platform) in the port of Livorno (Ist phase) is a land reclamation project made in order to build up container handling capacity in the port of Livorno. The project is included in the new masterplan for the Port of Livorno and comprehends: land reclamation project, dredging, creation of a new access channel to the port area, breakwater facilities, new container terminals, relocation of old terminals and development of new rail and road links to cope with the increased capacity.	Livorno Port Authority	2020	644	Public funds and possible EU Co-funding (CEF)	X	X
IT 314	Seaport	La Spezia	Works	WESTERN PORT EXTENSION: Construction of Canaletto yard and quay with buffer zone and preparatory works for the shifting of the marinas and the upgrading of Molo Pagliari (Pagliari Quay) Extension to head of Molo Fornelli (Fornelli Pier) Tracks reorganization - construction of 650 m new modular rail tracks and decommissioning of Fascio Italia Dredging of seabed opposite Canaletto and Ravano wharves Reclamation and dredging of seabed opposite Calata Artom (Artom Wharf) Arrangement work on seabed of Molo Italia (Italia Wharf) works for the extension of Garibaldi pier	La Spezia Port Autority	> 2015		not yet determined	X	X
IT 315	Seaport	La Spezia	Works	EASTERN PORT EXTENSION: Construction of Terminal del Golfo yard and quay and buffer zone	La Spezia Port Autority	> 2015		not yet determined	X	X
IT 316	Seaport	La Spezia	Works	PORT- CITY INTERACTION AND ENVIROMENTAL PROJECTS: Construction of new cruise terminal Calata Paita (Paita wharf) - quayside construction Construction of cruise station Calata Paita (Paita wharf) - service structure Underground link with the Levante terminal (East Terminal) Construction of a green zone between port area and city On shore power supply LNG projects	La Spezia Port Autority	> 2015		not yet determined	X	X
IT 317	Seaport	La Spezia	Works	THE LOGISTIC PROJECT: A dry port area in Santo Stefano Magra A new railways company - La Spezia Shunting Railways Preclearing and e-custom procedures New Port Community System AP NET WiderMoS project, implementing an IT Corridor Management Platform	La Spezia Port Autority	> 2015		not yet determined	X	X
IT 318	Seaport	Ancona	Study & works	Improving the nautical accessibility: Adaptation of the port basins to reach the draft of -14 meters Completing the sottoflutto breakwaters and adaptation of the Northern wharf to protect the new line of quays	Ancona Port Authority	> 2015	57	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
IT 319	Seaport	Ancona	Study & works	Improving and increasing the port facilities for freight traffic and RO/PAX: Works for the building of the new line of quays Adaptation of the former industrial areas to port logistics New RO/PAX terminal and new road access to the port and to the embarking quays New RO/PAX moorings Motorway link (road bottleneck);	Ancona Port Authority	> 2015	66	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X
IT 320	Seaport	Ancona	Study & works	Development of intermodal transport: Works for a new rail-road terminal in the Scalo Marotti area Extension and electrification of the shunting track to the port terminal. New control system for the station of Ancona (rail bottleneck) Extension of the terminal tracks to 600 metres;	Ancona Port Authority	> 2015	4	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X
IT 321	Seaport	Ancona	Study & works	New passenger terminal: New passenger terminals in the old port	Ancona Port Authority	> 2015	8	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X
IT 322	Seaport	Ancona	Study & works	Planning and Implementation of an onshore power supply, and design and building of alternative clean fuel facilities : Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Ancona Port Authority	2030		not yet determined	X	X
IT 323	Seaport	Livorno	Study & works	Planning and Implementation of an onshore power supply : Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Livorno Port Authority	2030		not yet determined	X	X
IT 324	Seaport	Bari	Study & works	Planning and Implementation of LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Bari Port Authority	2030		not yet determined	X	X
IT 325	Seaport	Taranto	Works	Seaport Hub: Developing the Taranto seaport as a transshipment hub, and to the creation of an intermodal platform.	Taranto Port Authority	> 2015	220	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 326	Seaport	Taranto	Study & works	Planning and Implementation of LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Taranto Port Authority	2030		not yet determined	X	
IT 328	Seaport	Napoli	Works	Seaport Hub: Developing the Napoli seaport as a hub, by improving the infrastructure and the road and rail connections.	Napoli Port Authority	> 2015	73	Possible public and private funds as well as possible EU Co-financing (CEF)	X	X
IT 329	Seaport	Napoli	Study & works	Planning and Implementation of LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assist the environmental performance of ships in ports to achieve the objective set for 2030.	Napoli Port Authority	2030		not yet determined	X	X
IT 331	Seaport	Palermo	Study & works	Planning and Implementation of LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Palermo Port Authority	2030		not yet determined	X	
IT 332	Seaport	Gioia Tauro	Works	Seaport Hub: Upgrading of infrastructure in the Gioia Tauro transshipment hub	Gioia Tauro Port Authority	> 2015	77	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 333	Seaport	Gioia Tauro	Study & works	Planning and Implementation of LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Gioia Tauro Port Authority	2030		not yet determined	X	
IT 334	Seaport	Augusta	Works	Seaport Hub: Developing the Augusta seaport as a transshipment hub, by the upgrading of existing infractructure and equipment in order to allow container ships.	Augusta Port Authority	> 2015	85	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 335	Seaport	Augusta	Study & works	Planning and Implementation of LNG bunkering facilities and Onshore Power Supply: Improve technical parameter by assisting the environmental performance of ships in ports to achieve the objective set for 2030.	Augusta Port Authority	2030		not yet determined	X	
IT 336	Seaport + MoS	La Spezia	Study & works	Reach Compliance by settting up a central logistcs platform or FV: Planning and Implementation of a Logstics Intermodal Platform Port of Stefano, Improve the technical parameter on MoS for the Port of La Spezia to achieve objective set for 2030	La Spezia Port Autority			not yet determined	X	X
IT 337	Seaport + MoS	Palermo	Works	Reach Compliance by settting up a central logistcs platform or FV: Planning and Implementation of a Logstics Platform Port of Palermo, Improve the technical parameter on MoS for the Port of ´Palermo to achieve objective set for 2030	Palermo Port Authority			not yet determined	X	X
IT 338	Seaport + MoS	Gioia Tauro	n.a.	Reach Compliance by settting up a central logistcs platform or FV: Planning and Implementation of a Logstics Platform Gioia Tauro, Improve the technical parameter on MoS for the Port of Gioia Tauro to achieve objective set for 2030	Gioia Tauro Port Authority			not yet determined	X	
IT 339	Seaport + MoS	Augusta	n.a.	Reach Compliance by settting up a central logistcs platform or FV: Planning and Implementation of a Logstics Platform Port of Augusta, Improve the technical parameter on MoS for the Port of Augustato achieve objective set for 2030	Augusta Port Authority			not yet determined	X	
IT 342	MoS	Mediterranean Sea	Study	COSTA (2011-EU-21007-S): Developing framework conditions for the use of LNG for ships. LNG Masterplan for short sea shipping between Mediterranian Sea and North Atlantic Ocean as well as Deep Sea cruising in North Atlantic ocean.	RINA Grimaldi Group Grandi Navi Veloci	2012-2014	3	Financed by public and private funds and TEN-T MaP (MoS)	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
IT 341	Airport	Roma	Works	Roma Fiumiciono: New road network layout crossing the Tiber river: A new road network layout crossing the Tiber river in order remove bottlenecks, generated by the inadequacy of existing bridges capacity, at the beginning of the Rome Fiumicino motorway from Rome city center and on the road-axis connection between Ostia and the airport.	Local Authorities		115	Possible public and private funds as well as possible EU Co-financing (CEF)	X	
IT 340	RRT	Various public and private RRT	n.a.	Reach Compliance: Improve technical parameter to achieve the objective set for 2030.	Owner or infra manager concerned	2030		not yet determined	X	
MT 357	Seaport + MoS	Palermo/Taranto - Valletta /Marsaxlokk	Study	Pre-identified project: Port interconnections: Development of Motorways of the Sea (MoS) with Core Ports of Valletta/Marsaxlokk and Palermo/Taranto and other possible maritime ports in Southern Italy.	Port Authorities and other	2014-2020		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	X
MT 375	Road	Floriana	Works	Upgrading of route 6: Upgrading of Route 6 between node EA7a to node EA8.	Transport Malta	2015-2020	8	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	X
MT 376	Road	Various	Works	ITS on Maltese Roads: Further deployment and development of an Intelligent Transport Systems on Maltese roads.	Transport Malta	2015-2020	4	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 377	Road	Marsa	Works	Grade separation of Route 1: Grade separation of Route 1 between node WA19a to node EA21.	Transport Malta	2015-2020	73	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	X
MT 378	Seaport	Valletta	Study & works	Inner harbour improvement: Rip-rap and spending beach enhancement to improve inner harbour wave climate to improve safety, increase capacity and all weather access within port area.	Transport Malta	2015-2020	10	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 379	Seaport	Marsaxlokk	Study	Breakwatersystem: Continue to develop the breakwater system in order to increase safety, increase capacity and all-weather access within the Port.	Transport Malta	2015-2020		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 380	Seaport	Marsaxlokk	Works	Crane Rail and Terminal 1: Malta Freeport: Crane rail Installation & Terminal 1 yard expansion	Malta Freeport Terminals Ltd.	2015	5	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 381	Seaport	Marsaxlokk	Works	Quayside Cranes: Procurement of four quayside cranes at Malta Freeport and shifting of existing cranes	Malta Freeport Terminals Ltd.	2015	29	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 382	Seaport	Marsaxlokk	Works	Masterplan measures of Malta Freeport Corporation: Implementation of Master Plan for Malta Freeport: - Development of Distripark facilities	Malta Freeport Corporation	2016-20		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 383	Seaport	Marsaxlokk	Works	Masterplan measures of Malta Freeport Terminals Ltd: Implementation of Master Plan for Malta Freeport: - Relocation, redevelopment and expansion of container storage area and warehouses; - Development of new engineering facilities; - Extension of Terminal 2 (North Quay) and procurement of two new cranes; - Reconstruction of Port access road	Malta Freeport Terminals Ltd.	2016-2020		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 384	Seaport	Marsaxlokk	Works	Land reclamation for oil terminal: Land reclamation and construction of new tanks to increase storage capacity at the oil terminal.	Oiltanking Malta Ltd.	2014-20		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 385	Seaport	Marsaxlokk	Works	Jetty expansion for oil terminal: Jetty expansion increasing berthing facilities at the oil terminal.	Oiltanking Malta Ltd.	2014-20		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 386	Seaport	Marsaxlokk	Study	LNG bunkering study: Technical and Feasibility Study on LNG bunkering facilities at oil terminal	Oiltanking Malta Ltd.	2014-20		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 387	Seaport	Marsaxlokk	Study	OPS study: Technical and Feasibility Study on Onshore Power Supply at oil terminal	Oiltanking Malta Ltd.	2014-20		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 388	Airport	Valletta	Study & works	New ATC Tower: including area control centre and training facilities	Malta Air Traffic Services Ltd.	2015-2019	18	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 389	Airport	Valletta	Works	Primary surveillance radar: incorporating weather channel	Malta Air Traffic Services Ltd.	2016-2017	4	Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
MT 390	Airport	Valletta	Works	Introduction of A-CDM (Airport Collaborative Decision Making) procedures: (Airport Collaborative Decision Making)	Malta International Airport Plc.	2016-2017		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 391	Airport	Valletta	Works	Replacement of AODB (Airport Operations Database) system: provide for enhanced capabilities in the logistical management of the airport infrastructure and introduce media applications at passenger contact points	Malta International Airport Plc.	2015		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 392	Airport	Valletta	Works	Enlargement of the Non-Schengen Departures Concourse:	Malta International Airport Plc.	2014-2015		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
MT 393	Airport	Valletta	Works	Aircraft Movement Area Rehabilitation: Twy C, Twy J, Apron 9 and Apron 8	Malta International Airport Plc.	2015-2020		Public and private funds including possible CEF funding (CF / ERDF to be clarified until 3rd quater 2015).	X	
NO 358	Rail	Vestby - Hølen - Kambo	n.a.	Reach Compliance by increasing operating speed for freight to 100 km/h: Improve technical parameter to achieve the objective set for 2030. To be clarified, if part of a project or not.	Norway			not yet determined	X	
NO 359	Road	SE/NO border - Oslo	n.a.	Reach Compliance: Improve technical parameter to achieve the objective set for 2030, if the objectives are shared by Norway.	Norway	2030		not yet determined	X	
NO 361	Airport	Oslo airport	n.a.	Reach Compliance capacity-traffic: Improve passenger capacity to achieve the objective set for 2030, if the obectives are shared by Norway.	Norway	2030		not yet determined	X	
NO 360	RRT	Halden	n.a.	Reach Compliance: Improve technical parameter to achieve the objective set for 2030, if the objectives are shared by Norway.	Norway	2030		not yet determined	X	
DE, SE 362	MoS	Baltic Sea (Trelleborg-Kiel-Lübeck)	Study & works	Green Bridge on Nordic Corridor (2011-EU-21010-M): Piloting equipment of two large, multi-engine RoPax ships with exhaust gas cleaning technologies, in form of wet-scrubbers and preparation of corridor for operating next Baltic RoRo/RoPax ship generation. Also ferry berths re-constructions, shore side electricity installations.	Trelleborg Hamn AB Hafen-Entwicklungsgesellschaft Rostock Lübecker Hafen-Gesellschaft mbH TT-Line GmbH & Co. KG	2011-2014	85	Financed by public and private funds and TEN-T MaP (MoS)	X	
DK, DE 363	MoS	Rødby-Puttgarden	Study & works	Sustainable Traffic Machines - On the way to greener shipping (2012-EU-21023-S): Installation of hybrid propulsion and exhaust gas cleaning solutions on 2 RoPac vessels deployed on the aforementioned link Rødby - Puttgarten	Scandlines Deutschland GmbH, Scandlines Danmark A/S	2012-2015	13	Financed by public and private funds and TEN-T MaP (MoS)	X	
DK, SE, FI 364	MoS	Baltic Sea	Study & works	MonaLisa (2010-EU-21109-S): New methodology in maritime route planning. New pilot system of automated verification of ship crew certificates. Re-surveys of HELCOM fairways. Pilot system of sharing maritime data at a global scale.	Swedish Maritime Administration Finnish Transport Agency Danish Maritime Safety Administration SAAB TransponderTech AB SSPA Sweden AB Chalmers tekniska högskola AB GateHouse A/S	2010-2013	22	Financed by public and private funds and TEN-T MaP (MoS)	X	
DK, SE, FI 365	MoS	Baltic Sea (Helsinki, Stockholm, Kopenhagen, Aarhus, Helsingborg, Turku)	Study	LNG in Baltic Sea Ports (2011-EU-21005-S): Develop harmonised approach towards LNG bunker filling infrastructure. Achieve standardised process for planning and construction LNG infrastructure.	Port of Aarhus Port of Copenhagen-Malmö Port of Helsingborg Port of Helsinki Port of Stockholm Port of Turku	2012-2014	3	Financed by public and private funds and TEN-T MaP (MoS)	X	
FI, SE 366	MoS	Baltic Sea	Study & works	PILOT SCRUBBER – New Generation Lightweight Pilot Scrubber Solution installed on a Ro-Ro Ship operating on the Motorway of the Baltic Sea (2012-EU-21010-S): Installation, evaluation and demonstration of a new generation, innovative leightweight scrubber technology on existing RO-Ro vessels. Verification and evaluation of specific port infra and preparatory investments.	Swedish Orient Line AB Rederi AB TransAtlantic Stora Enso Oyj Sveriges Hamnars Service AB Svensk Rederiservice AB The Swedish Agency for Marine and Water Management SSPA Sweden AB Port of Oulu	2012-2015	14	Financed by public and private funds and TEN-T MaP (MoS)	X	
FI, SE 367	MoS	Nationwide	Works	New Icebrakers: Order of the a new basic icebreaker. Later the plan is to purchase also other icebreaker.	Finnish Transport Agency	2014-2016	123	Financed from national budget and EU funds.	X	X

ID	Transport mode	Location	Studies or works	Description of project	Project promoter	Timing	Costs (MEUR)	Financing sources	Critical issue	CEF pre-identified section
FI, SE 368	MoS	Baltic Sea	Study & works	Winter Navigation Motorways of the Sea, WINMOS (2012-EU-21008-M): Develop efficient maritime transport during winter. Developing and adapting winter navigation system, piloting new fuel injection technique, upgrading existing Icebreaking Management System.	Swedish Maritime Administration Finnish Ministry of Transport, Image Soft Oy, Yrkeshögskolan Novia, ILS Oy, Aalto-korkeakoulusäätiö, Aker Artctic Technology Oy, Ilmatieteen laitos	2012-2015	139	Financed by public and private funds and TEN-T MaP (MoS)	X	
IT, DE 369	MoS	Baltic Sea, Mediterranean Sea	Study	WiderMoS (2012-EU-21021-S): Improve long term effective and sustainable connection between the sea and other transport modes by developing new port/ship/train interfaces. E.g. five pilot projects, policy supporting activity.	Autorità Portuale della Spezia La Spezia Container Terminal S.p.A.	2013-2015	6	Financed by public and private funds and TEN-T MaP (MoS)	X	
IT, DE 370	MoS	Baltic Sea, Mediterranean Sea	Study & works	Business to Motorways of the Sea (2012-EU-21020-S): Pilot actions aimed at preparing and adapting business communities and port authorities' systems.	Valencia Port Foundation	2012-2015	11	Financed by public and private funds and TEN-T MaP (MoS)	X	
SE, DE, DK, MT, FI, IT 371	MoS	Baltic Sea, Mediterranean Sea	Study & works	Monalisa 2.0 (2012-EU-21007-S): Strengthen efficiency, safety and environmental performance of maritime transport, reducing administrative burden, Studies include Sea Traffic Management testings, maritime route exchange through common interface & data format.	Swedish Maritime Administration	2012-2015	24	Financed by public and private funds and TEN-T MaP (MoS)	X	
SE, DE, FI 372	MoS	Baltic Sea	Study & works	Methanol: The marine fuel of the future (2012-EU-21017-S): Pilot action to test the performance of methanol on the existing passenger ferry Stena Germanica (Göteborg-Kiel). Create appropriate port infrastructure for supply of methanol for bunkering.	Stena Aktiebolag Wärtsilä Finland Oy Stena Oil AB Seehafen Kiel GmbH & Co. KG Göteborgs Hamn AB	2013-2015	23	Financed by public and private funds and TEN-T MaP (MoS)	X	
SE, DK 373	MoS	Baltic Sea (Aarhus, Göteborg)	Study	The Baltic Sea Hub and Spokes Project (2010-EU-21108-P): Common Hub and Spoke concept. Four main activities: Marine Integration Project (MIP), Port Access Aarhus, Port Access Gothenburg and Port Security Tallin.	Municipality of Aarhus Port of Gothenburg Swedish Transport Administration APM Terminals Gothenburg AB	2012-2014	173	Financed by public and private funds and TEN-T MaP (MoS)	X	
SE, IT 374	MoS	Baltic Sea, Mediterranean Sea	Study & works	ANNA - Advanced National Networks for Administrations (2012-EU-21019-S): Adoption of national Maritime Single Window and electronic data transmission for the fulfilment of reporting requirements vor vessels entering and departing European ports.	Kingdom of Sweden, Italian Republic	2012-2015	37	Financed by public and private funds and TEN-T MaP (MoS)	X	
SE, NL 375	MoS	North Sea	Works	LNG Rotterdam - Gothenburg (2012-EU-21003-P): Create break bulk infrastructure for small-scale LNG supply in the ports of Rotterdam and Gothenburg. These ports have the critical mass to assist the market transition to maritime LNG in Northern Europe.	Havenbedrijf Rotterdam NV, Vopak LNG Holding, Port of Gotehburg AB, Swedegas, LNG Break Bulk Rotterman CV	2012-2015	171	Financed by public and private funds and TEN-T MaP (MoS)	X	

Annex 4:

ERTMS Deployment Plan

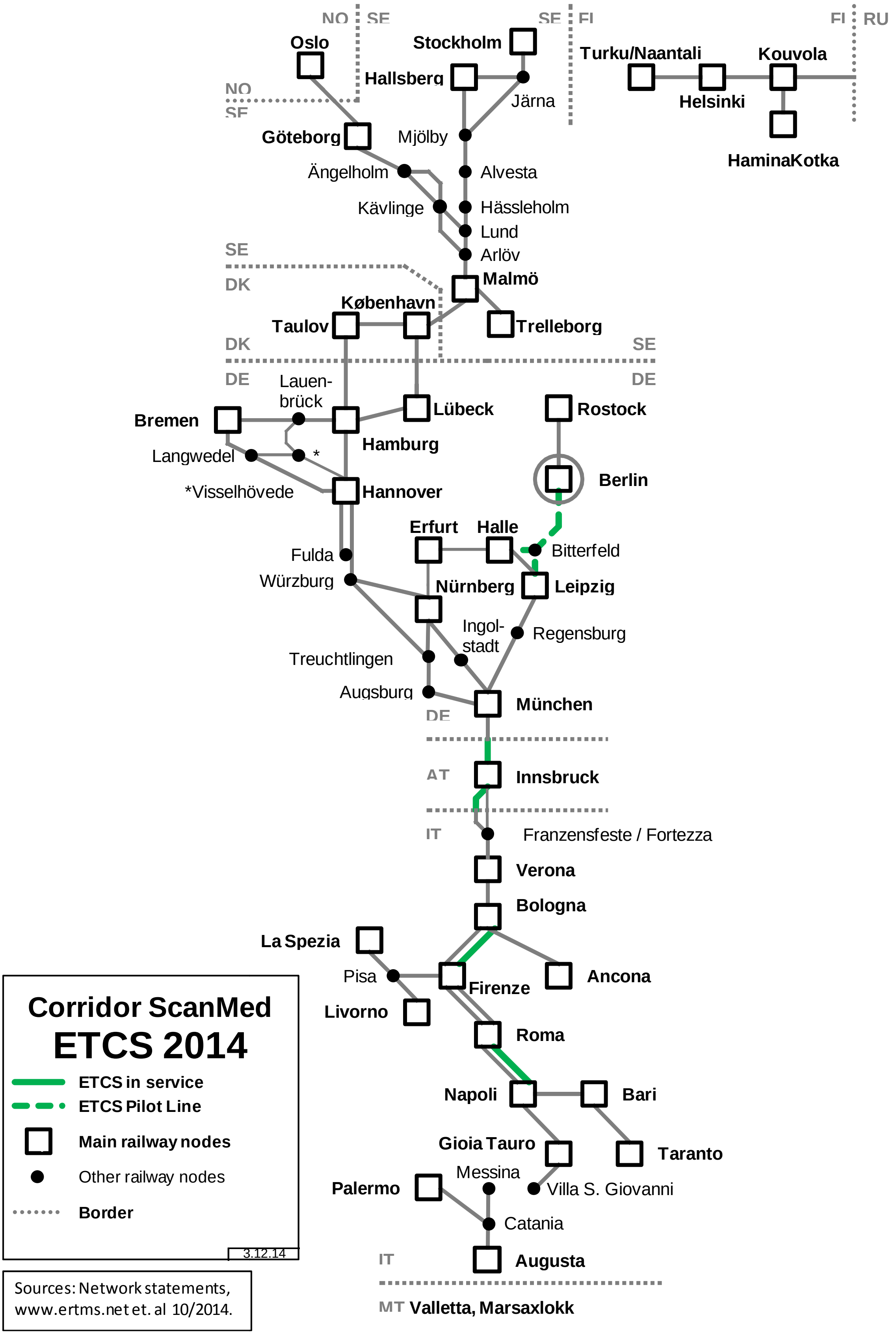


Figure 1: ETCS deployment on ScanMed Corridor - status 2014

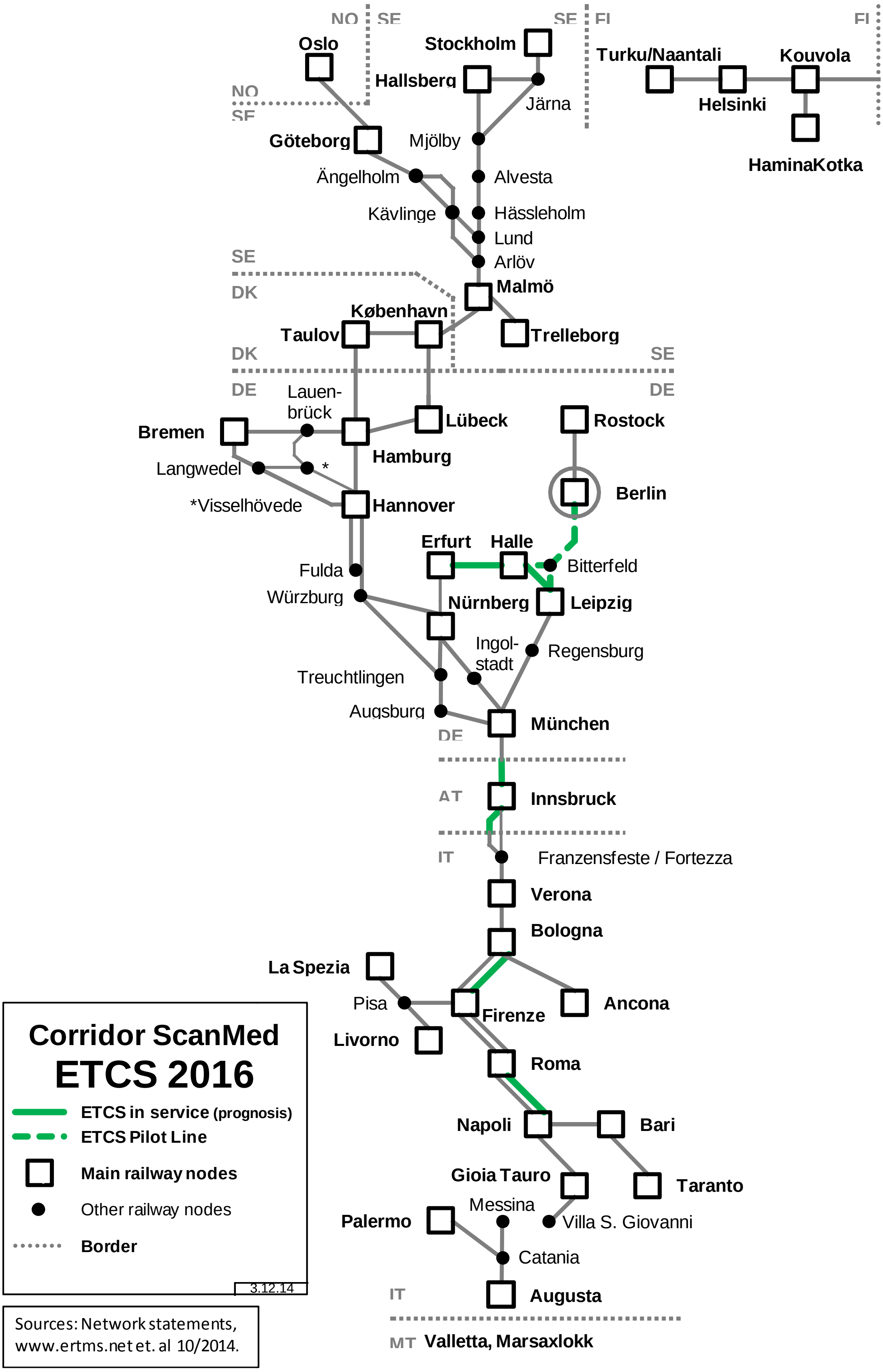


Figure 2: ETCS deployment on ScanMed Corridor - planned status 2016

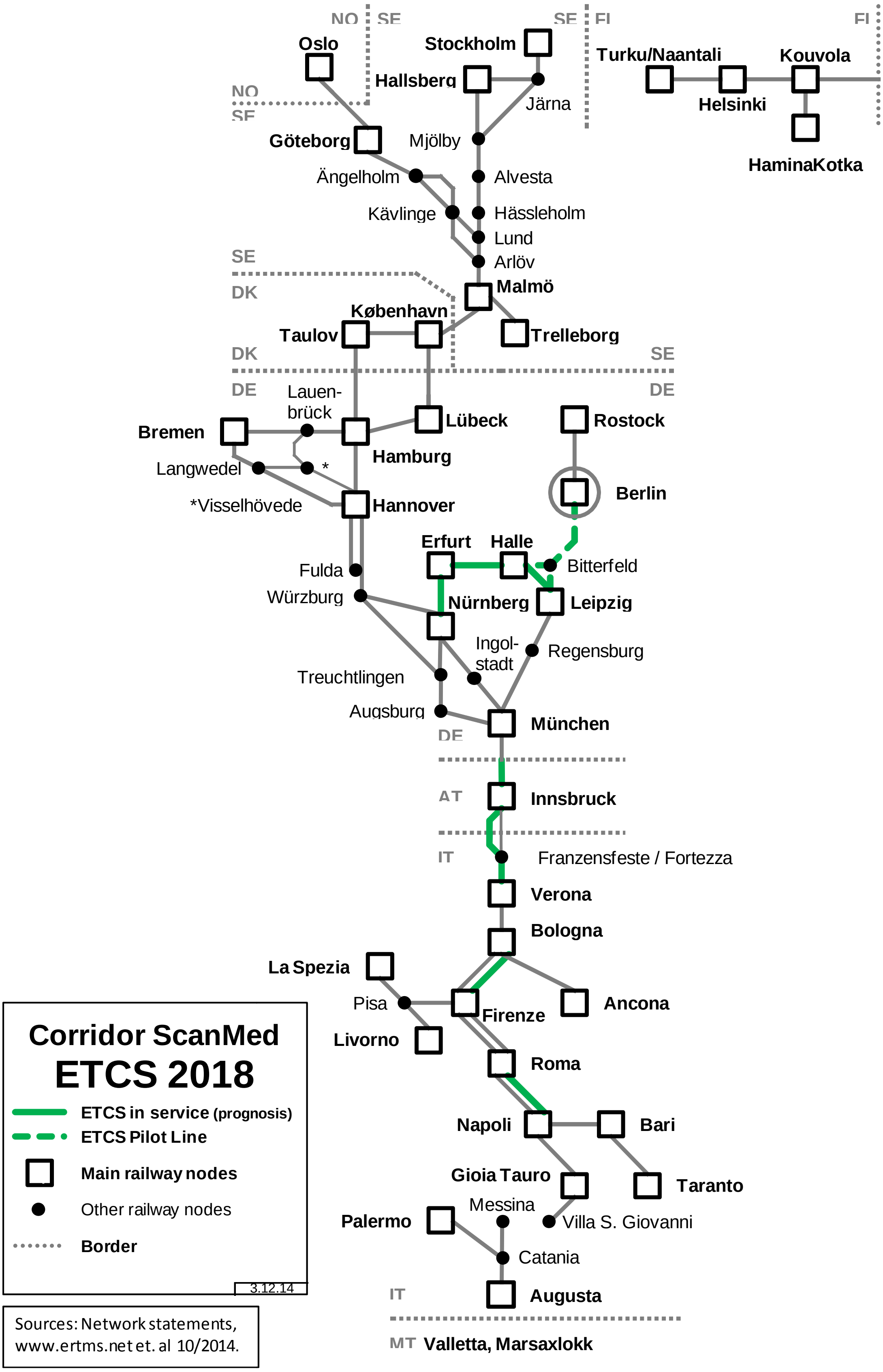


Figure 3: ETCS deployment on ScanMed Corridor - planned status 2018

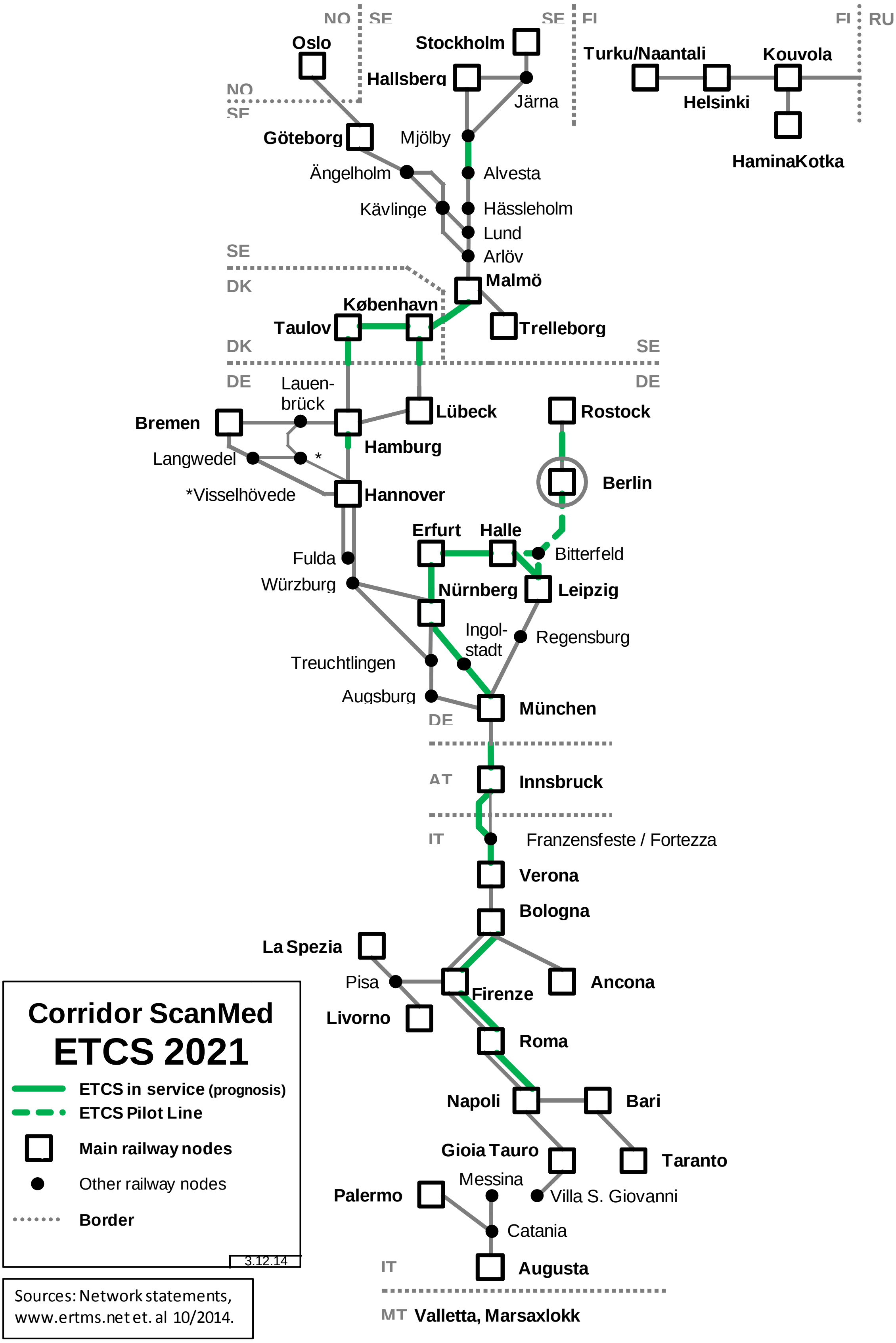


Figure 4: ETCS deployment on ScanMed Corridor - planned status 2021

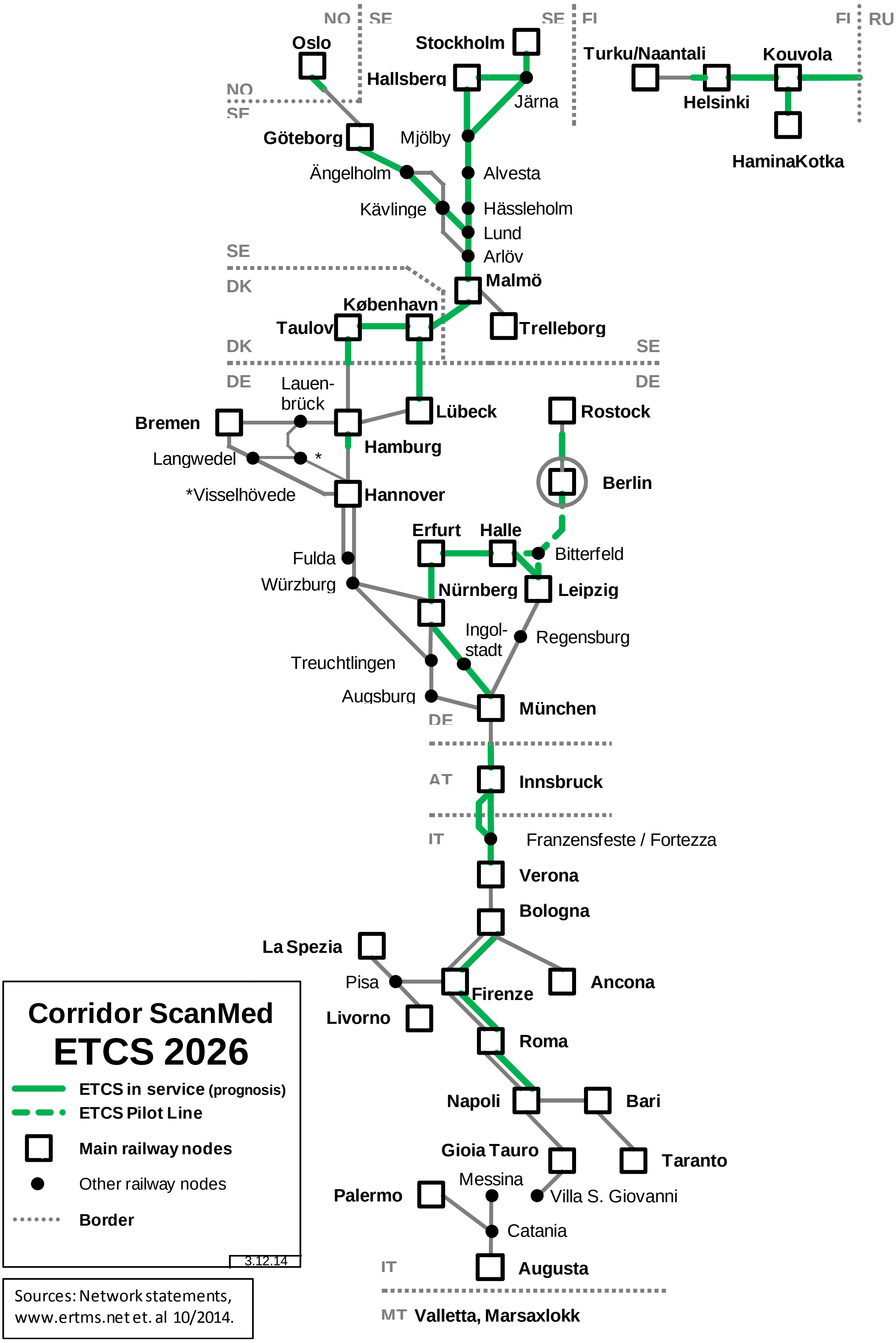


Figure 5: ETCS deployment on ScanMed Corridor - planned status 2026

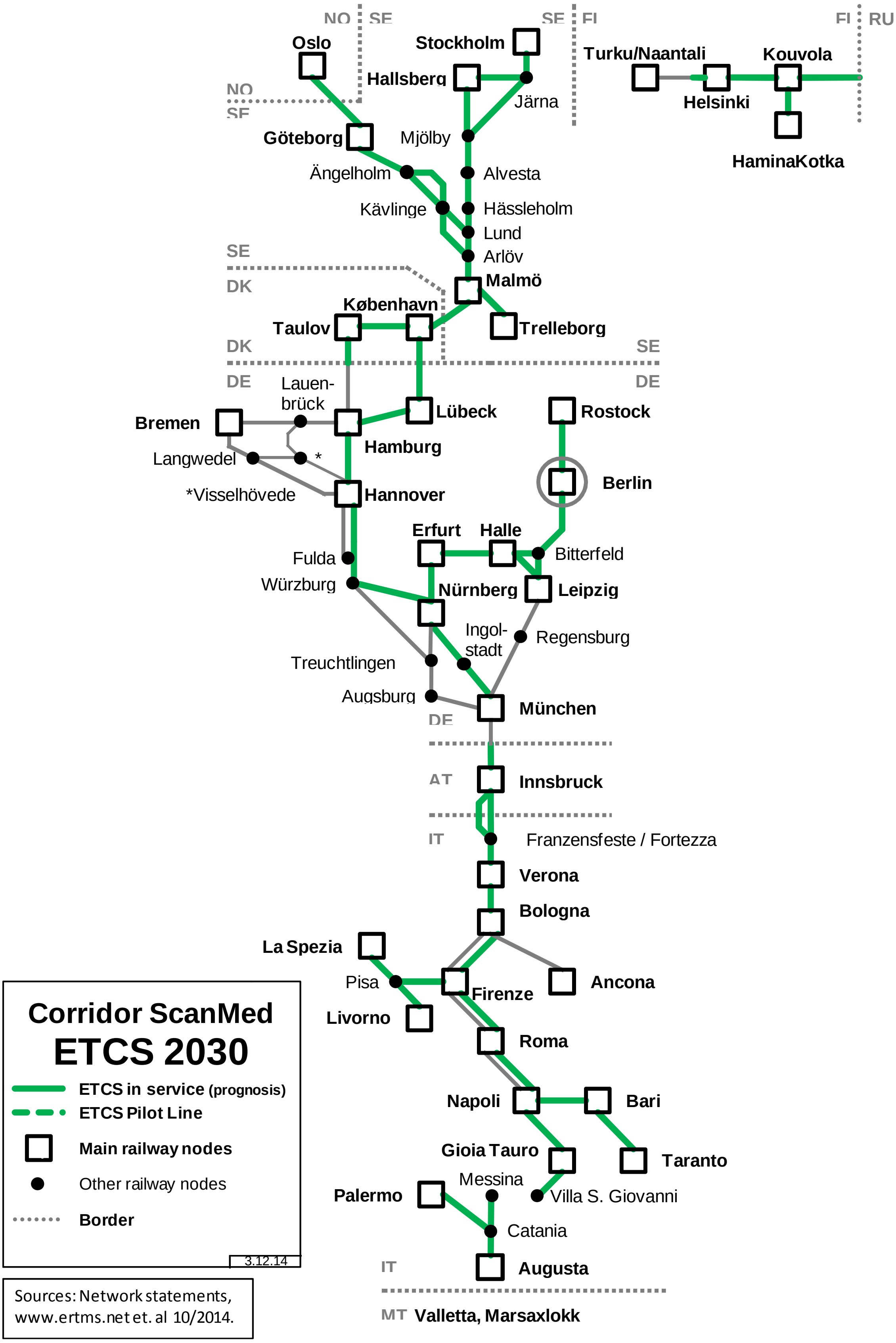


Figure 6: ETCS deployment on ScanMed Corridor - planned status 2030

Annex 5:

Multimodal Transport Market Study (MTMS)

Table of contents

List of figures

List of tables

Future traffic development of market sections and nodes

Consistent data of sufficient quality was not available for all sections and all nodes of the ScanMed Corridor. This annex gives an overview of the available forecasts, roughly following the corridor from north to south. In order to create a minimum degree of comparability, the linear average annual growth rates (AAGR) were calculated. Note that these AAGR have to be handled with caution, as their bases are not comparable with respect to base year, forecast year and time span. However, this procedure was the only possibility to finally come to a comprehensive overview.

In addition to the studies mentioned in the list of references at the end of this annex, information from various stakeholders from all corridor countries were retrieved and integrated. We would like to express our gratefulness to all these stakeholders. Most information and remarks were submitted by e-mail after the third Corridor Forum Meeting and a few adjustments were also proposed after the fourth meeting. Information sent until submission deadline of 28 November 2014 have been integrated wherever possible and reasonable.

In the following diagrams the market sections (S) and nodes (N) as introduced in Chapter 4.2 of the Final Report were used as well as the following abbreviations:

- HGV = heavy goods vehicle,
- AAGR lin. = linear average annual growth rate.

S1 Russian border – Hamina/Kotka including N1a HaminaKotka and N1b Kouvola

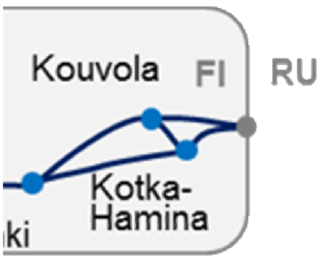


Figure 1: Map of S1 and N1a and N1b

The following figures forecasting the road transport situation in 2030 could be retrieved from Ramboll Finland (2014) for this section of the corridor.

Russian border – Hamina/Kotka	vehicles / day	thereof HGV
2012	13.000	1.600
2030	17.000	1.700
AAGR (lin.)	1.7 %	1.3 %

Table 1: Road transport forecast S1

This ScanMed market section does not contain a rail section according to the official corridor alignment defined by the Commission.

No additional information or data on the expected freight volumes could be retrieved for the seaport of HaminaKotka (N1a) or the RRT in Kouvola (N1b).

S2 Kotka-Hamina - Helsinki including N2 Helsinki

Figure 2: Map of S2 and N2

A forecast for this section could also be obtained by Ramboll Finland (2014).

	vehicles / day	thereof HGV
2012	21.000	1.800
2030	27.000	1.900
AAGR (lin.)	1.6 %	0.3 %

Table 2: Road transport forecast S2

For Helsinki airport, Finavia (2013) provides a projection for the year 2020, regarding passenger traffic.

	passengers / year
2013	15.279.043
2020	20.000.000
AAGR (lin.)	4.3 %

Table 3: Airport forecast N2

For Helsinki maritime port, the Port of Helsinki (2012) was able to deliver forecast data for the year 2022, regarding freight volumes.

	tons / year (Vuosaari Harbour)	cargo units / year (West Harbour)	passenger cars / year (West Harbour)
2011	7.500.000	160.000	800.000
2022	9.500.000	240.000	1.200.000
AAGR (lin.)	2.4 %	4.5 %	4.5 %

Table 4: Freight transport forecast N2

The cargo and passenger traffic between Helsinki and Stockholm (M2) is expected to remain stable at 2.5 million passengers, respectively 0.6 million tons until 2022.

S3a Russian border – Kouvola

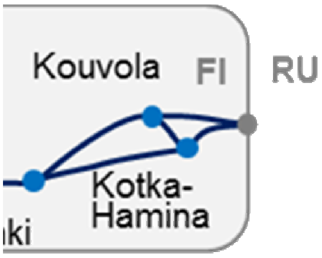


Figure 3: Map of S2 and N2

Data regarding railway traffic forecast was provided by Ramboll Finland (2014) for the relevant rail connection between the Russian border and Kouvola. The following table shows passenger and freight volumes (passengers / tons) per year.

Russian border - Kouvola	passengers / year
2013	1.500.000
2035	2.300.000
AAGR (lin.)	2.4%
	freight / year (net tons)
2013	7.600.000
2030	9.900.000
AAGR (lin.)	1.8%

Table 5: Rail freight transport forecast S3a

Following figures, which have been partly calculated, are based on recent data available in a study from the Finnish Transport Agency (FTA) published in 2014.

Russian border - Kouvola	freight / year (net tons)
2013	8.842.000
2025	9.355.000
2035	9.316.000
AAGR (lin.)	0.2 %

Table 6: Rail freight transport forecast S3a

S3b Kouvola – Kotka-Hamina and N1a HaminaKotka

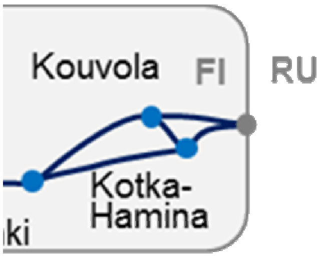


Figure 4: Map of S3b and N1a

Data regarding railway traffic forecast was provided by Ramboll Finland (2014) for the relevant rail connection north of Kotka-Hamina to Kouvola. The following table shows passenger and freight volumes (passengers / tons) per year. Note that the focus year of the railway passenger traffic projections is 2035, not 2030.

Kouvola – Kotka-Hamina	passengers / year
2013	100.000
2035	100.000
AAGR (lin.)	0.0%
	freight / year (net tons)
2013	5.800.000
2030	4.700.000
AAGR (lin.)	-1.1%

Table 7: Rail freight transport forecast S3b

Following figures, which have been partly calculated, are based on recent data available in a study from the Finnish Transport Agency (2014).

Kouvola – Kotka-Hamina	freight / year (net tons)
2013	6.939.000
2025	7.670.000
2035	7.191.000
AAGR (lin.)	0.2 %

Table 8: Rail freight transport forecast S3b

There were no forecast figures available for the seaport of HaminaKotka (N1a).

S3c Kouvola – Helsinki

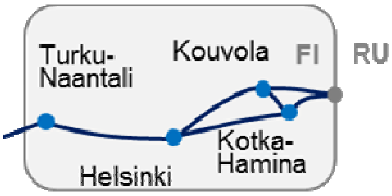


Figure 5: Map of S3c

Following table shows data regarding rail traffic forecast. The data was delivered by e-mail from Ramboll Finland (2014) and gives information for passenger and freight traffic per year for the market section Helsinki – Kouvola. Note that the focus year of the railway passenger traffic projections is 2035, not 2030.

Kouvola - Helsinki	passengers / year
2013	3.600.000
2035	3.800.000
AAGR (lin.)	0.3%
	freight / year (net tons)
2013	2.800.000
2030	4.500.000
AAGR (lin.)	3.4%

Table 9: Rail traffic forecast S3c

Following figures, which have been partly calculated, are based on recent data available in a study from the Finnish Transport Agency (2014).

Kouvola - Helsinki	freight / year (net tons)
2013	1.651.000
2025	1.786.000
2035	1.786.000
AAGR (lin.)	0.4 %

Table 10: Rail freight transport forecast S3c

S4 Helsinki – Turku/Naantali including N3a Turku and N3b Naantali

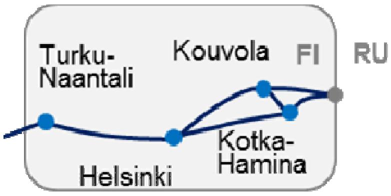


Figure 6: Map of S4 and N3a and N3b

The same source mentioned in the previous two market sections delivered relevant data for S4 (Ramboll Finland 2014).

	vehicles / day	thereof HGV
2012	22.000	2.200
2030	29.000	2.400
AAGR (lin.)	1.8 %	0.5 %

Table 11: Road transport forecast S4

The following data was retrieved from Ramboll Finland (2014). As shown, the table contains data for passenger and freight traffic per year up to 2035.

Helsinki – Turku/Naantali	passengers / year
2013	1.300.000
2035	1.700.000
AAGR (lin.)	1.4 %
	freight / year (net tons)
2013	200.000
2035	300.000
AAGR (lin.)	2.8 %

Table 12: Rail traffic forecast S4

Following figures, which have been partly calculated, are based on recent data available in a study from the Finnish Transport Agency (2014).

Kouvola - Helsinki	freight / year (net tons)
2013	60.000
2025	2.000
2035	2.000
AAGR (lin.)	-4.4 %

Table 13: Rail freight transport forecast S4

Turku maritime port forecast data was provided by the Port of Turku in 2014 by e-mail, expecting an increase of volumes of 40% until 2030.

Port of Turku	TEU / year	tons / year	passengers / year
2013	2.968	2.650.785	3.480.188
2030	4.155	3.711.099	4.872.263
AAGR (lin.)	2.4 %	2.4 %	2.4 %

Table 14: Maritime port forecast N3a

No data could be retrieved for Naantali (N3b) seaport, as well as for the airport of Turku (N3a).

S5 Stockholm – Örebro / Mjölby – Helsingborg - Malmö including N4a Stockholm, N4b Örebro and N5 Malmö

Figure 7: Map of S5 and N4

Once again Ramboll Sweden provided data via e-mail based on Trafikverket (2014) for the relation of Stockholm to Helsingborg, which is located close to Malmö. There are car and truck traffic forecasts available. Even though this relation is slightly longer than the defined market section between Stockholm and Malmö, this data is as significant as possible.

Stockholm – Helsingborg (E4 Ödeshög – Jönköping)	cars / day	trucks / day
2010	12.500	3.600
2030	15.125	4.860
AAGR (lin.)	1,1 %	1,8 %
Helsingborg - Malmö (Helsingborg – Landskrona)	**cars / day**	**trucks / day**
2010	35.600	6.400
2030	46.280	9.024
AAGR (lin.)	1,5 %	2,1 %

Table 15: Road forecast S5

For this market section, road traffic forecast data was available in TENtec (European Commission 2014c), entered by Trafikverket (2014).

Stockholm – Mjölby (Norrköping (J. E4/E22) – Nyköping)	cars / year
2010	6.920.400
2030	8.719.704
AAGR (lin.)	1.3 %
	trucks / year
2010	1.149.750
2030	1.494.675
AAGR (lin.)	1.5 %
Mjölby – Helsingborg (Lagan N - Jönköping (J. E4/40)	cars / year
2010	4.270.500
2030	5.167.305
AAGR (lin.)	1.1 %
	trucks / year
2010	1.241.000
2030	1.675.350
AAGR (lin.)	1.8 %
Helsingborg – Malmö (Helsingborg S – Kronetorp)	cars / year
2010	11.917.250
2030	16.445.805
AAGR (lin.)	1.9 %
	trucks / year
2010	2.124.300
2030	2.995.263
AAGR (lin.)	2.1 %

Table 16: Road traffic forecast S5

Trafikverket (2014a/b) delivers also forecast data regarding rail freight and passenger traffic for these market (sub-)sections:

Stockholm – Mjölby (Linköping – Mjölby)	passenger trains / day
2010	135
2030	188
AAGR (lin.)	2.0 %
Stockholm – Örebro (Katerineholm C - Hallsberg)	
2010	71
2030	112
AAGR (lin.)	2.9 %
Örebro - Mjölby (Örebro C - Hallsberg)	
2010	90
2030	106
AAGR (lin.)	0.9%
Mjölby – Lund (Mjölby – Nässjö C)	
2010	73
2030	116
AAGR (lin.)	2.9 %
Lund- Malmö (Lund - Ärlov)	
2010	298
2030	480
AAGR (lin.)	3.1%

Table 17: Rail passenger forecast S5

Stockholm – Mjölby (Linköping – Mjölby)	**freight trains / day**
2010	28
2030	34
AAGR (lin.)	1.1 %
Stockholm – Örebro (Katerineholm C - Hallsberg)	
2010	24
2030	30
AAGR (lin.)	1.3 %
Örebro - Mjölby (Örebro C - Hallsberg)	
2010	79
2030	86
AAGR (lin.)	0.4 %
Mjölby – Lund (Mjölby – Nässjö C)	
2010	57
2030	70
AAGR (lin.)	1.1 %
Lund- Malmö (Lund - Ärlov)	
2010	66
2030	66
AAGR (lin.)	0.0 %

Table 18: Rail freight forecast S5

Furthermore, for the node of Stockholm, forecast data could be gathered. The combination of two different sources permits a joint forecast to 2040, as Trafikverket (2013) contains data for 2030 and Swedavia (2014) looks even further to 2040.

	passengers / year
2012	19.700.000
2013	21.000.000
2030	28.800.000
2040	35.000.000
AAGR (lin.)	2.8 %

Table 19: Airport forecast N4a

Data for the maritime port of Stockholm was retrieved from Trafikverket (2013).

	tons / year
2010	4.400.000
2030	7.700.000
AAGR (lin.)	3.8 %

Table 20: Maritime freight forecast N4a

The research for relevant data highlighting the RRT of Stockholm (Stockholm-Årsta) was not successful. As part of the ScanMed Corridor, also no forecast data were available for RRT (Örebro-) Hallsberg (N4b).

The node Malmö (N5) consists of a seaport and an airport. For the seaport Trafikverket (2013a) published the following forecasts.

	tons / year
2010	9.600.000
2030	18.000.000
AAGR (lin.)	4.4 %

Table 21: Maritime freight forecast N5

The source Trafikverket (2013b) provides the subsequent forecast for Malmö Airport.

	passengers / year
2012	2.200.000
2030	2.800.000
AAGR (lin.)	1.5 %

Table 22: Airport forecast N5

S6 Oslo – Göteborg including N6 Oslo and N7 Göteborg

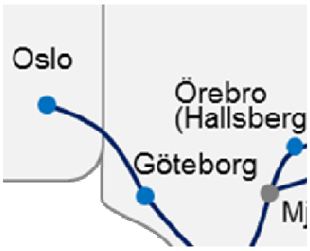


Figure 8: Map of S6, N6 and N7

For the market section from Göteborg to the border of Norway, road traffic data was submitted by Ramboll Finland based on Trafikverket (2014).

Oslo – Göteborg (Svinesund Bridge)	cars / day	trucks / day
2010	19.500	2.500
2030	26.130	3.100
AAGR (lin.)	1.7%	1.2%

Table 23: Road forecast for S6 (Göteborg to the border to Norway)

Complementary data for the western part of this section in Norway was sent by the Norwegian Ministry of Transport and Communications via e-mail. However, for the most northern part between Moss and Oslo, still no forecast data was available:

E6 at Moss	vehicles / day
2013	31.400
2030	38.000
AAGR (lin.)	1.2 %
E6 at Sarpsborg	**vehicles / day**
2013	25.700
2030	31.000
AAGR (lin.)	1.2 %
E6 Swedish border	**vehicles / day**
2013	14.400
2030	17.500
AAGR (lin.)	1.3 %

Table 24: Road forecast for S6 (Norwegian part to the border of Sweden)

For this market section, road traffic forecast data was available in TENtec (European Commission 2014c), entered by Trafikverket (2014):

Oslo – Göteborg (Haby – Rabbalshede ((J. E6/165))	cars / year
2010	3.485.750
2030	3.764.610
AAGR (lin.)	0.4 %
	trucks / year
2010	832.200
2030	1.031.928
AAGR (lin.)	1.2 %

Table 25: Road traffic forecast S6

The rail traffic forecasts for the relation from Göteborg to the Norwegian border are once again estimations by Ramboll based on Trafikverket (2014):

Norway border – Göteborg (Öxneret - Trollhättan)	passenger trains / day
2010	39
2030	98
AAGR (lin.)	7.6 %
Norway border – Göteborg (Öxneret - Trollhättan)	**freight trains / day**
2010	26
2030	42
AAGR (lin.)	3.1 %

Table 26: Rail forecast for S6 (Göteborg to the border to Norway)

The Norwegian Ministry of Transport and Communications provided forecast data via e-mail, covering the market section from the Swedish border to Oslo, but only regarding amounts of freight and passengers, not measuring trains.

Oslo – Border NO	passenger trains / year
2012	9.959
2030	13.608
AAGR (lin.)	2.0 %
	freight trains / year
2012	4.480
2030	10.905
AAGR (lin.)	8.0 %

Table 27: Rail forecast for S6 (Norwegian part)

The source for filling-in the forecast table for the airport of Oslo was sent by the Norwegian Ministry of Transport and Communications via e-mail:

	passengers / year	flights / year
2014	22.9 m	234.000
2030	35.5 m	318.000
AAGR (lin.)	3.4 %	2.2 %

Table 28: Airport forecast N6

The Airport traffic forecast for Göteborg was published in Trafikverket (2013a).

	passengers / year
2012	4.800.000
2030	6.630.000
AAGR (lin.)	2.1 %

Table 29: Aiport forecast N7

Forecast data for the port of Göteborg is based on Trafikverket (2013b).

	tons / year
2010	42.900.000
2030	55.300.000
AAGR (lin.)	1.4 %

Table 30: Seaport freight forecast N7

Forecasts for the Oslo seaport and the local RRT (Alnabru) could also be obtained by the Norwegian Ministry of Transport and Communications.

Port of Oslo	tons of freight / year	passengers / year
2012	5.64 m	2.76 m
2030	8.25 m	3.74 m
AAGR (lin.)	2.6 %	2.0 %

Table 31: Seaport forecast N6

Oslo Alnabru terminal	tons / year
2012	3.894.233
2030	4.247.000
AAGR (lin.)	0.5 %

Table 32: RRT forecast N6

S7 Göteborg – Malmö

Figure 9: Map of S7

Regarding road traffic, the relation from Göteborg to Malmö is divided into two market (sub-)sections: One from Göteborg to Helsingborg and the other from Helsingborg to Malmö. The forecast for the first relation is once again based on estimations done by Ramboll using data of Trafikverket (2014).

Göteborg - Helsingborg (Varberg – Falkenberg)	cars / day	trucks / day
2010	16.200	4.100
2030	21.708	5.084
AAGR (lin.)	1,7 %	1,2 %
Helsingborg to Malmö (Helsingborg – Landskrona)	**cars / day**	**trucks / day**
2010	35.600	6.400
2030	46.280	9.024
AAGR (lin.)	1,5 %	2,1 %

Table 33: Road forecast S7

For this market section, road traffic forecast data was available in TENtec (European Commission 2014c), entered by Trafikverket (2014).

Göteborg – Helsingborg (Ängelholm - Kallebäcksmotet)	cars / year
2010	9.431.600
2030	12.638.344
AAGR (lin.)	1.7 %
	trucks / year
2010	1.438.100
2030	1.898.292
AAGR (lin.)	1.6 %

Table 34: Road traffic forecast S7

For railways, the market section from Göteborg to Malmö is divided into six "subsections": One from Göteborg to Ängelholm, a second and third from Ängelholm to Kävlinge (via Helsingborg / Åstorp), from Kävlinge to Lund / Malmö and from Lund to Malmö. The traffic data from Trafikverket (2014a/b) for the respective subsections are presented in the tables below:

Göteborg - Ängelholm (Varberg – Falkenberg)	passenger trains / day
2010	61
2030	96
AAGR (lin.)	2.9 %
Ängelholm – Kävlinge via Helsingborg (Maria - Helsingborg)	
2010	99
2030	124
AAGR (lin.)	1.3 %
Ängelholm – Kävlinge via Åstorp (Åstorp - Teckmatorp)	
2010	0
2030	38
AAGR (lin.)	/
Kävlinge – Lund (Kävlinge – Lund)	
2010	148
2030	236
AAGR (lin.)	3.0 %
Kävlinge – Malmö (Flädie – Alnarp)	
2010	0
2030	76
AAGR (lin.)	/
Lund - Malmö (Lund - Arlöv)	
2010	298
2030	480
AAGR (lin.)	3.1 %

Table 35: Rail passenger forecast S7

Göteborg - Ängelholm (Varberg – Falkenberg)	freight trains / day
2010	22
2030	26
AAGR (lin.)	0.9 %
Ängelholm – Kävlinge via Helsingborg (Maria - Helsingborg)	
2010	0
2030	0
AAGR (lin.)	/
Ängelholm – Kävlinge via Åstorp (Åstorp - Teckmatorp)	
2010	4
2030	7
AAGR (lin.)	3.8 %
Kävlinge – Lund (Kävlinge – Lund)	
2010	0
2030	0
AAGR (lin.)	/
Kävlinge – Malmö (Flädie - Alnarp)	
2010	11
2030	24
AAGR (lin.)	5.9 %
Lund - Malmö (Lund - Arlöv)	
2010	66
2030	66
AAGR (lin.)	3.1%

Table 36: Rail freight forecast S7

S8 Malmö – Trelleborg including N8 Trelleborg

Figure 10: Map of S8 and N8

Following data regarding rail traffic forecast is again based on information provided by Trafikverket (2014a/b):

Malmö – Trelleborg (Lockarp – Trelleborg)	passenger trains / day
2010	7
2030	76
AAGR (lin.)	49.3%
	freight trains / day
2010	16
2030	20
AAGR (lin.)	1.3 %

Table 37: Rail traffic forecast S8

For this market section, road traffic forecast data was available in TENtec (European Commission 2014c), entered by Trafikverket (2014):

Malmö – Vellinge	trucks / year
2010	1.257.425
2030	1.772.969
AAGR (lin.)	2.0 %
	cars / year
2010	9.002.725
2030	12.423.761
AAGR (lin.)	1.9 %
Vellinge - Trelleborg	**trucks / year**
2010	1.001.925
2030	1.412.714
AAGR (lin.)	2.0 %
	cars / year
2010	3.801.475
2030	5.246.036
AAGR (lin.)	1.9 %

Table 38: Road traffic forecast S8

Once again, Ramboll Sweden also provided data for the relation of Malmö to Trelleborg, based on Trafikverket 2014:

Malmö – Trelleborg (Vellinge – Trelleborg)	cars / day	trucks / day
2010	10.100	2.800
2030	13.938	3.948
AAGR (lin.)	1,9 %	2.1 %

Table 39: Road forecast S8

For the node of Trelleborg, having a seaport and a RRT, there is forecast data for the seaport, but unfortunately not for the RRT. The data was provided by e-mail directly from the Port of Trelleborg (2014):

	tons cargo / year	trailer / year
2013	8.996.409	113.195
2020	12.336.405	166.513
2025	15.009.123	202.589
2030	18.260.893	246.481
AAGR (lin.)	6.1 %	6.9 %

Table 40: Maritime port forecast N8

Furthermore, a study from Trafikverket (2013) provides valuable additional information regarding the volume development of the port of Trelleborg:

	tons / year
2010	10.8 m
2030	18.1 mio
AAGR (lin.)	3.4 %

Table 41: Maritime port forecast N8

S9 Malmö – København including N9 København

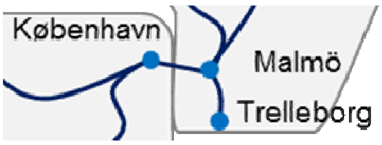


Figure 11: Map of S9 and N9

Road traffic forecasts for the relation Malmö to København are retrieved from Ramboll based on Trafikverket (2014):

Øresund bridge	cars / day	trucks / day
2010	17.190	1.910
2030	23.722	2.693
AAGR (lin.)	1,9 %	2.1 %

Table 42: Road Traffic S9

For this market section road traffic forecast data was available in TENtec (European Commission 2014c), entered by Trafikverket (2014):

Malmö – København (Petersborg – Øresundsbron)	cars / year
2010	7.119.000
2030	9.268.000
AAGR (lin.)	1.5 %
	trucks / year
2010	625.000
2030	1.005.000
AAGR (lin.)	3.0 %

Table 43: Road traffic forecast S9

Also the source IBU-Øresund (2010): "Delaktivitet 4 – Trafikanalyser for Øresundsregionen" provides forecasts for average daily heavy goods traffic:

	average daily HGV
2002	489
2020	1.319
2030	3.250
AAGR (lin.)	20.2 %

Table 44: Road Traffic S9 (with basis 2002)

For further inclusion into the big picture, the figures of Trafikverket (2014) were chosen because they are calculated on a more recent base year.

For railway, traffic forecasts were sent by Ramboll (2014) at least for the part from Malmö to the Øresund Bridge (Pepparholm). Furthermore the Danish Transport Authority provided information for rail freight traffic between København and Peberholm by e-mail:

Malmö – København (Hyllie – Pepparholm)	passenger trains / day
2010	172
2030*	228
AAGR (lin.)	1.6 %
	freight trains / day
2010	28
2030*	36
AAGR (lin.)	1.4 %
København – Peberholm (Kastrup - Øresund midt)	**passenger trains / year**
2012	51.300
2027*	78.840
AAGR (lin.)	3.6 %
	freight trains / year
2012	10.892
2027*	22.698
AAGR (lin.)	7.4 %

Table 45: Rail traffic forecast for S9

At the node of København, the airport, the seaport and the RRT (Høje-Taastrup) are part of the network. Unfortunately there was no forecast data available covering the seaport and the RRT.

However, there is a forecast for the airport of København (CPH), available at the website of Copenhagen Airport (http://www.cph.dk).

	passengers / year
2013	24.067.030
2040	40.000.000
AAGR (lin.)	2.5 %

Table 46: Airport Forecast N9

S10 København – Ringsted – Taulov including N10 Taulov

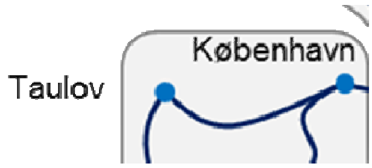


Figure 12: Map of S10 and N10

For the RRT in Taulov, no data forecast could be obtained.

Concerning road traffic, one study of the Danish Transport Authority (2012) offered data for some parts of this section. However this data has to be seen as highly valuable given the fact, that it incorporates the fixed Fehmarn Belt connection and its effects for the larger network. This guarantees some consistency with the other forecasts for the Fehmarn Belt region presented here.

However, the figures do not cover the complete alignment between København and Kolding, but only the western half of the E20 connecting Kolding and Storebaelt bridge. As the study is very profound, this short subsection was divided into six measuring points and each one was given a separate forecast. In a first step, all six subsections were granted a linear AAGR of 2.2%. After this, for each section the abatement of this base figure caused by the Fehmarn Belt Fixed Link was calculated (see page 28, table 4 of this reference). These cutbacks of the absolute forecasted values differ between the points and reach from 0 to 3%, but they are too small to reduce the mentioned AAGR of 2.2%.[1]

Banedanmark provides very exact and highly disaggregated data regarding even origin-destination-linkages to several regions along the corridor, but comparable forecast data was unfortunately not available. However, Banedanmark stated via e-mail, that a doubling of rail freight transportation in Denmark is to be expected until 2030. This would correspond to an AAGR (lin.) of 6.3%.

However, Trafikstyrelsen delivered following data (partly approximate figures) regarding rail freight and passenger traffic forecast by e-mail:

[1] In addition and regarding road traffic, preliminary and most recent calculations for the year 2030 were provided by the Danish Road Directorate (2014) (via the Danish Transport Authority). The forecast is based on the most recent calculations performed on the Danish National Transport Model (LTM 1.0.7.1). The model is still in the developing phase. The data is to be considered preliminary. The model provides bandwidth forecast data for all parts of the Danish road sections, **but it does not include the Fehmarn Belt,** hence the results are subsequently not shown in the analysis.

København – Roskilde	freight trains / year
2012	11.138
2027	2.006
AAGR (lin.)	-5.1 %
Roskilde - Ringsted	
2012	13.016
2027	4.134
AAGR (lin.)	-4.3 %
Ringsted - Odense	
2012	12.956
2027	4.063
AAGR (lin.)	-4,3%
Odense - Kolding	
2012	13.113
2027	4.246
AAGR (lin.)	-4.2%
København – Roskilde	**passenger trains / year**
2012	127.640
2027	143.080
AAGR (lin.)	0.8%
Roskilde - Ringsted	
2012	95.940
2027	78.840
AAGR (lin.)	-1.2%
Ringsted - Odense	
2012	43.800
2027	73.000
AAGR (lin.)	4.4%
Odense - Kolding	
2012	58.400
2027	84.680
AAGR (lin.)	3.0%

Table 47: Rail traffic forecast S10

S11 Taulov - Hamburg including N12 Hamburg

Figure 13: Map of S11 and N12

The data situation for this section is comparable to the previous one. Danish Transport Authority (2012) offers data for E45 between Haderslev and Froslev at the German border, leaving out the parts from Kolding to Haderslev and from Froslev to Hamburg. This piece of road was divided into two subsections for which an identical method was employed as described above (cf. S10).

West of Haderslev	
Original average growth	2.2 %
Fehmarn Belt induced cutback	-1.5
Resulting growth rate	1.4 %
Froslev	
Original average growth	2.2 %
Fehmarn Belt induced cutback	-3.2
Resulting growth rate	-1.0 %

Table 48: Road traffic forecast S11

Using the method described above, an average growth rate of 0.2% was calculated for S11.

Regarding rail traffic, data for the section Kolding to Padborg concerning passenger and freight is available. The study of the Danish Transport Authority (2013) and direct electronic information from Trafikstyrelsen (e-mail) delivers following forecast data:

Kolding - Padborg (Vamdrup – Farris)	freight trains / year
2011	13.036
2027	4.481
AAGR (lin.)	-4.1 %
Kolding – Padborg (Lunderskov – Tinglev)	**passenger trains / year**
2012	14.600
2027	14.600
AAGR (lin.)	0.0 %

Table 49: Rail traffic forecast S 11

The node Hamburg includes an airport, a seaport and a RRT. For the Port of Hamburg a freight forecast was published in MWP GmbH, IHS and Uniconsult (2013).

	tons / year	TEU / year
2010	104.500.000	7.906.000
2030	194.600.000	16.387.000
AAGR (lin.)	4.3 %	5.4 %

Table 50: Maritime freight forecast N 12

The forecast for the airport of Hamburg can be found in Land Schleswig-Holstein (2012).

	passengers / year
2010	12.960.000
2030	24.000.000
AAGR (lin.)	4.3 %

Table 51: Airport forecast N12

The forecast for the railway terminal in Hamburg was published in HaCon & KombiConsult (2012). The data represents the sum of all terminals of Hamburg in aggregation.

	loading units / year
2008	1.470.000
2025	3.360.000
AAGR (lin.)	7.6 %

Table 52: RRT forecast N12

S12 København - (Ringsted / Rødby) – Lübeck including N11 Lübeck

Figure 14: Map of S12 and N11

For the section from København to Lübeck, where the Fehmarn Belt Fixed Link will be located, the forecasts focus on that infrastructure to be built. Although there are various sources with multiple information regarding the expected traffic on the Fehmarn Belt Fixed Link, the subsequently quoted rail and road traffic forecast is the most current and thus reliable one.

For quoting the future road and rail traffic on the Fehmarn Belt Fixed Link, the newest available source was chosen to be included into the more comprehensive view, being Intraplan (2013: Traffic Forecast for the Fehmarn Belt Fixed Link (Update to 2002 FTC forecast)).

	cars / year	buses / year	HGV / year
2011	1.564.025	29.930	280.000
2025 (with FBFL)	3.578.825	33.945	508.480
AAGR (lin.)	9.2 %	1.0 %	5.8 %

Table 53: Road traffic forecasts Fehmarn Belt Fixed Link

	passenger trains / year
2011	3.285
2025 (with FBFL)	14.600
AAGR (lin.)	24.6 %
	freight trains / year
2011	0
2025 (with FBFL)	28.470
AAGR (lin.)	/

Table 54: Rail traffic forecasts Fehmarn Belt Fixed Link

The Danish Transport Authority (2013) - Trafikstyrelsen delivers forecast data regarding passenger and freight rail traffic between København and Nykøbing / Rødby:

København - Ringsted via Køge (Køge Nord – Ringsted)	**freight trains / year**
2012	0
2027	21.005
AAGR (lin.)	/
Ringsted – Nykøbing / Rødby (Næstved – Vordingborg)	
2011	0
2027	21.005
AAGR (lin.)	/
København – Ringsted via Køge (Køge Nord – Ringsted)	**passenger trains / year**
2012	0
2027	58.400
AAGR (lin.)	/
Ringsted – Nykøbing / Rødby (Næstved – Vordingborg)	
2012	28.780
2027	31.700
AAGR (lin.)	0.7 %

Table 55: Rail traffic forecast

The node Lübeck includes a seaport and a RRT. The forecast of the seaport is taken from MWP GmbH, IHS and Uniconsult (2013) and gives the figures below.

	tons / year	**TEU / year**
2010	17.900.000	153.000
2030	28.000.000	254.000
AAGR (lin.)	2.8 %	3.3 %

Table 56: Maritime freight forecast N 11

The forecast data covering the RRTs in Lübeck was originated from HaCon & KombiConsult (2012). It is the sum of the following terminals: Nordlandkai, Schlutup, Seelandterminal and Skandinavienkai. Even though technichally only the Skandinavienkai terminal is part of the core network. Unfortunately it was not possible to separate it.

	loading units per year
2008	126.000
2025	250.000
AAGR (lin.)	5.8 %

Table 57: RRT forecast N11

Market section data for Germany

For all market sections in Germany, consistent data sources could be found for rail traffic as well as for road traffic. However, interpreting these sources turned out to be methodically difficult.

Looking at road traffic, "Bundesamt für Straßenwesen" (BASt, 2011) is an excellent source for road related traffic loads, due to its numerous measuring points forming a dense network and delivering base data (2010) for all market sections. The data of the different points was converted to an average figure for each relevant section. Methodical problems were caused by the forecast data. IVV (2010) gives a consistent overview for whole Germany, but the forecast does not deliver actual numbers, instead ranges of traffic loads. These ranges comprise differences of at least 20,000 vehicles per day. The only option to calculate the desired growth rates was to use the mean values of these ranges and the average values of BASt.

Even the data situation for rail traffic turned out slightly more complicated. Destatis (2012) was exploited to collect present traffic loads (year 2010). Unfortunately the relevant data could not be obtained in form of tables or clear numbers but only included into nationwide maps, using rough value categories covering spans of at least 10,000 trains per year. These values had to be read out by visual interpretation and considering mean values of the particular ranges along each section. The forecast values, on the other hand, appeared to be very exact. BVU/Intraplan 2010 deliver forecast data (year 2025) for specific subsections along the ScanMed Corridor. These were used to calculate growth rates based on the Destatis data.

Using this approach, we managed to get growth rates for all sections in Germany. However, as these results originate from quite vague base data, they have to be treated with caution and are only able to contribute to a big picture. The calculated growth rates were included into the overview maps presented in Chapter 4.2 of the Final Report. For all sections with more accurate data available, it is included and represented in detail.

S13 Lübeck – Hamburg

Figure 15: Map of S13

No future road and rail data concerning this market section is available.

S14 Hamburg – Hannover including N12 Hamburg and N13 Hannover

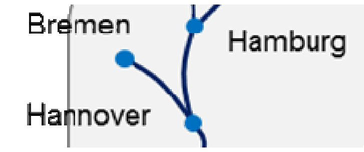


Figure 16: Map of S14 and N13

Looking at road traffic, there was no consistent data for the whole market section, but for two critical parts representing the endpoints of this section. SSP Consult (2010) gives the following figures for the two relevant measuring points along the A7 motorway:

South of Maschen	vehicles / day
2005	62.600
2025	79.800
AAGR (lin.)	1.4 %
North of Hannover-Ost	**vehicles / day**
2005	56.600
2025	74.600
AAGR (lin.)	1.6 %

Table 58: Road traffic forecast S14

For railway traffic, a crucial assumption is whether the so-called "Y-Trasse" or triangular connection connecting Hamburg, Bremen and Hannover will be built and when it will be finished. BVU / Intraplan 2010 give a forecast for relevant section parts in case of construction. However, in absence of base date, no growth rates can be calculated.

HPA (Hamburg Port Authority) provided us by mail the following information regarding port oriented rail traffic (in and out):

	trains / year
2013	60.000
2030	> 80.000
AAGR (lin.)	2.0%

Table 59: Port oriented rail traffic forecast N12

Uniconsult / MKmetric (2012) published a forecast on behalf of the Länder Schleswig-Holstein, Hamburg, Bremen, Niedersachsen and Mecklenburg-Vorpommern for the Hannover airport until 2030.

	passengers / year
2010	5.06 m
2030	9.03 m
AAGR (lin.)	3.9 %

Table 60: Airport forecast N13

In addition, there was also data available covering the RRT. This information is given by HaCon / KombiConsult (2012) and quotes aggregated figures for the three terminals of Linden, Leinetor and Nordhafen:

	units per year
2008	61.000
2025	209.000
AAGR (lin.)	14.3 %

Table 61: RRT Forecast N13

S15 Bremen – Hannover including N14 Bremen

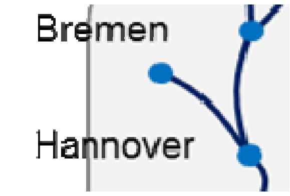


Figure 17: Map of S15 and N14

For this section, a railway forecast was done by Hanseatic Transport Consultancy in 2013. It contains data for two relevant subsections, leaving out only small gaps of the alignment.

Bremen Vahr to Achim	passenger trains / day
2012	160
2030	240
AAGR (lin.)	2.8 %
Verden to Wunstorf	
2012	72
2030	72
AAGR (lin.)	0.0 %

Table 62: Rail passenger traffic forecast S15

Bremen Vahr to Achim	freight trains / day
2012	60
2030	145
AAGR (lin.)	7.9 %
Verden to Wunstorf	
2012	117
2030	205
AAGR (lin.)	4.2 %

Table 63: Rail freight traffic forecast S15

Road data for this market section is missing.

Regarding the node of Bremen (N14), it has to be noted that several statistics deliver figures on the level of the Bundesland Bremen, including the volumes of Bremerhaven. Since Bremerhaven is explicitly not included in the corridor, its data should be excluded here, if possible. In fact, the city of Bremen (2014, delivered by e-mail) provides specific data for the port of Bremen, forecasting the following freight volume development:

	tons / year
2012	12.5 m
2025	14.3 m
2035	15.2 m
AAGR (lin.)	0.9 %

Table 64: Maritime freight forecast for N14

Similar data for TEU or passengers were not focused for the port of Bremen.

The RRT was forecasted by HaCon & KombiConsult (2012), giving joint numbers for the terminals Roland and Weserport:

	units / year
2008	126.000
2025	286.000
AAGR (lin.)	7.5 %

Table 65: RRT forecast for N14

S16 Hannover – Würzburg

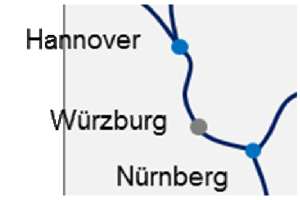


Figure 18: Map of S16

As consistent data for the whole section was not available, specific forecasts for two significant measuring points give an indication of the magnitude of the growth rates to be expected on this section. SSP Consult (2010) takes a look at the very north of the section, which is a measuring point south of Hannover Ost. This data can be extended by a forecast for another part of the section, being the A7 between Salzgitter and Drammetal (represented here by two measuring points). This study was published by the "Niedersächsische Landesbehörde für Straßenbau und Verkehr" (2014):

South of Hannover Ost	vehicles / day
2005	69.000
2025	76.600
AAGR (lin.)	0.6 %
Bockenem to Rhüden	**vehicles / day**
2000	66.000
2025	80.000
AAGR (lin.)	0.8 %
Echte to Northeim-Nord	**vehicles / day**
2000	53.000
2025	57.000
AAGR (lin.)	0.3 %

Table 66: Road traffic forecast S16

S17 Würzburg - Nürnberg including N15 Nürnberg

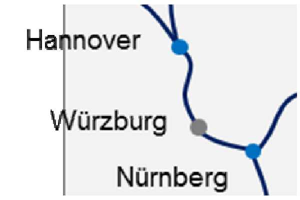


Figure 19: Map of S17 and N15

For the airport of Nürnberg, a rather short-term forecast was done by the citizens' initiative "Nein zur Flughafen Nordanbindung" (2009):

	passengers / year
2008	2.9 m
2020	3.3 m
AAGR (lin.)	2.6 %

Table 67: Airport forecast N15

The RRT forecast was done by HaCon / KombiConsult (2012) combining the two terminals HGBF and TriCon for 2008 and the whole terminal area for 2025:

	units / year
2008	189.000
2025	506.000
AAGR (lin.)	9.9 %

Table 68: RRT forecast for N15

S18 Rostock - Berlin including N16 Rostock and N17 Berlin

Figure 20: Map of S18, N16 and N17

MWP, HIS and Uniconsult (2013) provides a forecast for the seaport of Rostock where the subsequent data was retrieved.

	tons / year	TEU / year
2010	19.500.000	2.000
2030	24.800.000	3.000
AAGR (lin.)	1.4 %	2.5 %

Table 69: Maritime freight forecast N16

In the case of Berlin, the city of Berlin online published a forecast for the yet-to-be-finished new airport BER.

	passengers / year
2013 (Schönefeld & Tegel)	26.3 m
2035 (BER)	42.5 m
AAGR (lin)	2.8 %

Table 70: Airport Forecast N17

Like for all German RRT nodes, HaCon & KombiConsult (2012) forecasted the freight volume for both of these nodes, combining again data for all relevant terminals:

	units / year
2008	73.000
2025	181.000
AAGR (lin.)	8.7 %

Table 71: RRT forecast for N16

	units / year
2008	134.000
2025	335.000
AAGR (lin.)	8.8 %

Table 72: RRT forecast for N17

S19 Berlin - Leipzig including N18 Leipzig, Halle

Figure 21: Map of S19 and N18

The Saxonian "Staatsministerium für Wirtschaft, Arbeit und Verkehr" (2012) provides a forecast for the airport of Leipzig/Halle regarding passengers and freight until 2025.

	passengers / year
2011	2.3 m
2025	4.5 m
AAGR (lin.)	7.0 %
	tons / year
2011	0.76 m
2025	1.75 m
AAGR (lin.)	9.3 %

Table 73: Airport forecast N18

HaCon & KombiConsult (2012) provides data for the respective RRT aggregated for all relevant rail-road terminals.

	units / year
2008	135.000
2025	376.000
AAGR (lin.)	10.5 %

Table 74: RRT forecast for N18

S20 Leipzig - München including N19 München

Figure 22: Map of S20 and N19

Market section data for relevant future rail traffic loads are not available. A road connection is not part of the market section S20.

Accompanying the approving process for building the third runway at the airport München, an in-depth forecast until 2025 was done by Intraplan (2010) in case of construction.

	passengers / year
2009	32.7 m
2025	58.2 m
AAGR (lin.)	4.9 %

Table 75: Airport forecast N19

For München too, HaCon & KombiConsult (2012) delivers data for the RRT:

	units / year
2008	271.000
2025	737.000
AAGR (lin.)	10.1 %

Table 76: RRT Forecast for N19

S21 Leipzig – Nürnberg

Figure 23: Map of S21

No more accurate data concerning future road and rail development than the approach explained in the paragraphs before the market section S13 could be found.

S22 Nürnberg - München

Figure 24: Map of S22

One single forecast for this section was identified and included here. This seems to be problematic as it has its focus on a part of the northern Autobahnring around München, being a distinct "hot spot" of this section. It is disputable if this part is in any way representative for the whole section. However, the objective of our study is to identify potential bottlenecks of the traffic infrastructure. So, regarding this specific part as some kind of "worst case" still delivers valuable information. Autobahndirektion Südbayern (2014) gives the following data:

North-eastern Autobahnring München	vehicles / day
2010	140.000
2020	170.000
AAGR (lin.)	2.1 %

Table 77: Road traffic forecast S16

Market section data concerning rail is not available.

S23 München – Rosenheim

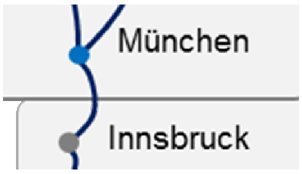


Figure 25: Map of S23, S24, S25, S26

No more accurate data than used in the approach explained before S13 could be found.

S24 Rosenheim – Kufstein

No more accurate data than used in the approach explained before S13 could be found.

S25 Kufstein - Wörgl

Considering the northern part of the Brenner Pass, there are several studies forecasting the effects of the completion of the Brenner Base Tunnel (BBT) available. The Austrian Bundesministerium für Verkehr, Innovation und Technologie (BMVIT) (2009) provides following data for road traffic (scenario 1) until 2025.

Kufstein - Wörgl	cars / workday
2005	28.500
2025	34.500
AAGR (lin.)	1.1 %
	passengers / workday
2005	39.000
2025	43.000
AAGR (lin.)	0.5 %
	trucks / workday
2005	9.500
2025	13.500
AAGR (lin.)	2.1 %

Table 78: Road traffic forecast S25

The Austrian BMVIT (2009) includes as well forecast data for railway traffic (scenario 1).

Kufstein - Wörgl	passengers / workday
2005	12.000
2025	14.500
AAGR (lin.)	1.0 %

Table 79: Rail traffic forecast S25

For the rail traffic forecast for the relation from Kufstein to Wörgl ÖBB Infrastruktur AG (2011) quote estimations for passenger and freight train loads in the year 2025.

Kufstein - Wörgl	passenger trains / workday
2009	51 - 100
2025	101 - 150
AAGR (lin.)	4.2 %
	freight trains / workday
2009	51 - 100
2025	151 - 200
AAGR (lin.)	8.3 %

Table 80: Rail traffic forecast S25

In addition, more detailed data are available regarding rail traffic forecast. The following data of ÖBB Infrastruktur AG (2014) depicts summarized average data for this market section:

Kufstein - Wörgl	passenger trains / workday
2013	108
2025+ with BBT	131
AAGR (lin.)	1.8 %
	freight trains / workday
2013	90
2025+ with BBT	204
AAGR (lin.)	10.6 %

Table 81: Rail traffic forecast S25

S26 Wörgl – Baumkirchen

For this section only rail traffic forecast data are available based on information from ÖBB Infrastruktur AG (2011):

Wörgl - Baumkirchen	passenger trains / workday
2009	101 - 150
2025	101 - 200
AAGR (lin.)	1.3 %
	freight trains / workday
2009	151 - 200
2025	> 200
AAGR (lin.)	0.9 %

Table 82: Rail traffic forecast S26

Again, for this section more detailed data are available. The following data of ÖBB Infrastruktur AG (2014) shows summarized average data for four smaller sections.

Wörgl - Abzw Knoten Radfeld	passenger trains / workday
2013	128
2025+ with BBT	157
AAGR (lin.)	1.9 %
Abzw Knoten Radfeld – Abzw Knoten Stans (inkl. NBS)	
2013	129
2025+ with BBT	157
AAGR (lin.)	1.8 %
Abzw Knoten Stans - Fritzens-Wattens (inkl NBS)	
2013	129
2025+ with BBT	231
AAGR (lin.)	6.6 %
Fritzens-Wattens - Abzw Fw 2 (inkl NBS)	
2013	156
2025+ with BBT	231
AAGR (lin.)	4.0 %

Table 83: Rail passenger traffic forecast S26

Wörgl - Abzw Knoten Radfeld	freight trains / workday
2013	143
2025+ with BBT	296
AAGR (lin.)	8.9 %
Abzw Knoten Stans - Fritzens-Wattens (inkl NBS)	
2013	143
2025+ with BBT	296
AAGR (lin.)	8.9 %
Abzw Knoten Stans - Abzw Fw 2 (inkl. NBS)	
2013	144
2025+ with BBT	296
AAGR (lin.)	8.9 %

Table 84: Rail freight traffic forecast S26

There is no data for road traffic on this market section available.

S27 Baumkirchen – Innsbruck

Also for this section, ÖBB Infrastruktur AG (2011) provided traffic forecast data:

	passenger trains / workday
2009	101 - 150
2025	151 - 200
AAGR (lin.)	2.5 %
	freight trains / workday
2009	101 - 200
2025	101 - 200
AAGR (lin.)	1.0 %

Table 85: Rail traffic forecast S27

The following data of ÖBB Infrastruktur AG (2014) shows calculated average data of two (sub-)sections:

Abzw Fw2 - Hall in Tirol	passenger trains / workday
2013	156
2025+ with BBT	231
AAGR (lin.)	4,0%
Hall in Tirol - Innsbruck	
2013	173
2025+ with BBT	231
AAGR (lin.)	2,8%
Abzw Fw2 - Üst Fw 14	
2013	0
2025+ with BBT	0
AAGR (lin.)	0,0%
Üst Fw 14 - Abzw I 1	
2013	0
2025+ with BBT	0
AAGR (lin.)	0,0%
Abzw Fw2 - Hall in Tirol	**freight trains / workday**
2013	55
2025+ with BBT	93
AAGR (lin.)	5,8%
Hall in Tirol - Innsbruck	
2013	48
2025+ with BBT	91
AAGR (lin.)	7,5%
Abzw Fw2 - Üst Fw 14	
2013	88
2025+ with BBT	204
AAGR (lin.)	11,0%
Üst Fw 14 - Abzw I 1	
2013	88
2025+ with BBT	20
AAGR (lin.)	-6,4%

Table 86: Rail traffic forecast S27

No data for future road traffic on this market section.

S28 Innsbruck – Patsch

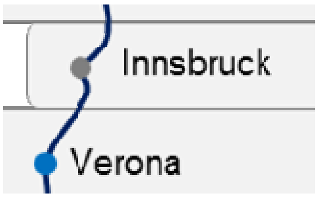


Figure 26: Map of S28, S29, S30

ÖBB Infrastruktur AG (2011) delivers following data for the rail traffic forecast:

	passenger trains / workday
2009	51 - 100
2025	51 - 100
AAGR (lin.)	0.0 %
	freight trains / workday
2009	101 - 150
2025	>200
AAGR (lin.)	3.8 %

Table 87: Rail traffic forecast S28

Furthermore there is as well more detailed data for a smaller section available. ÖBB Infrastruktur AG (2014) delivers following data:

Innsbruck - Abzw I 1	passenger trains / workday
2013	80
2025+ with BBT	80
AAGR (lin.)	0,0%
Üst Fw 14 - Abzw I 1	
2013	0
2025+ with BBT	0
AAGR (lin.)	0,0%
Innsbruck Hbf - Abzw Innsbruck 3	
2013	0
2025+ with BBT	26
AAGR (lin.)	/
Innsbruck - Abzw I 1	**freight trains / workday**
2013	17
2025+ with BBT	2
AAGR (lin.)	-7,4%
Üst Fw 14 - Abzw I 1	
2013	88
2025+ with BBT	20
AAGR (lin.)	-6,4%
Innsbruck Hbf - Abzw Innsbruck 3	
2013	0
2025+ with BBT	17
AAGR (lin.)	/

Table 88: Rail traffic forecast S28, S29, S30

No data for future road traffic on this market section available.

S29 Patsch –Fortezza / Brenner

Several different traffic forecasts provide data regarding this last market sections north of the Brenner Base Tunnel (BBT).

Bundesministerium für Verkehr, Innovation und Technologie (2009, VPÖ 2025+) delivers following data for scenario 1 concerning road traffic loads.

Patsch - Fortezza	cars / workday
2005	17.000
2025	21.000
AAGR (lin.)	1.2 %
Patsch - Fortezza	**trucks / workday**
2005	6.800
2025	10.200
AAGR (lin.)	2.5 %
Patsch - BBT	**passengers / workday**
2005	26.000
2025	28.000
AAGR (lin.	0.4 %

Table 89: Road traffic forecast S29

Regarding road traffic, there are as well following data of ProgTrans (2007), not including inland traffic (AAGR growth based on 2004 – 2030).

Patsch - Fortezza	cars / day
2004	18.588
2015	21.306
2020	23.393
2025	25.668
2030	27.460
AAGR (lin.)	1.8 %

Table 90: Road traffic forecast S29

iMONITRAF! (2012) demonstrates data for the truck traffic in this section:

Patsch - BBT	trucks / year
2010	1.850.000
2020	2.368.000
2030	2.987.000
AAGR (lin.)	3.1 %

Table 91: Road traffic forecast S29

Regarding railway traffic forecast, ÖBB Infrastruktur AG (2011) delivers following data:

Patsch - BBT	passenger trains / workday
2009	51 - 100
2025	51 - 100
AAGR (lin.)	0.0 %
	freight trains / workday
2009	101 - 150
2025	>200
AAGR (lin.)	3.8 %

Table 92: Rail traffic forecast S29

Also for this section, ÖBB Infrastruktur AG (2014) delivers more detailed data. As shown in the following tables, the data concerns smaller sections of the market section S29 Patsch to Fortezza via the Brenner Base Tunnel.

Abzw I 1 - Steinach in Tirol	passenger trains / workday
2013	80
2025+ with BBT	80
AAGR (lin.)	0,0%
Steinach in Tirol - Brennero/Brenner	
2013	53
2025+ with BBT	44
AAGR (lin.)	-1,4%
Abzw I 1 - Abzw Sti 4	**freight trains / workday**
2013	104
2025+ with BBT	22
AAGR (lin.)	-6,6%
Abzw Sti 4 - Brennero/Brenner	
2013	72
2025+ with BBT	22
AAGR (lin.)	-5,8%

Table 93: Rail traffic forecast S29

Abzw Innsbruck 3 - Fortezza/Franzensfeste	passenger trains / workday
2010	0
2030	26
AAGR (lin.)	/
Abzw Innsbruck 3 - Fortezza/Franzensfeste	**freight trains / workday**
2010	0
2030	201
AAGR (lin.)	/

Table 94: Rail traffic forecast S29

Also BMVIT (2009) delivers data concerning rail traffic as following data for passenger rail traffic (scenario 1).

Patsch - BBT	passengers / workday
2005	3.000
2025	5.000
AAGR (lin)	3.3 %

Table 95: Rail traffic forecast S29

S30 Fortezza – Verona

Road freight and passenger data, covering the market section from Fortezza to Verona, were retrieved via TENtec (2014).

Fortezza - Verona	cars / day
2010	10.627.745
2030	12.336.950
AAGR (lin.)	5.8 %
	trucks / day
2010	3.980.435
2030	4.526.000
AAGR (lin.)	5.7 %

Remark: AADT figures are calculated as average of various counting stations on the road market section

Table 96: Road traffic forecast S30

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	33.488
AAGR (lin.)	/

Table 97: Rail traffic forecast for S30

S31 Verona - Bologna including N20 Bologna

Figure 27: Map of S31 and N20

Road freight and passenger data, covering the market section S31 from Verona to Bologna, were retrieved via TENtec (2014).

Verona - Bologna	cars / day
2010	17.985.315
2030	20.363.000
AAGR (lin.)	5.7 %
	trucks / day
2010	6.579.172
2030	7.597.500
AAGR (lin.)	5.8 %

Remark: AADT figures are calculated as average of various counting stations on the road market section

Table 98: Road traffic forecast S31

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	29.129
AAGR (lin.)	/

Table 99: Rail traffic forecast for S31

The node of Bologna consists of an airport and a RRT, but data was only derived for the airport. It was provided by e-mail by the Italian Civil Aviation Authority (ENAC). Recent data for 2013 to calculate the linear growth rates were detected on the homepage of the airport www.bologna-airport.de. Freight data for 2013 was also delivered by ENAC.

	passengers / year	tons / year
2013	6.2 m	44.000
2030	8.8 m	79.000
AAGR (lin.)	2.5 %	4.7 %

Table 100: Airport forecast N20

RFI provided RRT volume forecasts for the year 2030 by e-mail.

	tons / year
2014	704.204
2030	907.463
AAGR (lin.)	1.8 %

Table 101: Forecast for RRT Bologna (Interporto - Terminalitalia) N20

S32 Bologna - Ancona including N21 Ancona

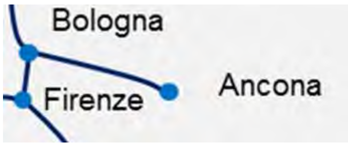


Figure 28: Map of S32 and N21

Road freight and passenger data, covering the market section S32 from Bologna to Ancona, were retrieved by TENtec (2014).

Bologna - Ancona	cars / day
2010	18.858.311
2030	21.890.750
AAGR (lin.)	5.8 %
	trucks / day
2010	5.980.981
2030	6.942.500
AAGR (lin.)	5.8 %

Remark: AADT figures are calculated as average of various counting stations on the road market section

Table 102: Road traffic forecast S32

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	44.103
AAGR (lin.)	/

Table 103: Rail traffic forecast for S32

Regarding this section, data for the Ancona seaport was delivered by Intermodadria (2014). Following table shows the forecasted container development.

	TEU / year
2011	126.000
2020	308.000
2030	385.000
AAGR (lin.)	10.8 %

Table 104: Forecast for the maritime port Ancona N21

Intermodadria (2014) also delivered forecast data regarding the Roll-on/Roll-off traffic for the Ancona seaport.

	low scenario (tons / year)	high scenario (tons / year)
2013	2.050.561	2.050.561
2020	2.420.875	2.734.933
2030	3.068.824	4.126.900
AAGR (lin.)	2.9 %	6.0 %

Table 105: Forecast for the maritime port Ancona N21

However, Interporto Marche Spa kindly provided a preliminary forecast regarding the RRT by e-mail.

	trains / year	TEU / year	tons / year
2014	150	5.400	120.000
2030	1.600	58.180	1.280.000
AAGR (lin.)	60.4 %	61.1 %	60.4 %

Table 106: RRT forecast for N21

S33 Bologna - Firenze including N22 Verona and N23 Firenze

Figure 29: Map of S33 and N23

Road freight and passenger traffic, covering the market section S33 between Bologna and Firenze was retrieved via TENtec (2014).

Bologna - Firenze	cars / day
2010	17.451.661
2030	20.257.750
AAGR (lin.)	5.8 %
	trucks / day
2010	6.407.123
2030	7.437.000
AAGR (lin.)	5.8 %

Remark: AADT figures are calculated as average of various counting stations on the road market section

Table 107: Road traffic forecast S33

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	89.875
AAGR (lin.)	/

Table 108: Rail traffic forecast for S33

RFI provided volume forecasts for the RRT Verona for the year 2030 by e-mail.

	tons / year
2014	7.011.440.
2030	9.034.713
AAGR (lin.)	1.8 %

Table 109: Forecast for RRT Verona (Quadrante Europa, Terminali Italia) N22

No data available for the RRT in Firenze.

S34 Firenze - Livorno including N24 Livorno

Figure 30: Map of S34 and N24

Road freight and passenger traffic, covering the market section S34 between Firenze and Livorno was retrieved via TENtec (2014).

Firenze - Livorno	cars / day
2010	15.265.505
2030	17.720.000
AAGR (lin.)	5.8 %
	trucks / day
2010	3.104.349
2030	3.603.000
AAGR (lin.)	5.8 %

Table 110: Road traffic forecast S34

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	36.184
AAGR (lin.)	/

Table 111: Rail traffic forecast for S34

Regarding Livorno, there was data available for the seaport. Autorita Portuale Livorno (2014) / European Commission (RACCORDO 2012) delivered the following figures:

	total throughput in tons / year	general cargo in tons / year	of which TEU / year	bulk in tons / year	passengers / year
2012	27.95 m	18.83 m	559.180	9.12 m	2.81 m
2030	/	app. 46	1.801.789	/	/
AAGR (lin.)	/	/	13.1 %	/	/

Table 112: Maritime forecast N24

S35 Livorno – La Spezia including N25 La Spezia

Figure 31: Map of S35 and N25

Road freight and passenger data, covering the market section S35 between Livorno and La Spezia were again retrieved via TENtec (2014).

Livorno – La Spezia	cars / day
2010	12.472.789
2030	17.740.354
AAGR (lin.)	7.1 %
	trucks / day
2010	3.252.714
2030	3.775.000
AAGR (lin.)	5.8 %

Table 113: Road traffic forecast S35

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	36.184
AAGR (lin.)	/

Table 114: Rail traffic forecast for S35

Again, available data for the node of La Spezia is limited to the seaport. The Port of La Spezia (2014) sent via e-mail forecast data for TEU in 2030:

	TEU / year
2013	1.30 m
2030	2.65 m
AAGR (lin.)	6.1 %

Table 115: Forecast for the maritime port La Spezia N25

S36 Firenze - Roma including N26 Roma

Figure 32: Map of S36 and N26

Road freight and passenger data, covering the market section S36 between Firenze and Roma were retrieved via TENtec (2014).

Firenze - Roma	cars / day
2010	26.311.170
2030	38.100.966
AAGR (lin.)	7.2 %
	trucks / day
2010	4.205.324
2030	5.158.498
AAGR (lin.)	6.1 %

Remark: AADT figures are calculated as average of various counting stations on the road market section

Table 116: Road traffic forecast S36

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	94.689
AAGR (lin.)	/

Table 117: Rail traffic forecast for S36

The forecast data for the Roma Fiumicino airport was sent via e-mail by the Italian Civil Aviation Authority (ENAC). Recent data for 2013 to calculate the linear growth rates could be found in the annual report of the airport. Freight data for 2013 was also delivered by ENAC.

	passengers / year	tons / year
2013	41.0 m	141.911
2030	67.5 m	237.258
AAGR (lin.)	3.8 %	4.0 %

Table 118: Airport forecast N26

Data for road traffic was delivered by e-mail from ANAS (2014). There is just data around the city of Roma available. The following table shows truck and car traffic from the A1 motorway (Roma to Firenze) to A24 motorway (Roma/L'Aquila).

Roma (A1Dir / A90) – Roma (A24)	trucks / year
2013	3.722.708
2030	4.991.175
AAGR (lin.)	2.0 %
	cars / year
2013	56.684.484
2030	82.765.929
AAGR (lin.)	2.7 %

Table 119: Road traffic forecast S36

RFI provided RRT volume forecasts for the year 2030 via e-mail:

	tons / year
2014	711.328
2030	1.151.579
AAGR (lin.)	3.9 %

Table 120: Forecast for RRT Roma (Pomezia) N26

S37 Roma - Napoli including N27 Napoli

Figure 33: Map of S37 and N27

Road freight and passenger data, covering the market section S37 between Roma and Napoli were retrieved via TENtec (2014).

Roma - Napoli	cars / day
2010	20.363.466
2030	23.637.833
AAGR (lin.)	5.8 %
	trucks / day
2010	4.580.925
2030	5.317.000
AAGR (lin.)	5.8 %

Remark: AADT figures are calculated as average of various counting stations on the road market section

Table 121: Road traffic forecast S37

Furthermore and regarding road traffic, data around the city of Roma is available. A24 is the motorway from Roma to L'Aquila, A1 in this case the motorway from Roma to Napoli. A91 is the motorway to the airport of Roma and A90 describes the large ring-road connection around Roma. Following data was sent by e-mail from ANAS (2014).

Roma (A1 / A90) – Roma (A24)	trucks / year
2013	2.528.319
2030	3.389.812
AAGR (lin.)	2.0 %
Roma (A1 / A90) – Roma (A90 / A91)	
2013	3.975.094
2030	5.329.559
AAGR (lin.)	2.0 %
Roma (A1 / A90) – Roma (A24)	cars / year
2013	57.322.062
2030	83.696.867
AAGR (lin.)	2.7 %
Roma (A1 / A90) – Roma (A90 / A91)	
2013	89.482.105
2030	86.850.780
AAGR (lin.)	-0.2 %

Table 122: Road traffic forecast S37

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	63.149
AAGR (lin.)	/

Table 123: Rail traffic forecast for S37

The seaport of Napoli was surveyed in a study by the Port of Napoli from 2005, considering the construction of the Levante Dock.

	TEU / year
2004	450.000
2020	1.4 m
AAGR (lin.)	13.2 %

Table 124: Maritime freight forecast for N27

The forecast data for the Napoli airport was once again provided via e-mail by the Italian Civil Aviation Authority (ENAC). Recent data for 2013 to calculate the linear growth rates until 2030 were retrieved in the annual report of the airport. Freight data for 2013 was also delivered by ENAC.

	passengers / year	tons / year
2013	5.4 m	7.514
2030	6.5 m	8.000
AAGR (lin.)	1.2 %	0.4 %

Table 125: Airport forecast for N27

RFI provided RRT volume forecasts for the year 2030 via e-mail:

	tons / year
2014	118.000
2030	159.000
AAGR (lin.)	2.2 %

Table 126: Forecast for RRT Napoli (Maddaloni Marcianise (excl. RRT Nola)) N27

S38 Napoli – Bari including N28 Bari

Figure 34: Map of S38 and N28

Road freight and passenger traffic data, covering the market section S38 between Napoli and Bari was retrieved via TENtec (2014).

Napoli - Bari	cars / day
2010	6.642.251
2030	7.710.000
AAGR (lin.)	5.8 %
	trucks / day
2010	1.577.713
2030	1.831.000
AAGR (lin.)	5.8 %

Remark: AADT figures are calculated as average of various counting stations on the road market section

Table 127: Road traffic forecast S38

RFI provided rail traffic development for 2030 via e-mail.

	trains / year
2013	/
2030	18.095
AAGR (lin.)	/

Table 128: Rail traffic forecast for S38

RFI provided RRT volume forecasts for the year 2030 via e-mail.

	tons / year
2013	587.621
2030	757.189
AAGR (lin.)	1.8 %

Table 129: Forecast for RRT Bari (Interporto) N28

There was no future data available for the seaport and the RRT of Bari.

S39 Bari – Taranto including N29 Taranto

Figure 35: Map of S39 and N29

Road freight and passenger traffic data, covering the market section S39 between Bari and Taranto was retrieved via TENtec (2014).

Bari - Taranto	cars / day
2010	2.939.163
2030	3.411.000
AAGR (lin.)	5.8 %
	trucks / day
2010	537.982
2030	624.000
AAGR (lin.)	5.8 %

Table 130: Road traffic forecast S39

RFI provided rail traffic development for 2030 by e-mail.

	trains / year
2013	/
2030	18.095
AAGR (lin.)	/

Table 131: Rail traffic forecast for S39

There was no future data available for the seaport of Taranto (N29).

S40 Napoli – Gioia Tauro including N30 Gioia Tauro

Figure 36: Map of S40 and N30

RFI provided rail traffic development for 2030 by e-mail.

	trains / year
2013	/
2030	22.054
AAGR (lin.)	/

Table 132: Rail traffic forecast for S40

The following data regarding road traffic forecast for this section was sent via e-mail by ANAS (2014). There are data available for the following four "subsections":

Salerno - Sicignano	**trucks / year**
2013	613.626
2030	795.683
AAGR (lin.)	1.7 %
Firmo - Sicignano	
2013	2.737.704
2030	3.549.956
AAGR (lin.)	1.7 %
Firmo – Sant Eufernia Lamezia	
2013	1.009.785
2030	1.309.379
AAGR (lin.)	1.7 %
Sant Eufernia Lamezia - Cannitello	
2013	1.828.798
2030	2.371.385
AAGR (lin.)	1.7 %

Table 133: Road traffic forecast S40

Salerno - Sicignano	cars / year
2013	3.260.956
2030	4.950.813
AAGR (lin.)	3.0 %
Firmo - Sicignano	
2013	17.033.423
2030	25.860.298
AAGR (lin.)	3.0 %
Firmo – Sant Eufernia Lamezia	
2013	4.363.156
2030	6.624.183
AAGR (lin.)	3.0 %
Sant Eufernia Lamezia - Cannitello	
2013	8.737.553
2030	13.265.433
AAGR (lin.)	3.0 %

Table 134: Road traffic forecast S40

There was no future data available for the seaport of Gioia Tauro (N30) as well as future railway traffic load for this market section S41.

S41 Gioia Tauro - Palermo including N31 Palermo

Figure 37: Map of S41 and N31

For the market section from Gioia Tauro to Palermo, road traffic forecast data are available only for two smaller sections. The following data was sent by e-mail by ANAS (2014).

Caltanissetta - Buonfornello	trucks / year
2013	1.246.083
2030	1.615.785
AAGR (lin.)	1.7 %
Buonfornello – Palermo Est	
2013	2.371.341
2030	3.074.896
AAGR (lin.)	1.7 %
Caltanissetta - Buonfornello	**cars / year**
2013	3.230.006
2030	4.903.825
AAGR (lin.)	3.0 %
Buonfornello – Palermo Est	
2013	15.223.642
2030	23.112.671
AAGR (lin.)	3.0 %

Table 135: Road traffic forecast S 41

RFI provided rail traffic development for 2030 via e-mail:

	trains / year
2013	/
2030	18.100
AAGR (lin.)	/

Table 136: Rail traffic forecast for S41

For the seaport of Palermo, several forecast data was provided via e-mail by the Port of Palermo (2014):

	ships / year	TEU / year	tons / year
2013	7.200	20.600	6.1 m
2030	10.000	50.000	10.0 m
AAGR (lin.)	2.3 %	8.4 %	3.8 %

Table 137: Maritime freight forecast for N31

The forecast data for the Napoli airport was once again sent by the Italian Civil Aviation Authority (ENAC) by e-mail. Recent data for 2013 to calculate the linear growth rates were derived from the annual report of the airport. Freight data for 2013 was also delivered by ENAC:

	passengers / year	tons / year
2013	4.3 m	1.533
2030	8.5 m	3.200
AAGR (lin.)	5.7 %	6.4 %

Table 138: Airport forecast N31

S42 Gioia Tauro -Augusta including N32 Augusta

Figure 38: Map of S42 and N32

RFI provided rail traffic development for 2030 via e-mail.

	trains / year
2013	/
2030	13.938
AAGR (lin.)	/

Table 139: Rail traffic forecast for S42

ANAS (2014) delivered data regarding road traffic in the section from Gioia Tauro to Augusta. The data shown in the following two tables represents specific small parts of the whole section.

Caltanisseta – Catania South	trucks / year
2013	1.380.117
2030	1.789.585
AAGR (lin.)	1.7 %
Catania South - Catania	
2013	3.401.511
2030	4.410.709
AAGR (lin.)	1.7 %
Catania South – Catania (J.SS114/RA15)	
2013	3.803.742
2030	4.932.279
AAGR (lin.)	1.7 %

Table 140: Road traffic forecast S42

Caltanisseta – Catania South	cars per year
2013	6.178.309
2030	9.379.964
AAGR (lin.)	3.0 %
Catania South - Catania	
2013	26.057.405
2030	39.560.590
AAGR (lin.)	3.0 %
Catania South – Catania (J.SS114/RA15)	
2013	18.017.493
2030	27.354.321
AAGR (lin.)	3.0 %

Table 141: Road traffic forecast S42

There was no future data available for the seaport of Augusta.

S43 Valletta – Marsaxlokk including N33 Valletta and N34 Marsaxlokk

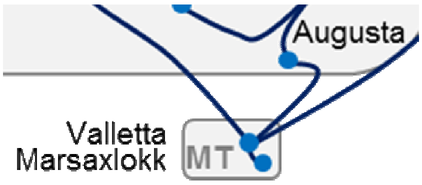


Figure 39: Map of S43, N33 and N34

The Maltese transport administration (Transport Malta) provided forecast information concerning road traffic loads as well as seaport and airport volumes.

Valletta - Marsaxlokk	vehicles / day
2013	40.000
2030	47.000
AAGR (lin.)	1.0 %

Table 142: Road traffic forecast S43

	tons / year
2013	1.9 m
2030	< 15 m
AAGR (lin.)	/

Table 143: Maritime freight forecast N33

Marsaxlokk	TEU / year
2013	2.75 m
2030	4.0 m
AAGR (lin.)	2.7 %

Table 144: Maritime freight forecast N34

	passengers / year
2013	4.0 m
2030	5 – 10 m
AAGR (lin.)	/

Table 145: Airport forecast N33

List of references for MTMS

- ANAS (2014): Data delivery by e-mail.
- Airport Research Center GmbH (2009): Prognose des Verkehrsaufkommens und Erstellung des Datenerfassungssystems für die Flugbewegungen der sechs verkehrsreichsten Monate für das Jahr 2020 während der Tag- und Nachtstunden.
- Autobahndirektion Südbayern (2014): http://www.abdsb.bayern.de/imperia/md/content/stbv/abdsb/projekte/planung/a99_acht_streifiger_ausbau_ak_nord_as_haar_.pdf.
- Autorità Portuale Livorno (2012): Piano opertivo triennale 2013/2015.
- Autorita Portuale di Livorna (2014): Market study – Port of Livorno traffic flows and estimates.
- Berlin.de - Das offizielle Hauptstadtportal (2014): Prognose: 2035 rund 42,5 Millionen Passagiere in Schönefeld, http://www.berlin.de/aktuelles/berlin/3105525-958092-prognose2035-rund-425-millionen-passagie.html.
- bremenports (2014): Hafenspiegel für die bremischen Häfen 2013, http://www.bremenports.de/standort/statistiken/bremische-haefen-in-zahlen.
- Bundesamt für Straßenbau (2011): Manuelle Straßenverkehrszählung 2010.
- Bundesministerium für Verkehr, Innovation und Technologie – BMVIT (2009): Verkehrsprognose Österreich 2025+. http://www.bmvit.gv.at/verkehr/gesamt verkehr/verkehrsprognose_2025/index.html
- BVU Beratergruppe Verkehr + Umwelt & Intraplan Consult (2007): Prognose der deutschlandweiten Verkehrsverflechtungen 2025.
- BVU Beratergruppe Verkehr + Umwelt & Intraplan Consult (2010): Überprüfung des Bedarfsplans für die Bundesschienenwege.
- Copenhagen Airport (2014): CPH: More than 24 million travellers in 2013, a new record, http://www.cph.dk/en/about-cph/investor/traffic-statistics/cph-more-than-24-million-travellers-in-2013-a-new-record/.
- Danish Transport Authority (2012): Analysis of Padborg Intermodal Terminal – EWTC Task 4E Background Report.
- Danish Transport Authority (2013): Trafikplan for den statslige jernbane 2012-2027.
- Destatis (2012): Eisenbahnverkehr: Betriebsdaten des Schienenverkehrs.
- ENAC (2014): Data delivered by e-mail.
- ETIS Plus (2014): ETIS PLUS Database, http://www.etisplus.eu/default.aspx.
- European Commission (2012) TEN-T EA. Work Programmes 2007-2013. Application form for EU financial aid in the field of trans-European transport network. Part B.2. Rail Access from Coast to Corridor (RACCORDO).
- European Commission (2014a): Motorways of the Sea, http://ec.europa.eu/transport/modes/maritime/motorways_sea/index_en.htm

- European Commission (2014b): Priority Project 21, http://inea.ec.europa.eu/en/ten-t/ten-t_projects/30_priority_projects/priority_project_21/priority_project_21.htm
- European Commission (2014c): TENtec Information System. Private Portal. http://ec.europa.eu/transport/themes/infrastructure/tentec/index_en.htm
- Faber, Jasper; Nelissen, Dagmar; Koopman, Marnix (2013): Ökonomische Analyse der Erweiterung des Münchner Flughafens.
- Femern A/S (2003): Fehmarn Belt Forecast 2002.
- Femern A/S (2013): Traffic forecast for a Fehmarn Belt Fixed Link (Update to 2002 FTC forecast).
- Femern.com (2012): http://www.femern.com/home/economy/traffic-forecast
- Finavia (2013a): 2012 lentoliikennetilasto / air traffic statistics.
- Finavia (2013b): Finavia is starting a major development programme at Helsinki Airport.
- Finavia (2013c): Traffic statistics 2013, http://www.finavia.fi/en/finavia-corporation/statistics/statistics-2013/
- Finnish Rail Adminstration (2009): Tulevaisuuden henkilöliikennesevitys.
- Finnish Transport Agency (2014): Raraverkon tararaliikenne-ennuste 2035.
- HaCon Ingenieurgesellschaft mbH & KombiConsult GmbH (2012): Erstellung eines Entwicklungskonzeptes KV 2025 in Deutschland als Entscheidungshilfe für die Bewilligungsbehörden.
- Hanseatic Transport Consultancy/ RMCon (2013): Kapazitive Leistungsfähigkeit des Eisenbahnnetzes im Großraum Bremen.
- IBU-Øresund (2010) Delaktivitet 4 – Trafikanalyser for Øresundsregionen.
- iMONITRAF! (2012): Alpine Transit Traffic – Policy Scenarios 2020 (PRIMES Model BAU).
- Intermodadria (2014): Il Porto di Ancona. Nodo intermodale della rete adriatica. Analisi territoriale dei flussi merci Ro-Ro e containers. Terza versione, maggio 2014.
- Interporto Marche Spa (2014): Data related to core rail-road terminal "Interporto Marche".
- Intraplan Consult GmbH (2010): Luftverkehrsprognose 2020 für den Flughafen München.
- Intraplan Consult GmbH (2013): Traffic forecast for a Fehmarn Belt Fixed Link.
- IVV (2010): Überprüfung des Bedarfsplans der Bundesfernstraßen.
- Københavns Lufthavn (2014) Københavns Lufthavn skal kunne håndtere 40 mio. passagerer årligt, http://www.cph.dk/om-cph/presse/nyheder/expanding-cph/.
- Land Schleswig-Holstein (2012): Gutachterliche Vorarbeit zur Erstellung eines Norddeutschen Luftverkehrskonzeptes.
- Lian, Jon Inge (2009): The Importance of Oslo airport for Norway.
- Mantecchini, L. (2013): I Progretti Metropolitani – L'aeroporto.
- MWP GmbH, IHS and Uniconsult (2013): Verkehrsverflechtungsprognose 2030. Los 2 – Seeverkehrsprognose – Eckwerte der Hafenumschlagsprognose.

- Nein zur Flughafen Nordanbindung (2009): Prognose für die Anzahl der Originärpassagiere.
- Niedersächsische Landesbehörde für Straßenbau und Verkehr (2014): Sechsstreifiger Ausbau der Autobahn 7 vom Dreieck Salzgitter bis zum Dreieck Drammetal.
- ÖBB Infrastruktur AG (2011): ÖBB Zielnetz 2025+.
- ÖBB Infrastruktur AG (2014): Betriebsdaten (Bemessungsgrundlage von Infrastrukturanlagen) für die Brennerachse.
- Orestata (2014): Traffic across Øresund.
- Oslo Airport (2013): Traffic statistics for Oslo Airport - December 2013.
- Port of Helsinki (2012): Port of Helsinki Development Programme 2022.
- Port of La Spezia (2014): Container traffic Forecast La Spezia. Sent via e-mail.
- Port of Napoli (2005): The final budget 2004 and the three year operating plan 2005-2007.
- Port of Palermo (2014): Statistics sent via e-mail.
- Port of Trelleborg (2014) Data sent via e-mail.
- Port of Turku (2014): Statistics sent via e-mail.
- ProgTrans (2007): Aktualisierung der Personen- und Güterverkehrsprognose für den Brenner 2015 und 2025. Schlussbericht zur 2. Aktualisierung Phase II.
- ProgTrans (2012): World Transport Reports 2012 / 2013.
- Ramboll Finland (2014): Finish road traffic data 2012 and 2030.
- Ramboll Sweden (2014) Swedish rail and road traffic data for 2012 and 2030 (based on Trafikverket forecasts (2014)).
- Rete Ferroviaria Italiana (RFI) - Direzione Pianificazione Strategica (2014): Forecasts for the Italian rail traffic in 2030.
- Scandria (2012): The Scandinavian-Adriatic Corridor for Innovation and Growth.
- SSP Consult (2010): Neubau der A 39 Lüneburg – Wolfsburg mit nds. Teil der B 190n. Verkehrsuntersuchung – Schlussbericht.
- Staatsministerium für Wirtschaft, Arbeit und Verkehr (2012): Landverkehrsplan Sachsen 2025, http://www.smwa.sachsen.de/download/LVP_2025_Web.pdf.
- Swedavia (2014): Historical investment plan to ensure Swedish air travel connections.
- Swiftly Green: European project aiming to develop a toolbox for greening corridors. Information, reports and material are available on the official website: http://www.swiftlygreen.eu/en
- Swiss federal office of transport (2013): Alpinfo 2012.
- Trafikstyrelsen (2013): Trafikplan for den statslige jernbane 2012 - 2027.
- Trafikverket (2013a): Prognoser för arbetet med nationell transportplan 2014-2025 – Godstransporters utveckling fram till 2030.
- Trafikverket (2013b): Trafikprognos För Svenska Flygplatser 2030.
- Trafikverket (2014a): RAPPORT Prognos för godstransporter 2030. Trafikverkets basprognos 2014.

- Trafikverket (2014b): RAPPORT Prognos för personresor 2030. Trafikverkets basprognos 2014.
- Trafikverket (2014c): Underlagsrapport Disaggregering av prognos för godstransporter 2030 till Bansek, EVA och Sampers/Samkalk. Trafikverkets basprognos 2014.
- Transitects (2012): Transalpine Transport Architects - Sustainable shift of cargo transport into rail networks between Berlin/Brandenburg and Italy/Slovenia.
- Transport Malta (2014): Data sent via e-mail.
- Transport market study - Rail Freight Corridor 3 (RFC 3) (2014): Interim Results– Current market situation / Forecast & Outcome Interviews.

Annex 6:

Minutes of Meeting
of Corridor Forum Meetings

Contains:

- Minutes of Meeting of 2nd Corridor Forum Meeting
- Minutes of Meeting of 3rd Corridor Forum Meeting
- List of participants of 3rd Corridor Forum Meeting
- Minutes of Meeting of Working Group Ports
- Minutes of Meeting of Working Group Regions
- Minutes of Meeting of 4th Corridor Forum Meeting
- List of participants of 4th Corridor Forum Meeting

Second Corridor Forum Meeting

17th June 2014, Brussels (BE)

Minutes of Meeting

Participant List

Company/Organisation	Participants
Coordinator and EU Institutions	
European Coordinator	Pat Cox
EU Commission DG MOVE	Leo Huberts, Lia Potec, Gudrun Schulze, Gerhard Troche
INEA	Sofia Papantoniadou, Elisabeth Sandfuchs.
European Investment Bank	Claus Eberhard
Member States (MS)	
Austria (BMVIT)	Thomas Spiegel
Denmark (Ministry for Transport)	Thomas Rousing-Schmidt, Kasper Granhøi Hansen
Finland (Transport Agency)	Juhani Tervala
Germany (BMVI)	Reiner Nagelkrämer
Italy (Ministry of Infrastructure and Transport)	Roberto Ferrazza, Federica Polce
Malta (Ministry for Transport)	Stephen Camilleri
Sweden (Ministry of Enterprise, Energy and Communications)	Marina Fransson, Emil Fastén
Norway (Ministry of Transport and Communications)	Torbjørn Tråholt
Rail Infrastructure Managers	
ÖBB Infrastruktur AG	Diana Gasanova
Banedanmark	Martin Overgaard Jensen
Finnish Transport Agency	Markku Nummelin
DB Netz AG	Sophie Ismaier, Thomas Schneider
RFI S.p.a.	Nannina Ruiu
Jernbaneverket	
Trafikverket	Tommy Jonsson

Company/Organisation	Participants
Rail Freight Corridor 3 and border crossing projects	
Rail Freight Corridor 3	Hans Christian Wolter
BBT SE	Konrad Bergmeister, Raffaele Zurlo
Femern Bælt A/S	Claus Henrik Dynesen
Seaports	
Copenhagen Malmö Port AB	Gert Nørgaard
Port of HaminaKotka	
Port of Helsinki	Eve Tuomola
Port of Naantali	
Port of Turku	Marita Anstead
Hafen Bremen (free Hanseatic City of Bremen)	Torsten Raff
Hamburg Port Authority AöR	Stephan Küster
Hafen-Entwicklungsgesellschaft Rostock mbH	Thomas Biebig
Hafen Lübeck (Baltic Rail Gate)	Antje Falk
Ancona Port Authority	Guido Vettorel
Augusta Port Authority	
Levante Port Authority (Bari)	
Gioia Port Authority	
La Spezia Port Authority	Federica Montaresi
Livorno Port Authority	
Napoli Port Authority	
Palermo Port Authority	
Taranto Port Authority	Francesco Benincasa, Noemi Frascella
Malta Freeport Corporation Ltd.	Mark Vella
Valletta Cruise Port	
Oslo Havn KF	
Göteborgs Hamn AB	Elias Wästberg
Stockholms Hamnar AB	Henrik Widerståhl
Trelleborgs Hamn AB	Tommy Halen

Company/Organisation	Participants
Contractor Consortium (CC)	
KombiConsult	Klaus-Uwe Sondermann, Helmut Adelsberger
Uniconsult	Hartmut Beyer
Hacon	Marian Gaidzik
Prognos	Tobias Dennisen

Agenda

1 Opening at 10:00 (Cox)
2 Tour de table (All)
3 Presentation of Corridor outline and 2nd progress report (Sondermann), feedback from participants
- Characteristics of the Corridor (Ports: Beyer, Rail: Sondermann)
- Objectives of the Corridor (Sondermann)
- Multimodal transport market study (Dennisen)

4 Presentation of RFC 3 (Wolter)
5 Presentation of Brenner base tunnel (Bergmeister, Zurlo)
6 Presentation of Fehmarn Belt fixed link (Dynesen)
7 Further steps and conclusions (Cox)

Venue of the Meeting:

1040 Brussels, Rue de la Loi 200, Berlaymont Building, Room S3

No	Topic	Responsible

1. Opening

In his opening speech, Pat Cox started with an overview of the tasks of the Forum as a consultation space, but not a decision-making body, with the role of the stakeholders and with a brief outlook to the 3rd and 4th Corridor Forum meetings. He pointed to the tight timeline, which entails that it will not be possible to invite all stakeholders already to the 2014 meetings. However, the Corridor Forum will continue in 2015 and 2016. This year, the focus will be set on railways, the main border crossing projects (Fehmarn Belt fixed link and Brenner base tunnel) and the role of the seaports and regions. It would further not be possible to discuss everything in depth in the Corridor Forum meetings, but written comments would be considered into the work plan and the final report.

He pointed to the fact that the Corridor Forum's task is to elaborate a Work Plan. However, this Work Plan is not the same as the Call for Proposals. The aim is not to collect wish-lists. We would need much realism. E.g. the ports should explain what they would be going to do, with possible support from EU, to contribute to the objectives of the Corridor as enhancing efficiency and reducing negative environmental impacts and CO_2 emissions. Generally, the work plan to be elaborated by end of this year, would be based on a comparison of the existing quality of the Corridor with the requirements as specified in the TEN-T Regulation 1315/2013.

Further, he spoke about the Connecting Europe Facility (CEF): Some 26 B€ (of which about 11 B€ earmarked for cohesion countries) are available for the TEN-T Core Network in the current period 2014 – 2020, which is about three times of the previous TEN-T budget. Nevertheless, this is only a small part of the 250 B€ needed for implementing the Core Network, so that a pipeline of projects of highest European added value, but in line with MS' investment plans, will be selected for funding. This means that the focus would be on cross-border projects, investments to enhance multimodality, interoperability and technical innovation as well as measures to reduce CO_2 emissions. For other improvements of infrastructure, the CEF foresees supporting innovative financial instruments such as PPP and project bonds, which would allow investments without charging public budgets.

The first call for proposals is scheduled for September this year, with the deadline in February 2015. This call will be the biggest one ever opened, covering a total of about 12 B€, of which about 8,5 B€ are foreseen for the Core Network Corridors. Every two years an evaluation is foreseen, to see if money would have been spent as planned, else it would be used for other TEN-T projects, according to the "use it or lose it" principle.

Finally, Pat Cox reminded the participants that we were at the beginning, not at the end of a process.

2. Tour de Table

With view to the tight agenda, in the following tour de table participants introduced themselves with their names, the organisations they represented and their functions within them.

Sondermann collected the business cards of the participants for updating the attendance list and circulation of relevant documents after the meeting.

3. Presentation of Corridor outline and 2nd progress report

Sondermann presented the corridor outline on the basis of the progress report that was distributed to invited persons before the meeting. The corridor is defined in the Regulations 1315 and 1316/2013.

The Core Nodes do not only include the cities, but also their airports, sea and inland ports and rail-road terminals, with their corresponding last mile connections. Further, some sections have been identified which are functionally "associated" with ScanMed, although according to Annex 1 of Regulation 1316/2013 not part of it, e.g. the freight lines Würzburg – Treuchtlingen – Ingolstadt and Nürnberg – Treuchtlingen – Augsburg – München or some (potential) Motorways of the Sea (MoS). The study will examine whether the existing Regulations include sufficient flexibility to cope with these facts, or if the Regulations would have to be modified at a later stage.

The detailed characteristics are to be collected by the Contractor consortium into the TENtec information system of the European Commission.

While it had been possible to achieve a 100 % filling rate for infrastructure data (technical parameters), this is not yet the case for traffic data (traffic flows) on the same level of detail. Sondermann asked for support in data gathering, as the basis for developing the draft work plan.

Comparing the Core Network and the Rail Freight Corridor the following conclusion was drawn: Whereas CNC's are oriented on long-term multimodal infrastructure development, considering also operational aspects, the RFC's focus on short- and medium term cross-border freight railway operation. RFC 3, in particular, roughly covers the Stockholm/Oslo – Palermo section of ScanMed corridor. As regards the integration of RFC 3 into the framework of the ScanMed corridor, Sondermann made reference to the differential timelines, in particular the corresponding transport market studies.

Sondermann pointed to the characteristics and target parameters of core network elements, which had been gathered, in line with the specification of Regulation 1315/2013, e.g. for railways: gauge, electrification, axle load, line speed, train length, ERTMS. In the case of ScanMed, most sections fulfil all of these requirements already now, whereas the deficits are clearly marked.

Spiegel (AT) reminded of overall goals, which are of special importance for Alpine regions, such as reduction of noise and NOx emissions.

Ismaier (DB Netz) informed that the final report of the RFC 3 transport market study would be available in August 2014.

Ports

In the following presentation of the ports' section of the progress report, Beyer showed an assessment of all ScanMed seaports with regards to their compliance with the criteria specified in Regulation 1315/2013. Based on Articles 21, 22 and 23, twelve parameters per port had been identified. The survey had shown that all ports are connected to road and all except those in Malta to rail, but not with sufficient capacities in all cases. In the Baltic Sea, some additional icebreaking capacities might be needed. As regards equipment for LNG bunkering and onshore power supply (OPS), there is a general tendency that Baltic Sea and North Sea ports are more advanced. The degree of accomplishment with these criteria was indicated by a traffic light colour code.

Upon this presentation, Pat Cox stated that the Contractor Consortium is working on giving an accurate picture of where we are standing and asked for comments of the individual ports for their plans to shift from red or amber into green.

Norgaard (CMP) stated that they are considering the introduction of LNG but that no target date has yet been set.

Montaresi (La Spezia) declared that they were working on a logistic concept, integrating maritime and land transport in the framework of the WiderMOS project.

Frascella (Taranto) mentioned their efforts to diversify services, with a focus on RoRo and RoPax (2015) and MoS (Dec. 2014).

Anstead (Turku) reported on "Bridging Northern Europe", a joint project of the Finnish ports along the Corridor. She will provide the contractor with detailed information as input to the 3rd progress report.

Tervala (FI) added that Finland would bring in one common proposal how to connect with this Corridor.

Vettorel (Ancona) said that there is no indication on alternative clean fuels at national level.

Halen (Trelleborg) asked for clarification of "LNG bunkering facilities", in particular if mobile LNG supply, shared between neighbouring ports, could also be included.

Raff (Bremen) stresses that Bremerhaven and the important link Bremerhaven – Bremen are missing although they are of great importance for the freight flows on the corridor. It was answered that the SanMed corridor starts in "Bremen", while other corridors are starting in

Bremerhaven, so that these ports, links and flows are taken into account.

Biebig (Rostock) emphasized the importance of the railway connection to the rail freight, RoRo and the passenger as well as cruise ferry services reached via Rostock.

Sondermann stressed the importance of the ports in this context. He made reference to the cross-border cooperation of the ports of Copenhagen and Malmö as a good practice example.

Rail

Sondermann continued with a presentation of the analysis carried out for the rail part of the Corridor: Parameters as gauge, electrification and axle load are mostly fulfilled along the Corridor.

Finland with its isolated network has a different gauge, some sections like Copenhagen – Ringsted in Denmark, Hof – Regensburg in Germany and some minor sections in Italy are not electrified.

The line speed of 100 km/h is generally met, except on the existing Brenner railway, which however will be complemented by the base tunnel and is not part of the CNC therefore.

Regarding loading gauges (for intermodal transport) and maximum permitted (freight) train lengths, there are substantial deficiencies, mainly south of Bologna. This might be one of the reasons why there is very little freight transport on rail in that part of the Corridor, yet.

As regards electric power supply, there are different systems in operation. However, with corresponding locomotives, these differences can thus be overcome.

From today’s expectations, there will remain a patchwork of ERTMS implementation even beyond 2030. In this context, the European coordinator for ERTMS, who was provided with the analysis, will be challenged.

The rail infrastructure managers were asked to comment the findings and the following remarks were provided:

Nummelin (Finnish Railway Agency) mentioned bottlenecks on the single track section Helsinki – Turku and in the Helsinki area.

Ruiu (RFI) announced the coming communication of their plans.

Overgaard Jensen (Banedanmark) pointed to “low hanging fruits” that could be realised by operational improvements together with railway undertakings. Longer trains, 835 m in the case of DK/DE border crossing traffic would be an efficient way for increasing the capacity and efficiency.

Schneider (DB Netz) explained that bottlenecks shown in the corresponding slide (#230) of the progress report would reflect the status 2030, not the current one. DB Netz will give additional comments on situation and timeline in writing.

Gasanova (ÖBB) emphasized that the Austrian section is well advanced, according to schedule. Sondermann explained in addition that a Round Table meeting was organised between the infrastructure manager, the railway undertakings, locomotive manufacturers, leasing companies and regional and federal authorities to agree upon detailed implementation steps. With respect to ERTMS, and the importance of equipping the rolling stock simultaneously with the infrastructure.

Bergmeister (BBT SE) suggested to use the “bridging period” until the big projects would be operative, for enhancing today’s rail operations. This should be studied now, for implementation in time.

Spiegel (AT) added the need to reduce environmental impacts.

Cox came back to the question concerning the availability of rail data. He showed understanding for the sensibility of commercial data and suggested to find a way to get at least aggregated data, in line with the scale of the Corridor. This should be discussed bilaterally with the corresponding rail infrastructure managers, DB Netz in particular.

He referred to environmental issues as one of the main reasons for EU to co-finance projects and pleaded for the development of “accompanying measures”.

He also supported the view to not to forget to pick the low hanging fruit, whilst preparing the big infrastructure projects.

Multimodal Transport Market Study

In the following, Dennisen presented the current status of the multimodal transport market study. The goal would be establishing a picture of the traffic demand, in comparison with infrastructure supply, with time horizon 2030.

He reported that within the choice of a (A) model based and (B) study based approach, the option (B) had been chosen. A model based approach would require a coherent data set and extensive calibration, leading to results which may contradict to national survey. The study based approach avoids these disadvantages, however studies as far as available would need some harmonisation, too.

Dennisen gave a comprehensive overview of studies, covering all modes of transport, used for this approach, and presented preliminary results. Final conclusions are foreseen to be provided with the 3rd progress report.

Closing the morning session, Pat Cox invited all participants, invited and present, to contribute to the success of the work plan by providing missing data and additional information to the Contractor Consortium.

4. Presentation of RFC 3 – now named "RFC ScanMed" (see PPT attached)

After the lunch break, Wolter presented RFC 3. With its roots in 2009, when ERTMS Corridor B was established, RFC 3 was installed in 2012, on the basis of the Regulation 913/2010.

The short term goal is efficient infrastructure use, in particular for border crossing freight traffic, medium to long term goal is a better tuning of supply and demand, according to the transport market study, which is being finalised.

Wolter explained the governance structure of RFC ScanMed, with an executive and a management board on top and a one-stop shop (OSS) for daily operation of replying to train path requests.

5. Presentation of Brenner base tunnel (see PPT attached & www.bbt-se.com)

The common presentation of Zurlo and Bergmeister started with a short film on the project, showing its technical layout, the main steps of implementation and its regional and European benefits.

The details are also included in a presentation.

As a conclusion, Bergmeister made reference to Brenner Corridor Platform, a group of stakeholders accompanying the former Priority Project 1 , and he suggested that there should be a stronger link with real project implementation, maybe by installing at least one operational manager for the platform.

Cox emphasized the importance of a continuous communication with regional governments, municipalities and the citizens, which he did for the Brenner corridor.

6. Presentation of Fehmarn Belt fixed link (see PPT attached & www.femern.com)

Dynesen explained the main parameters of the submerged tunnel crossing the 19 km broad Fehmarn Belt. Containing two carriageways for cars and trucks and a double track railway line, this link will shortcut the distance Copenhagen – Hamburg by some 160 km compared to today's routing. The travelling time will shorten from 3½ hours using the existing ferry connection Rødby – Puttgarden to 2½ hours using Fehmarnbelt fixed link. A total of 78 freight trains, 40 passenger trains and 10.000 – 12.000 road vehicles per day are expected.

No	Topic	Responsible
	Approval of the project, both on Danish and on German side, is planned in spring 2015. Construction will start in 2015 and take 6½ years with an envisaged opening in 2021.	
	The details of the presentation held by Dynesen can be seen there.	
7.	**Further steps and conclusions**	
	Pat Cox reiterated his view on the current process:	
	Participants were invited to send their detailed clarifications to the Contractor Consortium in writing. According to the overall projects time schedule, the deadline to receive such information to be used for the 3rd progress report is the **8th of July 2014**. The e-mail addresses are usondermann@kombiconsult.com and Leo.HUBERTS@ec.europa.eu.	All 08.07.2014
	In September already, there will be the penultimate draft, in December the final draft of the work plan. We have to implement what is stated in Regulations 1315/2013 and 1316/2013, with focus on bottlenecks, multimodality and interoperability, i.e. the projects with the highest EU added value.	
	It is important to also pick the low hanging fruits, to realise quick and functional improvements on the corridor.	
	Regarding our work, we would be looking forward to the coming results from RFC ScanMed and try to find a way to get data, substantially more and better than zero.	
	Pat Cox also reported from a seminar with the Coordinators a week earlier, where they discussed how to get all players involved in the process. One way could be to install working groups of ports and regions, still this year. The idea behind would be relieving the work of the Fora. Ports and regions would elaborate their common position, which should be reported to the Fora by one person only. In such way we could combine inclusiveness with efficiency.	
	The 3rd Corridor Forum meeting is scheduled for 30th of September 2014 in accordance with the other Corridor's Forum meetings. Invitations will be send out by the Contractor Consortium in due time.	Contractor Consortium 31.07.2014
	At the end of the meeting, Pat Cox thanked all participants and informed that a follow-up meeting restricted to EC, Member States and Contractor Consortium would follow.	
	Helmut Adelsberger & Uwe Sondermann in accordance with Leo Huberts	

Third Corridor Forum Meeting

2nd October 2014, 10:00-15:00, Brussels (BE)

Minutes of Meeting

Participant List

Company/Organisation	Participants
See separate Annex	

Agenda

1 Opening, welcome and adoption of the agenda (Pat Cox)

2 CEF and Call for proposals (postponed => agenda point 6)

3 Tour de table (all)

4 Presentation of 3rd Progress Report (Sondermann),
including presentations regarding individual chapters such as modes of transport
- multimodal transport market study (Kienzler)
- ports (Beyer, followed by Küster reporting from working group on ports)
- airports (Vaghi)
- rail-road terminals (Sondermann)
- road (McDaniel)
- rail (Sondermann)

Feedback from participant was collected and discussed immediately to each presentation

5 Report from working group regions (Erik Ørskov, South Denmark)

6 Presentation on CEF (Lia Potec, MOVE B.4)

7 Presentation on financial instruments (Klaus Eberhard, EIB)

8 Further steps and conclusions (Pat Cox)

Venue of the Meeting:

1040 Brussels, Rue Froissart 36, Centre Albert Borschette, Room CCAB 2D

No	Topic	Responsible

1 Opening, welcome and adoption of the agenda

The European Coordinator Pat Cox chaired the meeting. He welcomed the participants and noted that there was a broad representation of the stakeholders. He asked the stakeholders to provide their concrete comments during this meeting or later, in writing. In this respect he made a specific reference to the tight time schedule of the coming work; only comments and recommendations which would be received by the Consortium by October 17th at the latest, will be taken into account for the Work Plan.

The final draft of the Work Plan will be presented at the 4th Corridor Forum on November 20th [date provided by the Commission after the meeting]. On this base the Consortium will elaborate and the European Coordinator will present the Work Plan, which will comprise a Project List, an Implementation Plan and an Investment Plan.

3 Tour de table (all)

Some 100 participants introduced themselves briefly with names and functions. The list of participants is enclosed as annex.

4 Presentation of the 3rd Progress Report

Mr. Sondermann first gave an overview of the structure of the Progress Report, which comprises:

- the Consortium and the distribution of tasks and responsibilities,
- an outline and the key data of the Corridor,
- compliance studies on the individual modes of transport in the Corridor,
- Rail Freight Corridor 3 and its relation to ScanMed Corridor,
- the results of the multimodal transport market study and
- the preparation of the Work Plan.

Mr. Kienzler (PROGNOS) presented the results of the multimodal transport market study, which delivers the quantitative figures (horizon 2030) to underline the Work Plan. A study based approach, based on more than 120 studies, had been chosen to make use of agreed national forecasts.

The network load for the individual modes of transport shows a high concentration of traffic flows between Scandinavia and Germany and even more between Germany and Italy (via Brenner), in particular on rail. The study showed that Germany is the turntable for all international traffic on the corridor.

A challenge for the study was that no harmonized and adopted long-term transport forecast exists at national level in Italy.
The discussion showed that this can be explained by a different approach of Italy in the field of infrastructure planning, implying a lack of forecast studies and data from Italy, while present data would be available. Pat Cox suggested to Italy to consider submitting a proposal for a forecast study under the current CEF call for proposals.

Mr. Beyer (UNICONSULT) presented the results of a compliance study on the ports. All analysed ports dispose of hinterland connections on road and, except in Malta, on rail, and also of the required I&C technology such as VTMIS. However, with respect to LNG bunkering facilities and offshore power supply (OPS), the North and Baltic Sea ports are more advanced.

In the following short discussion, it was claimed to show also the existing MoS connection from HaminaKotka to Lübeck and Rostock respectively.

Mr. Küster (Hamburg Port Authority) reported from the meeting of the ad-hoc Working Group on Ports, which had taken place the day before. The focus was on OPS, which would need international standardisation and a cooperation with energy suppliers, and LNG, where different ways of supply are possible as Vessel to vessel or shore side to vessel. A joint challenge of the ports is also the capacity and quality of the “last mile” on their hinterland connection with rail and road.

Cooperation of ports would be useful, both within the Corridor and across Corridors, to allow a more intensive exchange of information and experience and to be more effective in funding and financing of a more efficient use of the existing infrastructure, based on business models.

Pat Cox stressed the high level of practicality of the ports’ meeting and encouraged the ports to communicate and cooperate further on these issues.

Finland stated that Hamina and Kotka should be considered as one single port, which would mean that there would be only 4 core ports in Finland.

Mr. Vaghi (GruppoClas) reported on airports. In 2013, all Core airports along the Corridor had 212 million passengers and 1878 million tons of freight, with Munich, Rome and the Scandinavian airports on top for passengers, while Leipzig/Halle handled 46 % of the overall freight volume.

A discussion arose about Berlin-Brandenburg International Airport. This airport is defined as core airport in the regulation but is still under construction; therefore it was discussed and finally agreed that the cumulated figures of Tegel and Schönefeld should enter into the table on existing traffic, even if they do not belong to the corridor and will be replaced by BBI once operational.

Regarding connection to rail, all Core airports for which it is required in the Regulation are connected already, except Helsinki, which according to information from Finnish side (Finavia), will follow next year (opening rail access in 7/2015).

In the context of investments into airports and the possibility of including projects the question of state aid was raised. Pat Cox pointed to the necessity for the new Commission to consider this question, in order to find a fundamental trade-off between these conflicting goals.

Mr. Sondermann continued with rail-road terminals, with some semantic clarification and introducing the idea of terminal areas, in particular for the large German Core Nodes, such as Hamburg or München, which each of them contains several terminals, which cannot be distinguished at the level of this study.

Next was the presentation of roads by **Mr. McDaniel** (Ramböll). As a general finding, road standards are generally high, congestion would occur mainly in urban agglomerations, Fehmarnbelt fixed link is the only "missing link", but other types of bottlenecks would be equally relevant.

In total, about 100 measures had been identified in the study, but there would be the need for "other types" of measures, e.g. supply infrastructure for alternative fuels.

In the following discussion, Italy suggested a higher share of CEF for safe parking and stressed that also motorway sections between the big cities would be congested. In general, Italy suggested to better reflect on the conclusions regarding road.

Mr. Sondermann presented the report on the rail part of the Corridor, which has a total length of about 9000 km. The compliance analysis based, among others, on the network statements of the infra managers and refers to the requirements for Core railway lines. Whereas most of the links are double track, electrified and allow 22,5 tons axle-load, main priorities are interoperability, ERTMS, mitigation of noise impacts and safety at level crossings. Mainly in Italy, south of Bologna , there are also restrictions of the loading gauge.

With respect to ScanMed RFC 3, there are different scopes of work and approaches (freight / passengers and freight; definition of corridor after market study / corridor defined in regulation; corridor trains / network load; ...).. In addition to that the RFC3 transport market study might be available only after October 17th It was therefore concluded that the ScanMed corridor should mainly focus on the infrastructural aspects of the corridor while RFC3 should more focus on operational items.

Adding other links to the Corridor as suggested by Italy (old line Bologna – Florence, hinterland connections of La Spezia and Livorno) is not in line with the Regulation or may imply additional obligations for national governments. Mr. Sondermann stressed that the Regulations have defined the corridor and guide the funding. In this context Pat Cox pointed to the fact that a smaller part of the CEF budget is earmarked for the comprehensive network.

Austria claimed that the existing analysis would not comprise all relevant parameters necessary to justify the projects. For example, it would not be possible to argue for Brenner Base Tunnel only by mentioning that the existing line would allow only 80 km/h. The possibility to include more comprehensive project descriptions, at least for the major projects, was basically welcomed.

In Germany some existing railway lines which are basically covered by the Regulation definition have been included in the cartogram by the Consultants since they functionally belong the corridor and "proposed" to be included into the Corridor infrastructure . However, Germany requested to disregard from these "proposed" rail lines in Germany in order to focus on the other lines.

5 Report from Working Group Regions

Mr. Ørskov (Syddanmark) as rapporteur of the ad-hoc Working Group of the Regions, which also had met the day before, reported on the outcome of that meeting, emphasizing the following points:

- The request to consider shorter market sections in the MTMS,

- The consideration of smaller projects with high impacts,
- The resilience of the infrastructure to climate change,
- A detailed implementation plan for ERTMS,
- Putting a focus on “greening” and considering accompanying measures,
- Including urban nodes,
- Taking into account existing cooperation such as STRING, BCP, AGB.

6, 7 Presentations on CEF and on financial instruments

Mrs. Potec (MOVE B.4) presented the current Call for Proposals under the CEF and **Mr. Eberhard** (EIB) on financial instruments. These presentations, like all the others, will be distributed to everybody invited to the Forum.

Information on the current call can also be found through the link to INEA http://inea.ec.europa;eu. Direct questions to INEA shall be directed to INEA-CEF-transport-calls-2014@ec.europa.eu.

8 Further steps and conclusions

Pat Cox closed the meeting thanking the participants for their participation and contributions, and pointed once more to the deadline for comments and proposals with respect to the 3rd Progress Report which is October 17th. He also announced the 4th Corridor Forum meeting taking place on November 20th [date communicated by the Commission after the meeting]. He is obliged to submit his report to the Member States by December 22nd. The corridor activities will continue in 2015 with two Corridor Forum meetings and in 2016 with three meetings.
He refers to his presentation made to the informal Ministers of Transport council and the councils conclusion which are provided in annex.

Minuted by Adelsberger/Sondermann

3rd TEN-T ScanMed Corridor Forum Meeting
List of participants

2nd October 2014, Brussels

Organisation	Name	Present
EU/European Institutions		
European Coordinator	Pat Cox	YES
European Commission DG MOVE	Leo Huberts	YES
European Commission DG MOVE	Lia Potec	YES
INEA	Sofia Papantoniadou	YES
INEA	Elisabeth Sandfuchs	YES
INEA	Cristina Turci	YES
European Investment Bank	Claus Eberhard	YES
Member States		
Austria (BMVIT)	Thomas Spiegel	YES
Germany (BMVI)	Reiner Nagelkrämer	YES
Denmark (Transportministeriet)	Thomas Rousing-Schmidt	YES
Denmark (Transportministeriet)	Kasper Granøi Hansen	YES
Finland (Liikennevirasto)	Juhani Tervala	YES
Finland (Liikennevirasto)	Jukka Ronni	YES
Finland (Liikennevirasto)	Leena Sirkjärvi	YES
Italy (MIT)	Roberto Ferrazza	YES
Italy (MIT)	Federica Polce	YES
Malta (Transport Malta)	Ronald Attard Pullicino	YES
Sweden (Näringsdepartementet)	Emil Fastén	YES
Sweden (Näringsdepartementet)	Marina Fransson	YES
Norway		
Samferdselsdepartementet		
Rail Infrastructure Managers		
ÖBB Infrastruktur AG	Diana Gasanova	YES
DB Netz AG	Oliver Pflüger	YES
DB Netz AG	Oliver Sellnick	YES
Banedanmark	Martin Overgaard Jensen	YES
Finnish Transport Agency		
RFI S.p.a.	Giulia Costagli	YES
Jernbaneverket		
Trafikverket, Sweden	Ulla-Stina Ingemarsson	YES

Organisation	Name	Present
RFC3 and key border crossing projects		
Rail Freight Corridor 3	Tommy Jonsson	YES
Rail Freight Corridor 3	Hans Christian Wolter	YES
BBT SE		
Femern Bælt A/S	Claus Henrik Dynesen	YES
Ports		
Copenhagen Malmö Port AB	Gert Nørgaard	YES
Port of HaminaKotka		
Port of Helsinki		
Port of Naantali		
Port of Turku	Christian Ramberg	YES
Hafen Bremen		
Hamburg Port Authority AöR	Stephan Küster	YES
Hafen-Entwicklungsgesellschaft Rostock mbH		
Lübeck Port Authority	Bernhard Rogge	YES
Ancona Port Authority		
Augusta Port Authority		
Levante Port Authority (Bari)	Angelo Giordano	YES
Levante Port Authority (Bari)	Mario Sommariva	YES
Gioia Tauro Port Authority		
La Spezia Port Authority	Federica Montaresi	YES
Livorno Port Authority	Paolo Scarpellini	YES
Napoli Port Authority		
Palermo Port Authority		
Taranto Port Authority		
Malta Freeport Corporation Ltd.	Mark Vella	YES
Valletta Cruise Port		
Oslo Havn KF		
Göteborgs Hamn	Elias Wästberg	YES
Stockholms Hamnar AB	Henrik Widerståhl	YES
Trelleborgs Hamn AB	Tommy Halén	YES

Organisation	Name	Present
Road infrastructure managers		
ASFINAG		
BMVI, Referat UI 23 (respectively G 14)		
Sund & Bælt Holding A/S		see Femern Bælt A/S
Vejdirektoratet		
Øresundsbro Konsortiet		
Finnish Transport Agency		
ANAS	Domenico Crocco	YES
IT Ministerial Toll Road Monitoring Office		
AISCAT		
Transport Malta		
(Norwegian Road IM)		
Swedish Transport Administration		see Trafikverket
Airports		
Flughafen Berlin Brandenburg GmbH		
Flughafen München GmbH		
Flughafen Nürnberg GmbH		
Flughafen Bremen GmbH	Dettmar Dencker	YES
Flughafen Hamburg GmbH		
Flughafen Hannover		
Mitteldeutsche Flughafen AG (Airport Leipzig/Halle)	Uli Köhler	YES
Københavns Lufthavne		
Finavia Corporation (Airports Helsinki, Turku)	Kari Savolainen	YES
Aeroporti di Roma S.p.A.		
Aeroporto Guglielmo Marconi di Bologna SpA		
GESAP - Palermo Airport		
GESAC - Napoli Airport		
ENAC - Italian Civil Aviation Authority	Marco Trombetti	YES
Malta International Airport		
Transport Malta - Civil Aviation Directorate		
(Oslo airport)		
Swedavia	Peter Oscarsson	YES

Organisation	Name	Present
Regions		
Tirol	Ewald Moser	YES
Tirol	Ingrid Felipe	YES
Berlin	Horst Sauer	YES
Brandenburg		
Bayern	Kurt Bechtold	YES
Bremen		
Hessen		
Hamburg		
Mecklenburg-Vorpommern	Merten Barnert	YES
Niedersachsen	Wulf Blumenstein	YES
Schleswig-Holstein	Birte Ehlert	YES
Sachsen		
Sachsen-Anhalt		
Thüringen		
Region Hovedstaden		
Sjælland		
Syddanmark	Erik Ørskov	YES
Uusimaa ELY-center	Leo Koivula	YES
Helsinki-Uusimaa	Ossi Savolainen	YES
Centre for Economic Development, Transport and the Environment for Southwest Finland	Antti Kärki	YES
Regional Council of Southwest Finland	Juho Savo	YES
South East Finland ELY-centre	Antti Rinta-Porkkunen	YES
Päijät-Häme		
City of Kuvola	Lauri Lamminmäki	YES
Regional Council of Kymenlaakso	Ari Pietarinen	YES
Etelä-Karjala	Matti Viialainen	YES
Regione Calabria		
Regione Campania	Michela Castiello d'Antonio	YES
Regione Apulia		
Regione Sicilia	Giuseppe Anzaldi	YES
Regione Marche		
Regione Toscana	Simone Sarti	YES
Regione Lazio	Francesca d'Achille	YES
Regione Emilia-Romagna		
Regione Veneto	Marcello Chizzolini	YES
Province of Trento	Maria Celestina Antonacci	YES
Regione Liguria	Jacopo Riccardi	YES
Regione Lombardia	Emira Lanari	YES

Organisation	Name	Present
Regione Umbria		
Regione Basilicata		
Stockholms län		
Södermanlands län		
Örebro Regional Development Council	Fabian Ilgner	YES
Östergotlands län		
Jönköpings län	Anna Nilsson	YES
Kronobergs län	Mathias Roos	YES
Region Skåne	Mats Petersson	YES
Region Halland	Jeanette Larsson	YES
Region Västra Götaland	Max Falk	YES
Region Västra Götaland	Olle Jonäng	YES
Region Värmland	Marcus Smedman	YES
Contractor Consortium		
KombiConsult GmbH	Klaus-Uwe Sondermann	YES
KombiConsult GmbH	Christina Wölfert	YES
KombiConsult GmbH	Helmut Adelsberger	YES
Gruppo CLAS	Carlo Vaghi	YES
HaCon Ingenieurgesellschaft mbH	Marian Gaidzik	YES
Prognos AG	Hans-Paul Kienzler	YES
Ramböll	John McDaniel	YES
UNICONSULT Universal Transport Consulting GmbH	Hartmut Beyer	YES

Working Group Ports

1st October 2014, Brussels (BE)

Minutes of Meeting

Participant List

Company/Organisation	Participants
European Institutions	
European Commission MOVE.B1	Herald Ruijters
European Commission MOVE.B1	Günther Ettl
European Commission MOVE.B3	Ioana Statu
INEA	Sofia Papantoniadou
Member States (MS) as observers	
Denmark (Transportministeriet)	Thomas Rousing-Schmidt
Malta (Transport Malta)	David Sutton
Sweden (Näringsdepartementet)	Emil Fastén
Ports	
Copenhagen Malmö Port	Gert Nørgaard
Port of Turku	Christian Ramberg
Hafen Bremen	Jörg Schulz
Hamburg Port Authority	Stephan Küster
Hafen-Entwicklungsgesellschaft Rostock	Mario Lembke
Lübeck Port Authority	Bernhard Rogge
Ancona Port Authority	Guido Vettorel
Levante Port Authority (Bari)	Angelo Giordano
Levante Port Authority (Bari)	Mario Sommariva
La Spezia Port Authority	Federica Montaresi
Livorno Port Authority	Paolo Scarpellini
Malta Freeport Corporation	Mark Vella
Göteborgs Hamn	Elias Wästberg
Stockholms Hamnar	Henrik Widerståhl
Trelleborgs Hamn	Tommy Halén
Contractor consortium (CC)	
UNICONSULT	Hartmut Beyer
KombiConsult	Helmut Adelsberger

Agenda

- Opening, introduction of the framework, objective of working group meeting

- Tour de Table of participating port infrastructure representatives

- Appointment of rapporteur to summarize the outcome of the working group

- Overview of 3rd progress report on core seaports
- Results of the compliance analysis of “core“ requirements
- Additional port projects collected from port infrastructure stakeholders

- Discussion of two questions

Venue of the Meeting:

1040 Brussels, Rue de la Loi 200, Berlaymont Building, Room S

Minuted by Helmut Adelsberger and Hartmut Beyer

No	Topic	Responsible

1 Opening, Welcome, Adoption of the Agenda

In his opening statement, Herald Ruijters (head of Unit MOVE B.1) informed that this ad-hoc Working Group was based on an agreement reached in the 2nd Corridor Forum on June 17th.

Ports connect Europe with the rest of the world; Core Network Corridors start or end in Core Ports, which are key nodes of multimodal transport chains. The ScanMed Corridor disposes of 26 Core Ports.

Mr. Ruijters explained the corridor approach. He said that the current 3rd Progress Report would lead to the draft Work Plan. Comments to it or proposals must arrive by 17th October at the latest, to be taken into account for the Work Plan. The European Coordinator will present the Work Plan to the Member States on 22nd December; then Member States have to adopt it. The Work Plan will comprise a List of Projects which shall contain all that is needed to implement the Corridor.

Currently, a Call for Proposals in the framework of the Connecting Europe Facility (CEF) is open since Sept. 11th, until end of February 2015.

2 Tour de Table

The participants briefly introduced themselves with their names and functions.

3 Appointment of the Rapporteur

Upon proposal of Mr. Beyer (Uniconsult) Mr. Küster from the Hamburg Port Authority was unanimously appointed rapporteur to the 3rd Corridor Forum taking place the following day.

4 Short overview of 3rd Progress Report

Mr. Beyer gave a PP-presentation (see annex to these MoM), including a compliance analysis of the core ports of the Corridor.

5 Feedback from participants

A lively discussion followed with focus on:

- infrastructure: water depth, hinterland connection or “last mile” issues and logistic platforms,
- environment: LNG and onshore power supply (OPS).

Most of the ports have logistic centres within their premises or close by or they are planning to establish such multimodal platforms.

The indication of water drafts according to TENtec does not cover the whole variety of depths in the fairway and in various parts of the port. The drafts may be quite different and it could make sense to distinguish between minima and maxima.

Dredging can be funded if fairway or basins are deepened to allow bigger vessels to enter, however state aid aspects have to be taken into account. Maintenance dredging is not eligible for funding.

There are capacity constraints in some cases, due to insufficient landside road or rail access; in the case of La Spezia and Livorno, which are located at one branch of the Corridor, there are also rail loading gauge restrictions. Mr. Ruijters admitted that the Regulation does not comprise loading gauge as a criterion.

Adding new lines to the Corridor, which are not even part of the TEN-T Core Network, as e.g. the Ancona - Bari line, is legally not possible.

Regarding LNG there was concern about the need of particular bunkering infrastructure as in many cases tanks are filled from vessel to vessel. Northern ports are generally more advanced than Mediterranean ports, but the latter are very interested in alternative fuels as well.

Concerning OPS, there are different challenges to cope with:
- different on-board electrical systems (including different frequencies)
- lack of competitiveness with on-board generation with Diesel, due to high electricity cost
- the way of electricity generation should be taken into account. For the climate, electricity from coal may be not better than on-board Diesel generation.

For the future, special attention has to be given to international (IMO) standardisation, cooperation with energy supplier and innovative solutions by exploiting additional synergies (e.g. Bari gets electricity at lesser price because it allows to use its land for a substation which also serves the city.)

Also in the discussion, the question was raised why Bremen is part of the Corridor, but not Bremerhaven, which is the larger port with the greater transhipment volume. Bremerhaven is however part of 2 other corridors.

A few specific remarks and proposals were brought in by the representatives of the individual ports. In order to enable their consideration in the Work Plan (which implies the chance of getting funds), the corresponding stakeholders are invited to communicate them once more, in a written form, by October 17th, at the latest.

The participants representing ports deem it reasonable to further cooperate to exchange information or experience in the different fields, in particular in the context with LNG and OPS, and also to become more effective in applying for funding various projects. Such cooperation would make sense both at single Corridor level and even going beyond among all TEN-T Corridors.

No	Topic	Responsible

6 Conclusion

Mr. Ruijters appealed to the participants to consider this Working Group as a chance to inform the EC of the needs and wishes of the ports, to get access to financial instruments and to launch synergies. He announced that the ppt-presentation would be distributed and reminded that the deadline October 17th must be met.

Meeting of Working Group Regions

1st October 2014, 13:30 – 17:00, Brussels (BE)

Minutes of Meeting

Participant List

Company/Organisation	Participants
Coordinator and EU Institutions	
European Coordinator	Pat Cox
EU Commission DG MOVE	Leo Huberts, Lia Potec
INEA	Elisabeth Sandfuchs
Member States (MS) as observers	
Austria (BMVIT)	Thomas Spiegel, Barbara Zimmermann
Italy (Ministry of Infrastructure and Transport)	Roberto Ferrazza, Federica Polce
Malta (Ministry for Transport)	Ronald Attard Pullicino
Sweden (Ministry of Enterprise, Energy and Communications)	Marina Fransson
Regions	
Tirol	Ewald Moser, Richard Seeber
Berlin, Brandenburg	Horst Sauer
Bayern	Kurt Bechtold
Schleswig-Holstein	Birte Ehlert
Sjælland / STRING	Esther Davidsen
Syddanmark	Erik Ørskov
Regional Council of Southwest Finland	Juho Savo
South East Finland ELY-centre	Antti Rinta-Porkkunen
City of Kuvola	Lauri Lamminmäki
Regional Council of Kymenlaakso	Ari Pietarinen
Regione Campania	Sergio Vitale, Michela Castiello d'Antonio
Regione Apulia	Paola Ricci
Regione Sicilia	Giuseppe Anzaldi
Regione Toscana	Simone Sarti
Regione Veneto	Marcello Chizzolini
Province of Trento	Maria Celestina Antonacci
Province of Bolzano	Vesna Caminades
Regione Liguria	Jacopo Riccardi
Regione Lombardia	Emira Lanari
Örebro län	Fabian Ilgner

Company/Organisation	Participants
Jönköpings län	Anna Nilsson
Kronobergs län	Mathias Roos
Region Skåne	Mats Petersson
Region Halland	Jeanette Larsson
Region Västra Götaland	Max Falk
Region Värmland	Marcus Smedman
Contractor Consortium (CC)	
KombiConsult	Klaus-Uwe Sondermann, Christina Wölfert

Agenda:

1 Opening, welcome, adoption of agenda and introduction into TEN-T Corridors ***(Cox)***
2 Tour de table ***(all)***
3 Appointment of a “rapporteur” ***(all)***
4 Short overview of the 3rd Progress Report ***(Sondermann)***
5 Feedback from participants on 3rd Progress Report ***(all)***
6 Conclusion and next steps ***(Cox)***

Venue of the Meeting:

Representation of the EUREGIO Tyrol-South Tyrol-Trentino at the European Union
1040 Brussels, Rue de Pascale 45

1. Opening

The Head of the Representation of the European region of Tyrol-South Tyrol-Trentino to the EU, Mr Richard Seeber welcomed the participants.

Pat Cox who chaired the meeting, opened it and introduced the other presenters. He stressed the importance of the regions for the corridor and considers this meeting to be a platform for communication among the regions and between regions and EC. For the future, a structure for participation of the regions in the corridor working process has to be found which allows effective, content-based work and creates value for the corridor. The European Coordinator expressed the concern that, due to the geographical extent of the corridor and the resultant different needs of the regions, homogenous working groups consisting of regions solely would not lead to practical results. Multimodal working groups bringing together the different stakeholders in certain parts of the corridor would be more effective; whereas the exchange on corridor level would be performed in the Corridor Forum. However, regions can decide about a suitable structure for themselves, which has to be agreed by the Member States.

Uwe Sondermann explained the classification of this meeting which is meant to provide information on the progress of the corridor study and should enable the regions to give their respective feedback. It has to be distinguished from the formal "Working Group" as defined in Article 46 of EU-Regulation 1315/2013 with a focused scope on modal integration, interoperability and coordinated development of cross-border infrastructure.

Pat Cox highlighted the role of the Connecting Europe Facility (CEF). Although there is more budget available than ever ((26 billion Euro) there will still be the need to concentrate funding on projects with the highest EU added value., For the current CEF call for proposals it means that no wish lists will be accepted for funding. He also underlined the importance of Innovative Financial Instruments to finance TEN-T infrastructure.

2. Overview of TEN-T and CEF

Leo Huberts presented the background of the ScanMed Corridor in the framework of trans-European transport network (TEN-T). The contents are shown in the annex.

After that, Lia Potec introduced the CEF whose current call for proposals has started in September 2014 and will be open until February 2015. There are many opportunities to get detailed information on CEF, e.g. the website of DG MOVE or the CEF info days taking place on 9th to 10th October 2014. Questions concerning the call can be asked to INEA and will be publicly answered on the INEA website.
Also this presentation is provided in the annex.

Pat Cox explained that the Corridor Work Plan, which has to be adopted by the Member States, and is no back door for getting EU co-funding. Projects, whether they are part of the Work Plan or not, have to be in line with the funding requirements described in the Calls for Proposals.

No Topic Responsible

3. Tour de table

Participants of the meeting shortly introduced themselves.

4. Appointment of a "rapporteur"

Sondermann recommended the representative of Syddanmark, Erik Ørskov, to present the results of the regions' meeting to the Corridor Forum on 2nd October 2014. This would be a singular task without further duty or decision competence.
Participants agreed to the suggestion.

5. Overview of 3rd Progress Report and feedback from participants

Main facts about the ScanMed Corridor study - which are included in the 3rd Progress Report delivered to the stakeholders on 19th September - were presented by Sondermann, such as project structure and alignment of the corridor as well as objectives, characteristics and measures for the different modes (see presentation in annex). In the following, participants were asked to comment on the 3rd Progress Report:

Örebro region claimed to consider shorter sections for the Multimodal Transport Market Study which it would deliver respective data for.

An aspect missing in the corridor study is the topic of "greening". It was proposed to include measures for sustainable transport investigated in other projects such as Supergreen or the continuing Swiftly Green project that will create a toolbox of measures concerning greening of corridors. Sondermann stated that all final results and adopted findings of these studies will be considered for ScanMed Corridor but that preliminary results cannot be taken into account.

Berlin/Brandenburg region suggested focusing on urban nodes because of their importance in connecting all modes of transport, both for passengers and freight. Moreover, urban nodes have to carry the burden of transit (example Berlin).

Bayern suggested adding important regional projects to the Work Plan such as "Truderinger Kurve" which will improve the connection of the rail-road terminal München-Riem to the Brenner Corridor.

Malta requested to consider also projects that make the infrastructure more resilient to the impact of climate change, e.g. breakwater in ports.

Tirol as region in the centre of ScanMed Corridor highlighted the importance of the Brenner Base Tunnel project for removal of the respective bottleneck. Accompanying measures as established in the Brenner Action Plan should also be considered in ScanMed Corridor. Cox made a respective intervention on the informal Ministers of Transport summit in Milano (the Council's conclusions and the speech of Cox will be distributed in the annex).

Any detailed implementation plan for ERTMS/ETCS needs to be agreed upon with infrastructure managers, railway undertaking and the supplying industry to ensure proper migration as experiences in the Austrian Unterinntal have recently demonstrated.

No	Topic	Responsible
	The Italian regions proposed to set up a corridor wide platform of all the regional authorities of the ScanMed corridor with the aim to improve knowledge, exchange technical and political information, and presented a proposal for an organisational structure made of technical committees and national tables. The presentation of this issue is attached.	
	Besides spontaneous support for this idea, there was also the observation to avoid heavy double structures and built on existing sub-structures focused on specific items which have corridor relation, e.g. STRING around Öresund and Fehmarn Belt Fixed Link, Brenner Corridor Platform and Aktionsgemeinschaft Brennerbahn for Brenner, and others.	
6.	**Conclusion and next steps**	
	Pat Cox concluded the meeting. The conclusions will be summed up by Ørskov and Sondermann and presented in the Corridor Forum meeting on 2nd October.	Ørskov, Sonder-mann 2.10.2014
	Written comments with concrete recommendations on improving the 3rd Progress Report have to be sent to the contractor consortium by 17th October to be considered in the Work Plan.	All 17.10.2014
	A draft final version will be presented in the 4th Corridor Forum meeting 20th November 2014 (date clarified by the EC after the meeting). The Work Plan will be submitted by the European Coordinator to the Member States by 22nd of December 2014.	Consortium 20.11.2014 Pat Cox 22.12.2014
	minuted by Wölfert and Sondermann	

Fourth Corridor Forum Meeting

20th November 2014, Brussels (BE)

Minutes of Meeting (Draft by Contractors)

Participant List

See Annex.

Agenda

1 Opening, welcome and adoption of the agenda (Pat Cox)

2 Tour de table (all)

3 Presentations of
- ERTMS (Karel Vinck, European Coordinator for ERTMS)
- Innovation perspective on the ScanMed Corridor (Herald Ruijters, DG MOVE)

4 Presentation of Draft Final Report (Uwe Sondermann)

5 Feedback from participants on the Draft Final Report

6 Presentation of ITS (Julie Raffaillac, DG MOVE)

7 Further steps for the Corridor Coordination and the Corridor Forum in 2015/16 (Pat Cox)

Venue of the Meeting:

1040 Brussels, Rue Froissart 36, Centre Albert Borschette, Room CCAB 2D

Minuted by Helmut Adelsberger and Uwe Sondermann.

1 Opening, welcome and adoption of the agenda

The European Coordinator Pat Cox opened the meeting and welcomed the participants. He highlighted that this was the last Forum meeting in the year 2014 and before closing the present corridor study. For this reason, requests for substantial modifications of the Report could only be taken into account if brought up and discussed in this meeting. Minor, rather editorial amendments would be accepted until November 28th. The consultants have to hand over the Final Report to the Commission by 5 December 2014. Based on this, the European Coordinator will elaborate the Work Plan, which he will distribute to the Member States for approval by 22 December 2014. The indicative project list and the TENtec maps will be attached as Annexes to the Final Report but are not subject to approval by the Member States.

The agenda was unanimously adopted.

2 Tour de table

Participants introduced themselves briefly with names and functions.

3 Presentations of
- ERTMS
- Innovation perspective on the ScanMed Corridor

Mr. Vinck, European Coordinator for ERTMS, presented the current stage and plans for implementation of ERTMS in the Core Network Corridors. A copy of the corresponding presentation is distributed with this Minutes of Meeting. The discussion focused on standardisation issues, in particular with respect to GSM-R, the involvement of users, in particular railway undertakings in the agreement process of ETCS specifications and migration plans, and how to defend the technological leadership of Europe in this field against foreign competition.

Mr. Ruijters showed a presentation on ITS issues, with focus on CEF and other EU based co-funding possibilities, e.g. Horizon 2020. Urban nodes would be focal points of application of innovative technologies, because of their spatial structure and density. The Core Network Corridors could take the role for extending these technologies for long distance transport, with the target of decarbonisation and multimodal traffic management. Within CEF, DG MOVE's focus would be on business-oriented market-sided application of products rather than research and development. In this context, Mr. Ruijters pointed to policy initiatives, programmes and projects such as the EU 2020 Strategy, SESAR, Shift2Rail, “SuperGreen”, STRING, etc.

4 Presentation of the Draft Final Report

Mr. Sondermann reminded that the Draft Final Report was developed step-by-step from the previous Progress Reports taking into account works of the consultants and contribution of the Member States, stakeholders and the Commission. Apart from some brief repetitions, this presentation (see annex) would therefore refer to the latest supplements resulting from the work done since the 3rd Forum Meeting. Some Member States had delivered information only at a very late moment, so that it was not possible to include them in the version sent out already. In his presentation such late amendments were highlighted in red letters or numbers.

The objectives of the corridor had been derived from the TEN-T and CEF Regulations, which specify qualitative targets and quantitative parameters for the Comprehensive and Core Network. Passing from North to South, Mr. Sondermann explained that, for the maritime sections of the corridor, it had resulted more useful to show only those maritime sections which are indicated also in the official corridor maps, instead of the dense network of all possible maritime transport connections or MoS. Further, he pointed to the new situation in the area Hamburg/Bremen – Hannover in Germany, where DB and the German ministry of transport are seeking more economic alternatives to the “Y”-solution (which is shown in the TEN-T maps).

The Project List comprises 373 projects (of which 43 % for rail or rail connections with other modes) at a total cost of 142 M€. 102 projects at a cost of 71 M€ are located on pre-identified sections according to CEF-Regulation, Annex 1.

5 Feedback from participants on the Draft Final Report

In the subsequent discussion, Mr. Sauer (joint spatial planning of Berlin - Brandenburg) claimed that urban nodes should be given more weight in the paper, with view to their population and their importance for production, multimodal transport and environmental impacts of transport. Mr. Cox and Mr. Sondermann made clear that this would be a priority for the next year.

Mr. Hotz (ÖBB) suggested to include a political message into the Report, with view to the implementation horizon 2030. Mr. Sondermann explained that it was the goal of this Report to be purely technical and Mr. Cox explained that when sending out the Work Plan, he would include such a message.

Mr. d'Angelo (Regione Campania) pointed to the contribution of the corridor to cohesion and referred to the Italian proposal of forming a platform of the regions. Mr. Cox reminded that there had been a Working Group meeting of the regions prior to the 3rd Forum meeting and that their conclusion was brought to the attention of the Forum. He suggested that regions would be free to coordinate themselves and would always get an open ear, but it would not be his or the Commission’s task to organise additional structures.

Mr. Vestergaard (STRING secretariat) pointed to the importance of the corridor for the citizens and users. That would mean that socio-economic goals would have to be fulfilled.

Mr. Wästberg (Göteborgs Hamn) reminded of the large share and importance of maritime transport, which in his opinion would not be reflected sufficiently in the Report. Mr. Sondermann replied that ports as the key links between maritime and land transport had been thoroughly analysed. Mr. Cox added that a presentation of the MoS had been foreseen for this meeting, but had to be postponed to next year, because the corresponding European Coordinator, Mr. Brian Simpson, was not available this time.

Mr. Scarpellini (Port of Livorno) asked about possible updating of the Project List. Mr. Huberts (DG MOVE) replied that the main objective of the project list is to provide an overview of the projects necessary to implement the corridor by 2030. The current list is indicative. The project list is likely to be updated in the next phase of the Corridor Forum.

Further questions referred to discrepancies in project costs, splitting and/or clustering of projects, the separation of studies and works and other details.

Mr. Sondermann said that general answers could not be given. On one side, projects should not be too detailed, on the other side, a clear picture would be needed. He suggested a more specific approach according to the needs in each particular case. E.g. for the present German/Austrian border crossing section, a separation of the study phase might make sense, as works cannot start before the studies have been finalised.

6 Presentation of ITS

The afternoon session started with this presentation by Ms. Julie Raffaillac (DG MOVE). She indicated the legal base and explained the role of ITS application in the EU: It would not be an aim in itself, but an enabler for multimodality, sustainability, seamless linkage of urban, interurban and cross-border transport, both for passengers and freight. A copy of her presentation is included in annex.

7 Further steps for the Corridor Coordination and the Corridor Forum in 2015/16

Mr. Cox repeated the following deadlines for the 2014 tasks:
- 28th November: editorial remarks to the text, but no new items requiring discussion loops;
- 5th December: Final Report to Commission by consultants;
- 22nd December: Work Plan to Member States by European Coordinator.

Member States will be requested to adopt the Work Plan by end of February 2015.

The Forum is scheduled to meet twice in 2015 and three times in 2016. Revisions of the Work Plan are foreseen for 2016 and 2018. The next “TEN-T Corridor Days” are scheduled to take place in Riga on 25th - 26th June 2015. Also the next (“5th”) Corridor Forum meeting is scheduled for June. Present Members will be informed about the meeting.

The Commission foresees the preparation of new consultancy contracts early 2015.

The Coordinator’s Annual Report will be issued in March or April 2015, after Member States have adopted the Work Plan.

Working Group meetings will be continued, including also new Working Groups (e.g. on regions, urban nodes, cross-border sections, etc). The European Coordinator will continue undertaking missions to Member States and other stakeholders along the corridor in 2015 and 2016.

Mr. Cox closed the meeting and thanked all participants for their active contributions.

Annexes:
List of participants
Presentations used by
Karel Vinck
Herald Ruijters
Julie Raffaillac
Uwe Sondermann

Stakeholder Name	Surname	First name	Present
Member States and Norway			
Austria (BMVIT)	Spiegel	Thomas	YES
Austria (BMVIT)	Zimmermann	Barbara	YES
Germany (BMVI)	Nagelkrämer	Reiner	YES
Denmark (Transportministeriet)	Rousing-Schmidt	Thomas	YES
Denmark (Transportministeriet)	Granøi Hansen	Kasper	YES
Finland (Liikennevirasto)	Tervala	Juhani	
Finland (Liikennevirasto)	Ronni	Jukka	YES
Italy (MIT)	Ferrazza	Roberto	YES
Italy (MIT)	Polce	Federica	YES
Malta (Transport Malta)	Sutton	David	YES
Norway (Samferdselsdepartementet)	Tråholt	Torbjørn	YES
Sweden (Näringsdepartementet)	Fransson	Marina	YES
Regions			
Tirol	Moser	Ewald	YES
Bayern			
Berlin, Brandenburg	Sauer	Horst	YES
Bremen			
Hessen			
Hamburg	Huber	Martin	YES
Mecklenburg-Vorpommern			
Niedersachsen			
Schleswig-Holstein			
Sachsen	Lang	Christopher	YES
Sachsen-Anhalt			
Thüringen	Spieß	Andreas	YES
Region Hovedstaden			
Sjælland			
Syddanmark	Ørskov	Erik	YES
Uusimaa ELY-center			
Helsinki-Uusimaa			
Southwest Finland ELY-center			
Regional Council of Southwest Finland	Virtanen	Janne	YES
South East Finland ELY-centre			
Päijät-Häme			
Regional Council of Kymenlaakso	Pietarinen	Ari	YES
City of Kouvola	Lamminmäki	Lauri	YES
Etelä-Karjala			
Regione Calabria			
Regione Campania	D'Angelo	Giuseppe	YES
Regione Apulia	Migliaccio	Anna	
Regione Sicilia	Anzaldi	Giuseppe	YES
Regione Marche	Passarani	Antonella	YES
Regione Toscana	Sarti	Simone	YES
Regione Lazio			
Regione Emilia-Romagna			
Regione Veneto	Zanin	Luigi	
Province of Trento	Gilmozzi	Mauro	YES
Province of Bolzano	Caminades	Vesna	YES
Regione Liguria	Riccardi	Jacopo	YES
Regione Lombardia			
Regione Umbria			
Regione Basilicata			
Stockholms län, Södermanlands län	Lundgren	Gustaf	YES
Örebro Regional Development Council	Ilgner	Fabian	YES
Östergotlands län			
Jönköpings län	Nilsson	Anna	YES
Kronobergs län			
Region Skåne	(excused)		
Region Halland			
Region Västra Götaland	Jonäng	Olof	YES
Region Värmland	Poli	Isabel	YES
ScanMed-Reg Platform	Bartocci	Ruggero	
STRING	Vestergaard	Jacob	YES

Stakeholder Name	Surname	First name	Present
Rail infrastructure managers			
ÖBB Infrastruktur AG	Hotz	Harald	YES
BBT SE	Francesconi	Sandro	YES
DB Netz AG	Ismaier	Sophie	
Rail Net Denmark (BaneDanmark)			
Femern Bælt A/S	(excused)		
Finnish Transport Agency			
RFI	Castro	Stefano	YES
Jernbaneverket			
Trafikverket	Ingemarsson	Ulla-Stina	YES
Rail Freight Corridor 3	Jonsson	Tommy	YES
Road infrastructure managers			
ASFiNAG			
BMVI			
Sund & Bælt Holding A/S			
Vejdirektoratet			
Øresundsbro Konsortiet			
Finnish Transport Agency			
ANAS - National Road Infrastructure Manager	Nucci	Settimio	
IT Ministerial Toll Road Monitoring Office			
AISCAT			
Transport Malta			
N.N.			
Swedish Transport administration			
Port infrastructure managers			
Freie Hansestadt Bremen	Lattner	Jörg	YES
Hamburg Port Authority AöR	Küster	Stephan	YES
Hafen-Entwicklungsgesellschaft Rostock mbH			
Hansestadt Lübeck, Lübeck Port Authority	(excused)		
Hafen Lübeck / Baltic Rail Gate GmbH			
Port of HaminaKotka			
Port of Helsinki			
Port of Naantali			
Port of Turku			
Ancona Port Authority	Vettorel	Guido	YES
Augusta Port Authority			
Levante Port Authority (Bari)	Giordano	Angelo	YES
Gioia Tauro Port Authority			
La Spezia Port Authority	Montaresi	Federica	YES
Livorno Port Authority	Scarpellini	Paolo	YES
Napoli Port Authority			
Palermo Port Authority			
Taranto Port Authority	Frascella	Noemi	YES
Malta Freeport Corporation Ltd.	Vella	Mark	YES
Valletta Cruise Port			
Oslo Havn KF			
Copenhagen Malmö Port AB	Nørgaard	Gert	YES
Göteborgs Hamn	Wästberg	Elias	YES
Stockholms Hamnar AB			
Trelleborgs Hamn AB			
Rete Autostrade Mediterranee	Chiappetta	Andrea	

Stakeholder Name	Surname	First name	Present
Airport infrastructure managers			
Flughafen Berlin Brandenburg GmbH			
Flughafen München GmbH			
Flughafen Nürnberg GmbH			
Flughafen Bremen GmbH			
Flughafen Hamburg GmbH			
Flughafen Hannover-Langenhagen GmbH			
Flughafen Leipzig/Halle GmbH			
Københavns Lufthavne			
Finavia (Helsinki and Turku Airports)	Salomaa	Hannu	YES
Aeroporti di Roma S.p.A.			
Aeroporto Guglielmo Marconi di Bologna SpA			
GESAP - Palermo Airport			
GESAC - Napoli Airport			
ENAC - Italian Civil Aviation Authority			
Malta International Airport			
Transport Malta - Civil Aviation Directorate			
N.N.			
Swedavia			
European institutions			
European Coordinator	Cox	Pat	YES
European Commission DG MOVE	Huberts	Leo	YES
European Commission DG MOVE	Potec	Lia	YES
INEA	Papantoniadou	Sofia	YES
INEA	Sandfuchs	Elisabeth	YES
EIB	Eberhard	Claus	YES
Contractor Consortium			
KombiConsult GmbH	Sondermann	Klaus-Uwe	YES
KombiConsult GmbH	Adelsberger	Helmut	YES
Gruppo CLAS	Grea	Gabriele	YES
Prognos AG	Dennisen	Tobias	YES
Ramböll	Mäenpää	Marko	YES