European Commission

# North Sea Baltic

## Fourth Work Plan of the European Coordinator

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Mobility and Transport

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## Abbreviations

| | |
|---|---|
| bn | billion |
| CEF | Connecting Europe Facility |
| CEMT class | Inland waterway classification according to CEMT (European Conference of Ministers of Transport) Resolution No 92/2 |
| CNC | Core Network Corridor |
| DG MOVE | European Commission – Directorate General for Mobility and Transport |
| EC | European Commission |
| EIA | Environmental Impact Assessment |
| ERTMS | European Rail Traffic Management System |
| ESIF | European structural and investment funds |
| ETCS | European Train Control System |
| EU | European Union |
| GDP | Gross Domestic Product |
| GHG | Greenhouse gas |
| INEA | Innovation and Networks Executive Agency (EU) |
| ITS | Intelligent Transport Systems |
| IWW | Inland waterway |
| km | kilometre |
| KPI | Key performance indicator |
| LNG | Liquified Natural Gas |
| LPG | Liquified Petroleum Gas |
| m | metre |
| mn | million |
| MoS | Motorway(s) of the Sea |
| MTMS | Multimodal Transport Market Study |
| MS | Member States of the European Union |
| NSB | North Sea - Baltic |
| n.a. | not available / not applicable |
| RFC | Rail Freight Corridor |
| RRT | Rail and road terminal |
| TEN-T | Trans-European Transport Network |

Country Codes according to ISO 3166:

| | |
|---|---|
| BE | Belgium |
| DE | Germany |
| EE | Estonia |
| FI | Finland |
| LT | Lithuania |
| LV | Latvia |
| NL | The Netherlands |
| PL | Poland |

# 1 Towards the North Sea – Baltic 4th Work Plan

## 1.1 Introduction

The **Fourth Work Plan of the North Sea – Baltic (NSB) CNC** has been prepared based on the work done for the First Work Plan[1] (May, 2015), the Second Work Plan[2] (December, 2016) and the Third Work Plan[3] (April, 2018), several studies and intense interactions with different Corridor stakeholders during many Corridor fora, joint activities with the dedicated group of stakeholders during many Working Group meetings and most importantly continuous work on the project list dedicated to the monitoring of the ongoing Corridor development and further development plans.

The Work Plan provides a **common vision**, based on the compilation of the work of all stakeholders towards final realisation of the Corridor and a framework for the prioritisation of actions to be taken. The common interest and vision of all the Member States on the Corridor is the crucial driving force behind the Work Plan implementation.

The common vision and Work Plan will contribute to the better functioning of the **EU internal market** as it is dependent on effective transport systems and cross-border traffic flows. The Work Plan is the element which brings together different countries across the Corridor and aligns the investments to achieve the full potential of the Corridor. The sections in the Work Plan dedicated to the transport market study, in particular, highlight the market potential of the Corridor.

The Study reports used in the Work Plan preparation include analysis of transport infrastructure compliance with **technical requirements** set in the TEN-T Regulation for all transport modes, definition and assessment of KPIs used to assess the progress made in the Corridor's further development. The technical requirements analysis relates to the current compliance and compliance at 2030 based on the completion of the known Corridor projects.

The timing of the 4th Work Plan preparation is also linked with the important stage of the most critical NSB cross-border project - **Rail Baltica**. The key infrastructure objects and the mainline of Rail Baltica are being designed. Construction works for the Rail Baltica objects and main line have started and are planned to be completed in the three Baltic States and Poland within the next EU financial period. The Commission Implementing Decision C(2018) 1723 of October 2018 provided set out the intermediate milestones and highlights the importance and commitment of the Member States and the Commission to the main NSB flagship project.

The 4th Work Plan is prepared at a time when **climate change** mitigation and digitalisation are high on the agenda for the new Commission, the European Coordinator and all Member States. Many projects foreseen along the Corridor will be enablers for the transformation to carbon free mobility and will help to mitigate climate changes.

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1https://ec.europa.eu/transport/sites/transport/files/themes/infrastructure/news/doc/2015-05-28-coordinator-work-plans/wp_nsb_final.pdf

2 https://ec.europa.eu/transport/sites/transport/files/2nd_workplan_nsb.pdf

3 https://ec.europa.eu/transport/sites/transport/files/3rd_nsb_wp_28032018web_june2018.pdf

## 1.2 Achievements along the Corridor since 2014

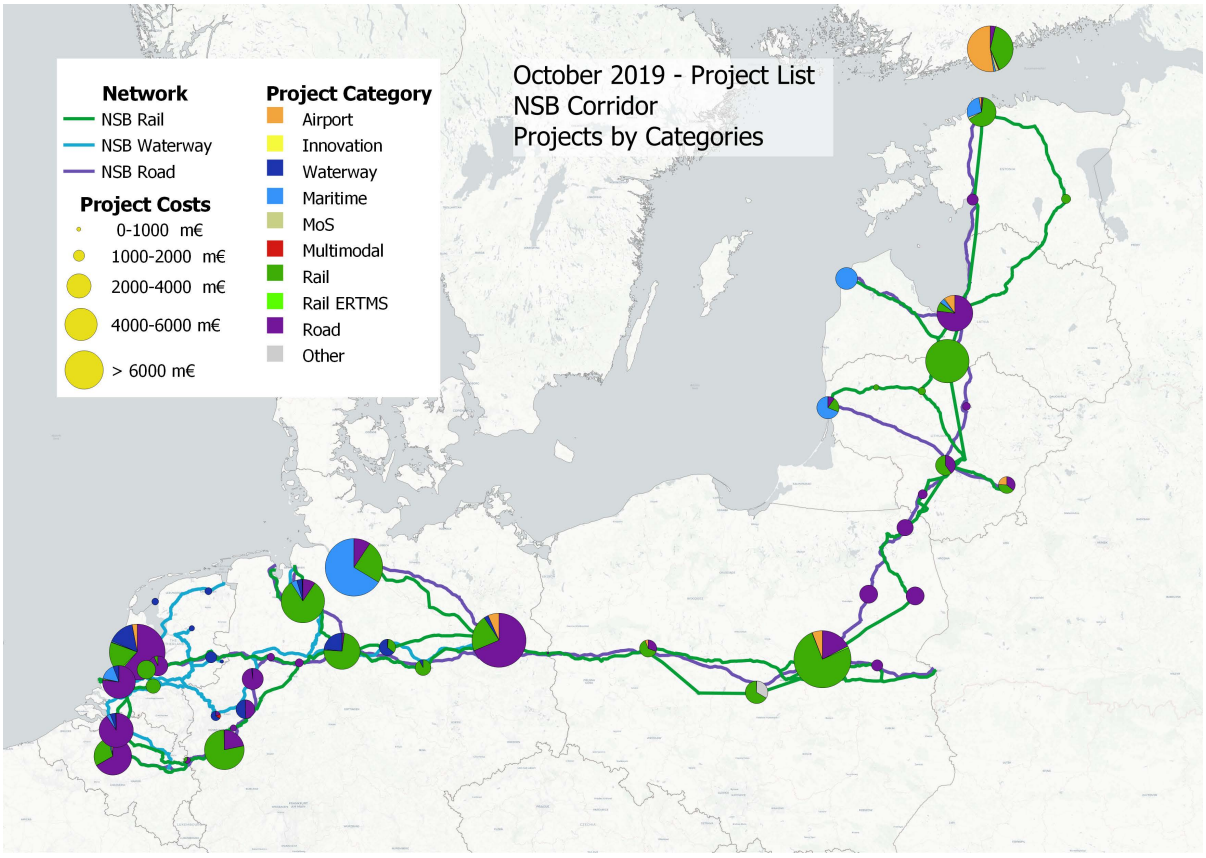
Since the Third Work Plan, a lot has been achieved with respect to compliance with TEN-T requirements and realising the **economic, social and territorial cohesion potential** of the Corridor, which was on the agenda for many Working Group meetings and the reason for identification of new Corridor projects. The European Coordinator actively monitors the project implementation status along the Corridor twice per year, and provides support to the Member States and project implementers as needed.

Since the Third Work Plan, 17.5% of **projects have been completed** for different transport modes, for instance, rail (Germany, Lithuania), airports (The Netherlands, Poland), maritime (Germany, Lithuania), inland waterways (Germany, The Netherlands) and other.

The importance and progress made on the Corridor could be the best characterised by the **increased number of projects** since the previous Work Plan edition from 530 to 657 projects and by the shift from studies to works. Another important characteristic and assurance of achieving set Corridor objectives is the number of completed projects (17,5%), a good maturity of the projects to be completed by 2025 (65%) and majority of the projects due to be completed by 2030 (83%). Since the previous Work Plan edition the overall project value increased from 95 bn € to 110 bn € with a peak of project implementation 38.4 bn € (35%) for the period of 2026 - 2030.

The graph below shows visually the projects to be completed by geographical alignment, project category and project costs.

**Figure 1: Number of projects by project categories**



There is a **good evolution of cross-border projects** implementation (61 projects) with 25% of the cross-border projects already completed. There is also a good cross-border project maturity with 80% of the projects to be completed by 2025.

The **project implementation is also linked with some difficulties,** specifically for complex cross-border projets, where planning procedures, priorities and time lines may differ across the Member States; as well as procurement procedures and technical solutions. Project financing structures are also often more complex in this case. Other external and economic factors affect cross-border projects in a similar way as other projects.

# 2 Characteristics of the NSB Corridor

## 2.1 Alignment

The **North Sea-Baltic Corridor** comprises 5,986 km of railways, 4,092 km of roads and 2,186 km of inland waterways. It is one of nine core network corridors and it is the northern-most Corridor including Finland, Estonia, Latvia, Lithuania, Poland, Germany, The Netherlands and Belgium. It joins the Baltic Sea Region with the low countries of the North Sea Region. The Corridor is a clear example of a principal objective of the TEN-T policy by connecting East with West, improving the accessibility of the Eastern Member States and connecting the Western and the Eastern markets.

An important characteristic of the North Sea-Baltic Corridor is the **connection with other corridors via multi-modal connecting points** (hubs). Helsinki connects with the Scandinavian-Mediterranean corridor, Warsaw, Łódź and Poznań connect with the Baltic - Adriatic corridor, while Berlin and Hannover connect with both the Orient-East Mediterranean and the Scandinavian-Mediterranean corridors. Further west, Cologne, Nijmegen, Liège intersect with the Rhine-Alpine corridor and at its western end points, Antwerp, Brussels, Rotterdam and Amsterdam connect with the Rhine-Alpine and the North Sea-Mediterranean corridors.

The main **transport modes** covered by the Corridor and thus the 4th Work Plan are rail, road, inland waterways, seaports and airports. The figure below presents the **North Sea Baltic Corridor map** including transport interconnections at ports, airports and rail-road terminals of the TEN-T Regulation.

**Figure 2: Alignment of NSB Corridor**


Source: TENtec

As stated above, one of the main Corridor objectives is to **use untapped economic potential** in the northern and eastern parts of the Corridor. The Corridor can provide a way to develop global transport routes and a platform for dialogue with industrial stakeholders by considering interests of the 40 regions along the North Sea-Baltic Corridor as well as civil society affected by the projects of common interest.

## 2.2 Compliance 2018 and 2030 with the technical infrastructure parameters of the TEN-T guidelines to be achieved by 2030

The Corridor has to comply with the technical requirements defined in the TEN-T Regulation. The analysis below includes only those transport modes for which Regulation (EU) No 1315/2013 determines technical requirements.

### Rail and RRT

The table below presents the summary of technical compliance for rail - including information about the Baltic States in order to provide a better overview, but the 1520mm networks in the Baltic States are exempt from the compliance with these parameters due to their **isolated network status** in the sense of the TEN-T Regulation. Therefore, the compliance rate only needs to reach 83% of the Corridor for ERTMS, electrification and track gauge. The compliance rate for line speed and train length is 96% and 83% respectively, when excluding the isolated networks. The

new parameter - structure gauge[4] has been also assessed but proved difficult to harmonise towards the UIC gauges as the national standards do not all fit the UIC gauge criteria.

**Table 1: Rail compliance with TEN-T requirements (2018, ERTMS 2019)**

| RAILWAYS | | All entries: Share of all sections fulfilling the respective standard | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **TEN-T parameters** | | **BE** | **NL** | **DE** | **PL** | **LT** | **LV** | **EE** | **FI** | ***Corridor*** |
| **Length of all sections** | km | 397 | 477 | 1 783 | 1 442 | 848 | 594 | 442 | 3 | ***5 986*** |
| **Electrification** | Electrified | 100% | 100% | 97% | 91% | 18% | 11% | 17% | 100% | ***75 %*** |
| **track gauge** | 1,435mm | 100% | 100% | 100% | 100% | 13% | 0% | 0% | 0% | ***76 %*** |
| **line speed (core freight lines)** | ≥100km/h | 87% | 100% | 100% | 79% | 88% | 0% | 100% | N/A | ***93 %*** |
| **Axle Load (core freight lines)** | 22.5t | 100% | 100% | 100% | 99% | 100% | 100% | 100% | N/A | ***100 %*** |
| **Train length (core freight lines)** | min. 740m | 100%[5] | 100% | 100%[6] | 51% | 100% | 100% | 100% | N/A | ***88 %*** |
| **ERTMS/signalling system** | YES | 56% | 40% | 0% | 1% | 0% | 0% | 0% | 0% | ***8 %*** |

The whole Corridor is **electrified** in Belgium, The Netherlands, Germany, Finland and Poland, except for an approximate 60 km link between Oldenburg and Wilhelmshaven in Germany (compliance to be reached by 2022) and, in Poland, a 100 km section between Ełk and the Polish-Lithuanian border. The Baltic States' networks will be compliant for Rail Baltica project part – even exceeding the minimum requirements for line speed, axle load and train length - and are exempt for the 1520mm lines.

There is a **line speed compliance** of minimum 100 km/h for freight in The Netherlands and Germany, while in Belgium there are some sections, which are not compliant. In Poland, the line speed compliance along the Corridor is on a relatively low level, caused mostly by very low maximum speed on certain sections (especially southern rail bypass of Warsaw and Rail Baltica close to the border with Lithuania). In Poland, large-scale projects are in progress or foreseen by 2023 to upgrade the performance of the network. Only very limited sections of the network do not comply with the **axle load** standard of minimum 22,5 t .

Most of the Corridor can accommodate the minimum **train length** of 740 m, except in Belgium due to the existing train length restrictions of 650 m during peak hours and in Germany due to capacity bottlenecks during peak hours. Bottlenecks also exist in The

4 Structure gauge indicates the height and width of overhead structures for rail, so essentially whether you can load a particular freight unit (container or road trailer) onto a particular rail wagon, and safely run it on a particular line without hitting any overhead obstacles.

5 Operation of 740 m long trains is theoretically possible in Belgium and Germany. Restriction e.g. due to capacity bottlenecks during peak hours are likely to occur; however, it is not possible to mathematically measure the impact of these restrictions on the compliance, hence the 100% compliance rate in the table.

6 See footnote 3.

Netherlands. The Polish network currently does not comply on the E20 railway from Polish/German state border to Poznań, on the Poznań node, on the Warsaw node (partly) and on the Rail Baltica corridor (Czyżew-Trakiszki).

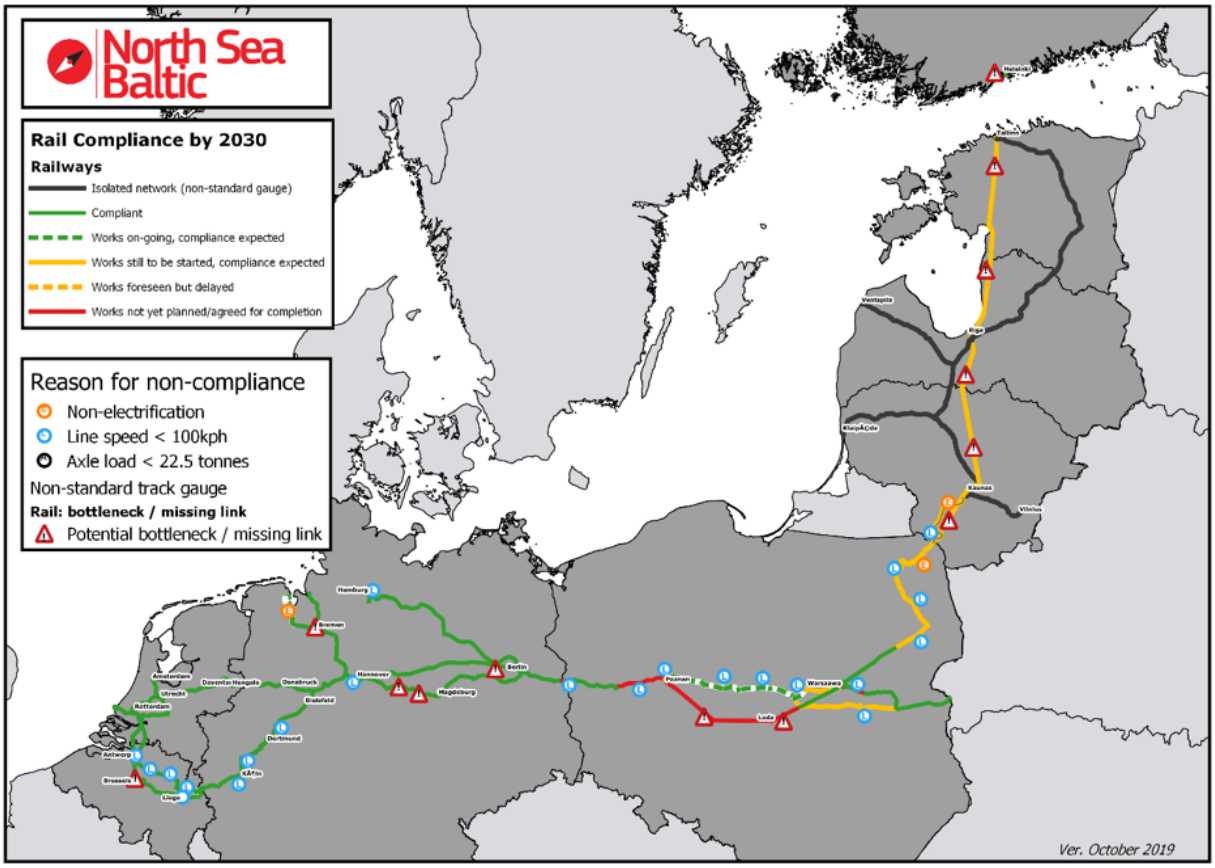
The **ERTMS deployment** on the NSB Corridor is at low level, even in The Netherlands with 40% (some high-speed lines and conventional lines) and in Belgium with 56% (most of the high-speed lines). Overall, on 7% of the corridor ETCS is in operation while on 72% of the corridor GSM-R is in operation. ERTMS implementation and timeline for deployment in different Member States along the Corridor is described in the "ERTMS European Deployment Plan"[7] and national implementation plans. The state of expected ERTMS compliance of the NSB Corridor by the end of 2023 is 27%, resulting from an increase of deployment rates in Poland, Belgium and Germany.

Sections of Latvia, Lithuania and Estonia other than the north-south axis (with different gauge) are exempt from ERTMS deployment thus by 2030 only 83% of the Corridor's length should be in operation with ETCS.

Additionally, compliance of railway accessibility to rail-road terminals in terms of train length and electrification shall also be considered for improvement, especially where it facilitates open access to multimodal infrastructure.

The figure below presents the projected rail compliance by 2030, based on the planned project completion.

**Figure 3: Rail compliance by 2030 overview**




7 https://ec.europa.eu/transport/modes/rail/ertms/ertms_deployment_en

## Roads

The table below presents the summary of current compliance with technical requirements for roads.

**Table 2: Road compliance with TEN-T requirements (2018)**

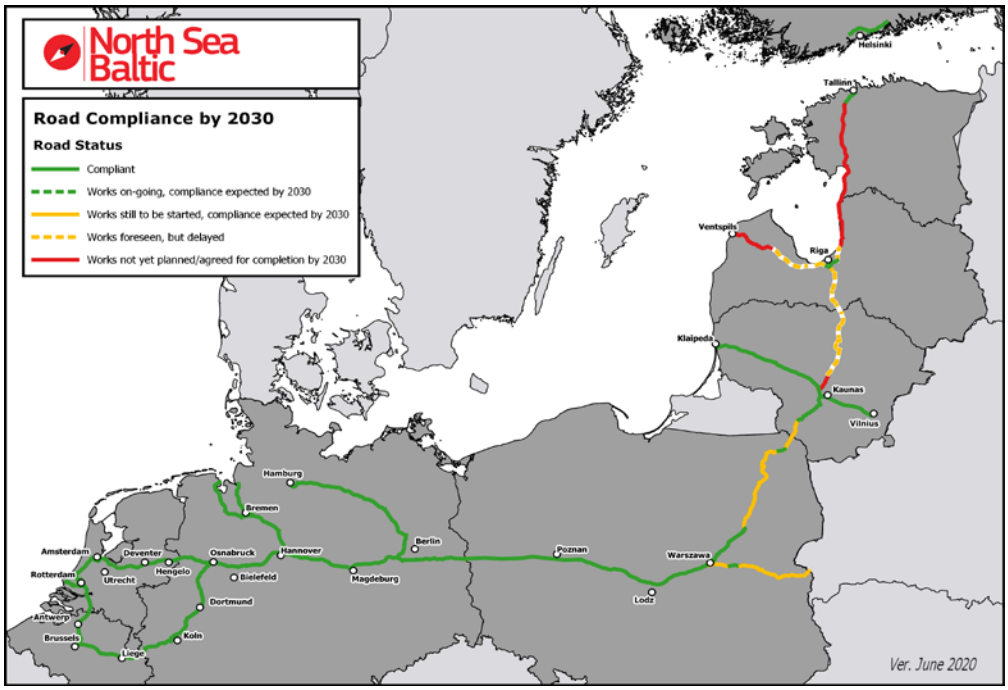
| Parameter | Requirement | BE | NL | DE | PL | LT | LV | EE | FI | Corridor |
|---|---|---|---|---|---|---|---|---|---|---|
| **Road class** | Roads have to be either an express road or a motorway by 2030 | 100 % | 100% | 100% | 59% | 65% | 8% | 14% | 100% | **73 %** |
| **Parking areas along the motorways, including their security level** | Sufficient parking areas, at least every 100 km, by 2030 | 100 % | 100% | 100% | 100% | 100% | N/A | N/A | N/A | **100 %** |
| **Availability of alternative fuels** | Available by 2025 | 100 % | 100% | 100% | 100% | 100% | 100% | 100% | 100% | **100 %** |

Belgium, The Netherlands, Germany and Finland meet the requirements of the TEN-T Regulation. There are several important road sections in Poland that are not compliant and Polish authorities are already planning and implementing some of the projects and for other sections will conduct socio-economic analysis.

The Baltic States' roads on the Corridor are not compliant with respect to road class requirements and there are plans to improve the situation for some of the sections where it is economically feasible. Where this is deemed necessary, the Baltic States could assess the possibility to ask for exemptions from this TEN-T requirement due to lack of economic justification of the required investments.

The figure below presents the planned road compliance by 2030 based on the projects planned.

**Figure 4: Road compliance by 2030 overview**



## Inland waterways (IWW)

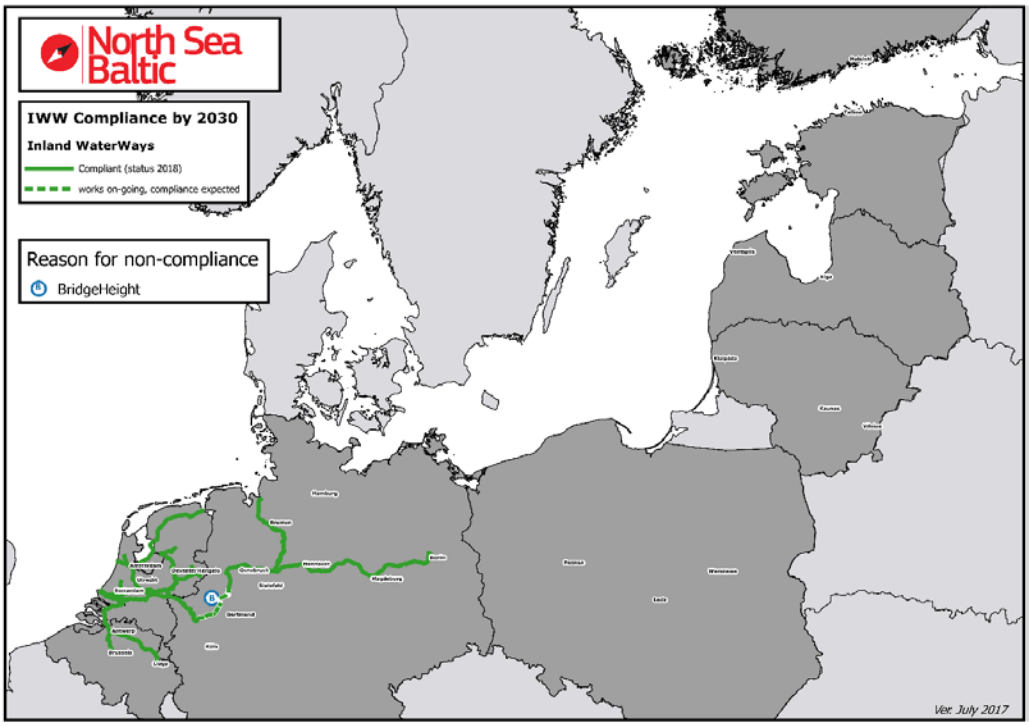
The Corridor has an effective IWW network stretching from the North Sea ports to Berlin and including three Corridor countries – Belgium, The Netherlands and Germany. The table below presents an overview of compliance with TEN-T technical requirements.

**Table 3: IWW compliance with TEN-T requirements (2018)**

| Parameter | Requirement | BE | NL | DE | PL | LT | LV | EE | FI | Corridor |
|---|---|---|---|---|---|---|---|---|---|---|
| **CEMT Class** | Class IV | 100% | 100% | 100% | N/A | N/A | N/A | N/A | N/A | **100%** |
| **Minimum draught** | from 2.50m | 100% | 100% | 100% | N/A | N/A | N/A | N/A | N/A | **100%** |
| **Minimum height under bridges** | from 5.25m | 100% | 100% | 85% | N/A | N/A | N/A | N/A | N/A | **93%** |
| **Availability of alternative fuels** | Indication of availability by 2030 | 100% | N/A[8] | N/A[7] | N/A | N/A | N/A | N/A | N/A | **N/A** |

The IWW network is almost compliant with all technical requirements, except one parameter in Germany: the minimum height under bridges has not yet been reached on some sections of the Rhein-Herne-Kanal (RHK), the Dortmund-Ems-Kanal (DEK) and the river Weser.

**Figure 5: IWW compliance by 2030 overview**




8 Availability of alternative fuels is not calculated for The Netherlands and Germany due to the lack of a common definition of the criterion.

## Inland ports

The Corridor has 20 inland ports situated in Belgium, The Netherlands and Germany. The table below presents on overview of compliance with technical requirements.

### Table 4: Inland ports compliance with TEN-T requirements (2018)

| Parameter | Requirement | BE | NL | DE | PL | LT | LV | EE | FI | Corridor |
|---|---|---|---|---|---|---|---|---|---|---|
| **CEMT class** | Class IV connection | 100% | 100% | 100% | N/A | N/A | N/A | N/A | N/A | **100%** |
| **Connection to rail** | Core ports to be connected to rail by 2030 | 100% | 100% | 100% | N/A | N/A | N/A | N/A | N/A | **100%** |
| **Availability of clean fuels** | Available by 2025 | 100% | 33% | 0% | N/A | N/A | N/A | N/A | N/A | **15%** |
| **Availability of at least one freight terminal open to all operators** | In a non-discriminatory way and application of transparent charges | 100% | 100% | 100% | N/A | N/A | N/A | N/A | N/A | **100%** |

All inland ports are compliant with TEN-T requirements, except that they still have to implement alternative fuels accessibility.

## Seaports and maritime infrastructure

The Corridor has 12 core maritime ports and the table below presents an overview of Corridor's seaports and maritime infrastructure compliance with TEN-T technical requirements.

### Table 5: Seaports compliance with TEN-T requirements (2018)

| Parameter | Requirement | BE | NL | DE | PL | LT | LV | EE | FI | Corridor |
|---|---|---|---|---|---|---|---|---|---|---|
| **Connection to rail network, inland waterways and road network** | Core ports to be connected to rail by 2030 | 100% | 100% | 100% | N/A | 100% | 100% | 100% | 100% | **100%** |
| **Availability of alternative fuels** | Available by 2025 | 100% | 100% | 100%[9] | N/A | 100% | 0% | 100% | 100% | **83%** |

All core seaports on the Corridor are connected to rail and road, although in some cases the connections are deemed of insufficient quality and capacity, which sometimes affects safety and environmental conditions.

9 LNG in German ports is provided by fuelling vehicles/vessels.

## Airports

There are 16 core network airports on the Corridor. Regulation (EU) 1315/2013 sets an obligation that certain **core network airports need to be connected by rail** (preferably high-speed) by 2050 and there are 8 airports in the Corridor which need to comply with this requirement. The table below presents the summary of technical compliance assessment with the two TEN-T requirements for airports.

**Table 6: Airports compliance with TEN-T requirements (2018)**

| Parameter | Requirement | BE | NL | DE | PL | LT | LV | EE | FI | Corridor |
|---|---|---|---|---|---|---|---|---|---|---|
| **Connection to transport network** | Heavy rail or urban rail system and road network, certain airports have to be connected to heavy rail by 2050 | 100% | 100% | 100% | 100% | 100% | 0% | 100% | 100% | **88%** |
| **Clean fuels** | Available (2017) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | **0%** |

None of the airports of the Corridor is making **clean fuels available** for airplanes. All concerned airports meet the requirement to be connected by rail, except Riga, but there are plans to connect the airport to the railway system as part of the development of the Rail Baltica project thus ensuring the rail link to the airport before 2030.

## 2.3 Persisting bottlenecks and missing links

The North Sea-Baltic Corridor links eight Member States; however, there remain substantial divergences, in terms of transport infrastructure, as well as economic and social, between the Eastern and Western parts of the Corridor. Therefore, the main challenge for the Corridor is to use the full potential of all Member States via fully **interconnected and interoperable European transport infrastructure network**.

Another challenge is to create **new rail traffic flows in a North/South direction** on the eastern shore of the Baltic Sea and to connect them to the well-established West/East and East/West flows on the Corridor and to realise the full potential of the Corridor by resolving capacity issues, interconnecting isolated networks and diverting cargo from road to rail.

Developing the transport interconnectivity of the key **urban nodes** is another priority for the efficiency of the Corridor because these nodes of high economic importance are recognised as having a crucial importance not only to this Corridor, but also to the rest of the EU transport network. To use this potential, further actions need to be taken at the crossing-points of the corridors for improving interoperability and interconnections, solving capacity issues and implementing ITS, improving multimodality and working on decarbonisation.

The North Sea-Baltic TEN-T Corridor needs to cooperate closely and on an equal basis with **Rail Freight Corridor (RFC) North Sea-Baltic** (set up under Regulation (EU) No 913/2010) which provides a unified system for the organisation and management of a dedicated capacity offer for international rail freight. RFC operations will be extended to Latvia and Estonia in 2020. A persisting rail related challenge is insufficient train length allowance in some of the countries as it creates a serious obstacle to seamless international freight traffic flows. As described above a very important part of the planned rail works will relate to ERTMS implementation across the whole Corridor. Additionally the adjustment of rolling stock, especially for freight, in due time requires special attention.

The main flagship project for the Corridor - the **Rail Baltica project** is a missing link to ensure that there is no gauge break between different Member States, and full economic potential of the Corridor is realised. Therefore, one of the Corridor priorities and challenges continues to be the completion of the Rail Baltica project on time and in a coordinated way, ensuring infrastructure interoperability, not only across the Baltic States but also Poland and Finland.

Although the existing **road network** in many countries meets the requirements of the TEN-T Regulation, there are congestion issues around the main urban nodes. Road safety is another challenge, which has been identified but not yet fully addressed.

For the **provision of alternative fuel sources** for road transport, the Corridor has made significant developments and some implementation projects are ongoing for electricity, LPG, LNG or hydrogen refuelling stations development across the Corridor. However, there are differences between the Member States with regard to the type of alternative fuel provided, network coverage and thus a lack of continuity of service provision for all types of alternative fuel across Corridor borders is expected.

**Additional projects** have been identified which from the consultants' point of view could be needed to achieve the Corridor compliance with TEN-T requirements, but are not currently planned. Those projects mostly relate to the use of clean fuels for airports; the bridge height for IWW in Germany; road compliance with TEN-T requirements in the Baltic States; and the train speed and length for some rail sections.

The main issues with regard to the project implementation are lack of funding, difficulties to coordinate implementation of complex cross-border projects as such actions need to have a **common vision and coordinated action**.

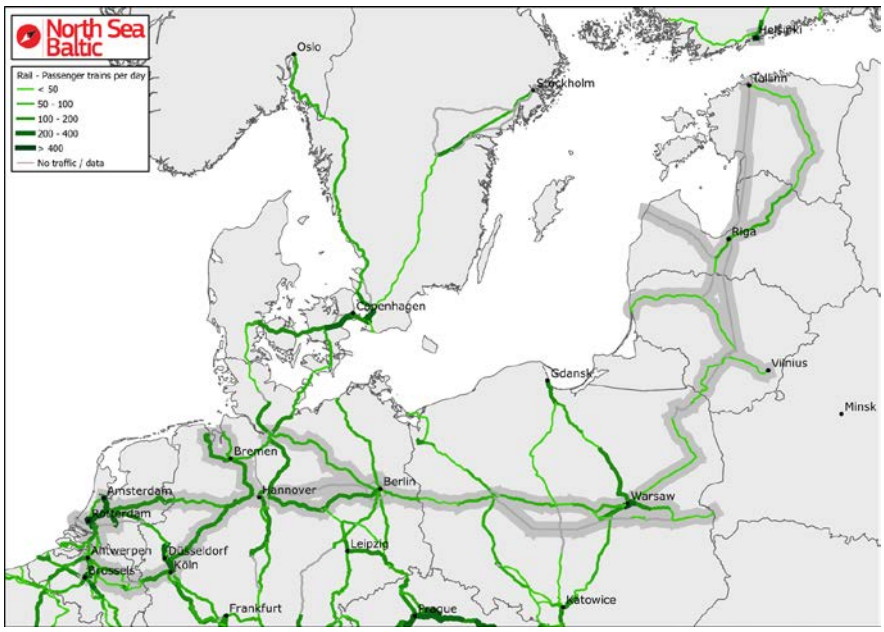
# 3 Transport Market analysis

## 3.1 Current flows along the Corridor

The figures below present the current traffic flows along the Corridor (highlighted in grey) for road (passenger/freight), rail (passenger/freight) and inland waterways (freight traffic). The reference year for collecting traffic data is 2016 and the sources are official public sources such as Eurostat and/or national statistics.

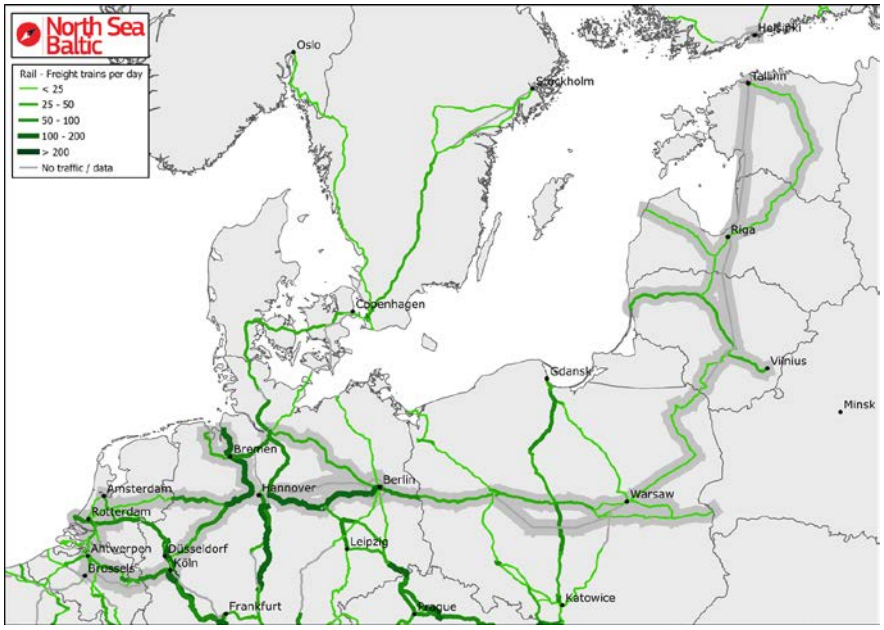
Traffic intensity in terms of passenger trains per day is higher along the Corridor lines in The Netherlands, Germany and near Warsaw.

**Figure 6: Rail traffic flow passenger trains per day**




In terms of freight traffic flows, the sections in Germany are the ones with higher freight trains per day and therefore more congestion.

**Figure 7: Rail traffic flow freight trains per day**




For road traffic the traffic flows are more intense near the urban nodes, especially in Belgium, The Netherlands and Germany.

**Figure 8: Road traffic flow passenger vehicles per day**

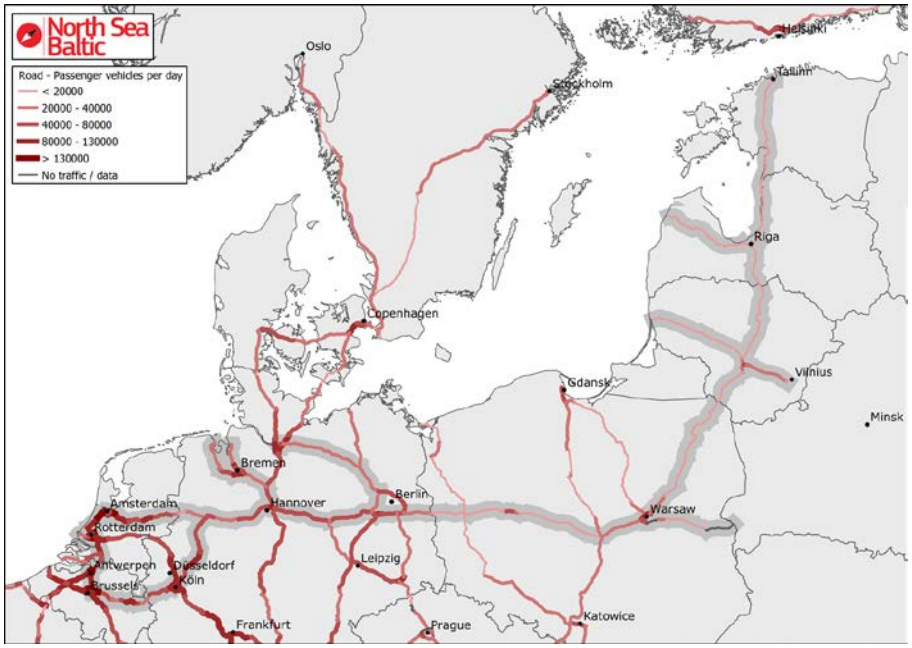
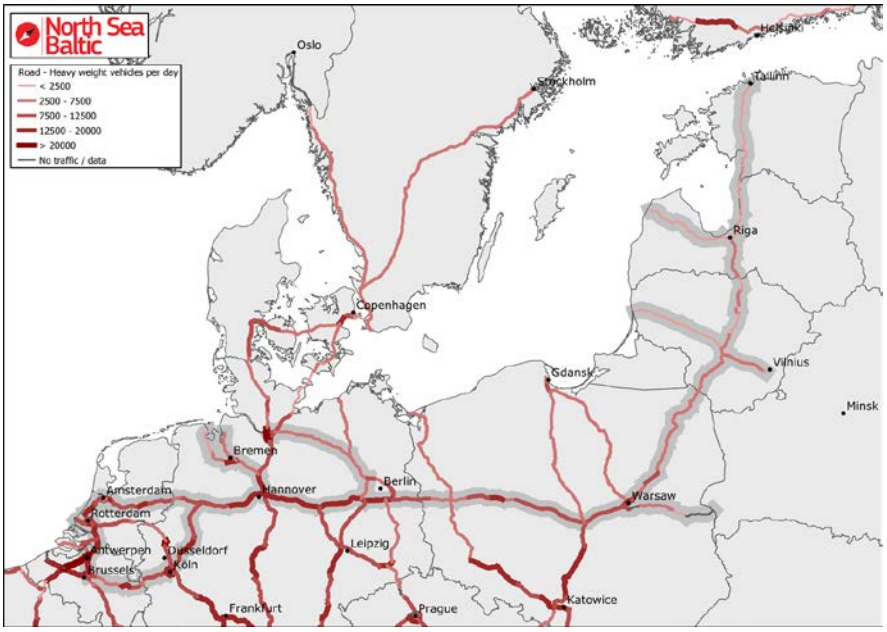
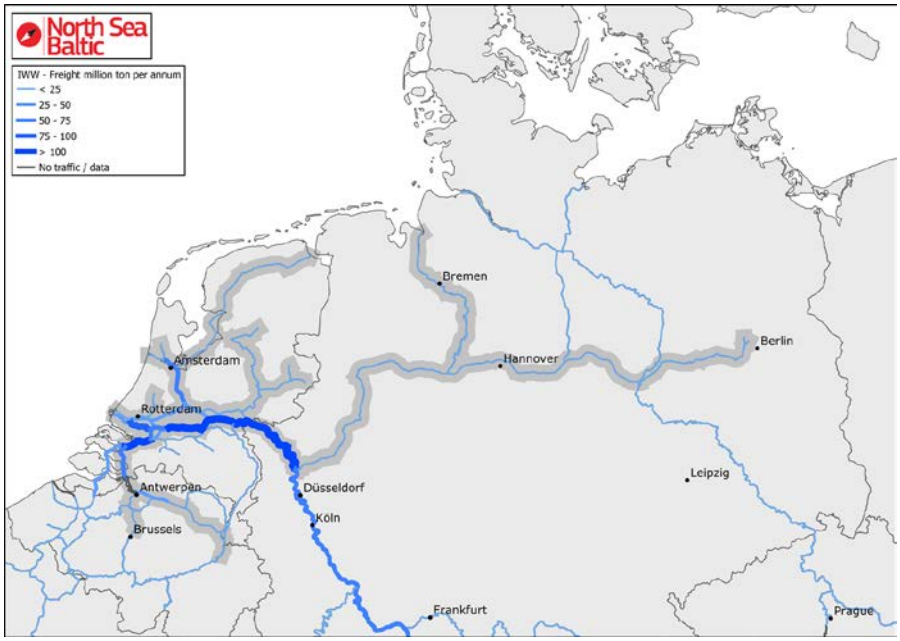


**Figure 9: Road traffic flow heavy vehicles per day**




Regarding inland waterways, the heaviest section is coming from North Sea ports towards Germany.

**Figure 10: IWW traffic flow freight million tones per year**




## 3.2 The Corridor scenario

Besides the analysis of the current flows and available capacity of the corridor infrastructure, future transport activities have been estimated, as well as macro-economic impacts for three different corridor development scenarios: 1) The **baseline scenario**, assuming that no additional core TEN-T network investments are taking place beyond 2016; 2) The **reference scenario** assuming full completion of the core TEN-T, in line with the projects identified through the work of the European

Coordinators and 3) A **specific scenario per corridor** highlighting specific aspects such as critical projects, special opportunities, specific sets of investments or measures of relevance for the individual corridor. For all three scenarios, a combination of the "Assessment of Transport Strategies" (ASTRA) and "TRansport eUropean Simulation Tool" (TRUST) models have been used. For the scenarios relating to full corridor completion, this work plan draws on the results of the study *the impact of TEN-T completion of growth, jobs and the environment* published in 2019 by the European Commission. The corridor-specific scenario was elaborated as part of an additional study conducted in view of this work plan.

### *Reference scenario*

The impact analyses performed under the Growth and Jobs study allow capturing the direct effects of the new infrastructure developments in the transport sector and the indirect effects on supplying industries and the wider economic impacts induced by mechanisms such as higher productivity diffusing to other economic agents and into future years at regional/national scale. For the North Sea-Baltic Corridor, according to this study, the implementation of the whole EU-wide core TEN-T (reference vs. baseline in 2030) will result, in the corridor Member States during the period 2017 - 2030, in an increase of cumulated GDP by 0.8%, corresponding to about € 527 billion, and in the generation of a total of 2.2 million additional man-years of jobs.
These socioeconomic gains will be furthermore coupled with additional benefits in terms of reduction of external costs and environmental protection. The planned investments along the corridor, in accordance with the present work plan (notably in the field of rail and the improvement of intermodal transport) will enhance the environmental performance of the TEN-T, creating favourable conditions to increase the modal share of greener transport modes, mitigating greenhouse gas emissions, noise and, as appropriate, other negative environmental impacts.

Whereas the transition to innovative and sustainable transport technologies will generally make possible the decarbonisation of all transport modes, a positive contribution is also expected from the large-scale adoption of alternative clean fuels and zero-emission vehicles. The ongoing and planned projects on the TEN-T are expected to play an important enabling role by supporting the early adoption of such technologies.

### *Corridor specific scenario*

The NSB Corridor specific scenario investigates the impact of the work plan implementation regarding urban nodes efficiency along the Corridor. In this scenario, projects that contribute to the urban nodes efficiency, e.g by decreasing travel time, are excluded and their impact estimated. Examples of projects are: bypasses, upgrades on the network e.g additional lanes/tracks, bridges/tunnel construction, etc.

The non implementation of these projects (corresponding to a total investment of 24 € billion) would result in a loss of 11.0% and 10.0% of the TEN-T implementation impact on national GDP and employment (corridor vs reference in 2030) in the Member States crossed by the North Sea-Baltic Corridor, with higher negative effects in Estonia (-54.4% and -46.9% of the TEN-T implementation impact on national GDP and employment), Latvia (-25.8% on GDP and -40.7% on employment) and the Netherlands (-34.1% of the TEN-T the impact on GDP and -24.5% on employment).

# 4 What has still to be realised by 2030

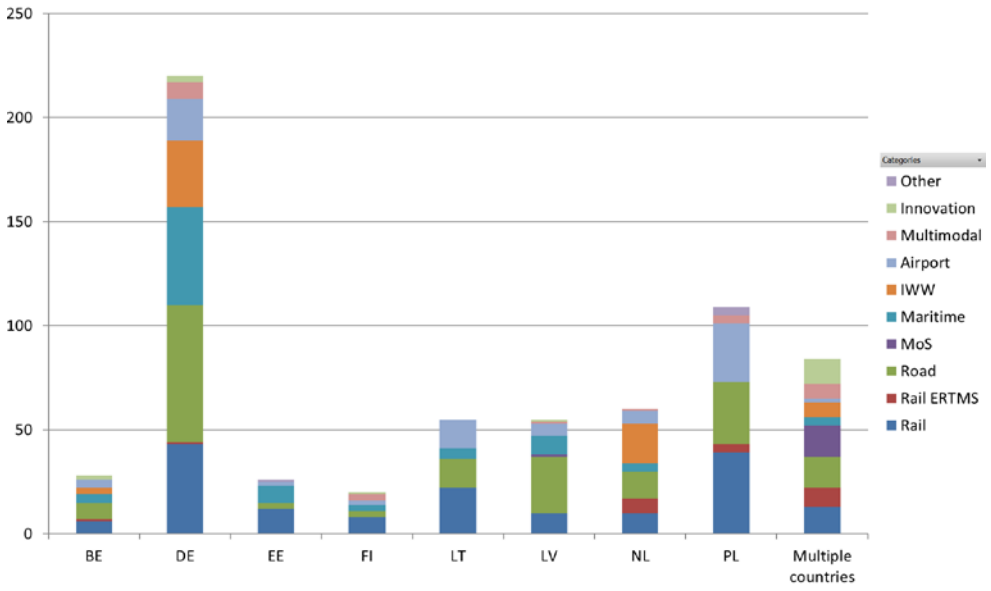
The main instrument to implement the Corridor objectives – to achieve **compliance** with TEN-T requirements and use the **full potential** of the Corridor – are **transport infrastructure projects**. The results of initial identification of the projects was reflected in the First Work Plan and since then the project list has been updated on a regular basis regarding progress made and new projects identified.

Furthermore, the **project list was enriched** by the input from the Connecting Europe Facility (CEF) transport call results, the new national infrastructure plans and the Rail Freight Corridor (RFC) implementation plan. Extensive consultations with the European Commission, Member States and the Corridor Forum stakeholders have been conducted, in order to harmonise the project list and to ensure the completeness and accuracy of the information gathered. As a result of the common vision and work, **657 projets amounting to 110 bn €** have been identified (according to cost figures agreed with the Member States and stakeholders).

There are in total 68 "additional projects" amounting to an estimated 488 mn € **proposed by the Corridor consultants** to achieve compliance with TEN-T KPIs on the NSB corridor. The indicative list of "additional projects" should be considered as input for discussion between the European Coordinator and involved stakeholders. The main project categories for additional projects relate to clean fuels, bridge height, train length 740 m terminal accessibility and 100 km/h line speed for trains on freight lines. This recommendation does not question in any way the Member States' competence in infrastructure planning.

The challenges are Member State specific and horizontal as demonstrated in the graph below providing information on the number of projects per Member State and per transport mode.

**Figure 11: NSB corridor projects by country and category**



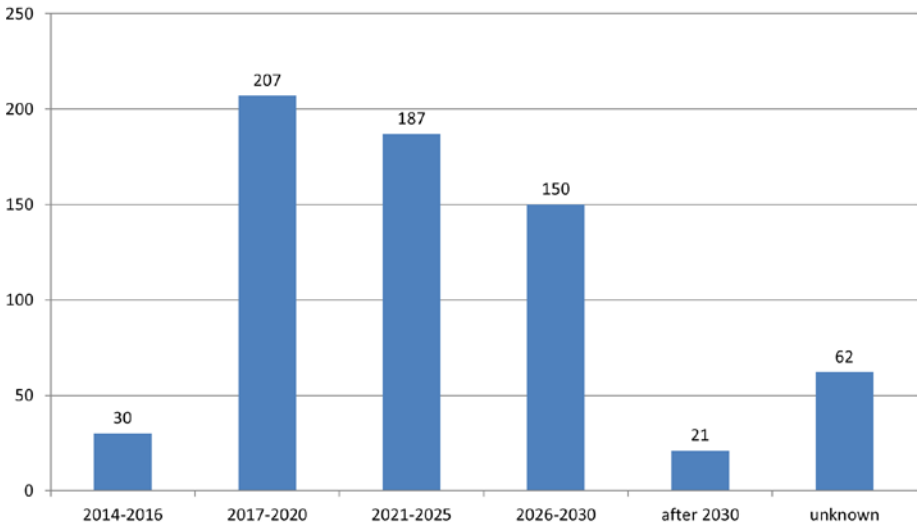

*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects; Status: October 2019*

As stated above, the main objective of projects is to help to achieve the **compliance with the TEN-T Regulation.** There are 152 projects with the total value 39 bn € (37.7 bn € agreed with Member States and 1.45 bn € "additional projets" proposed by

the Corridor consultants) which will help to achieve the compliance with KPIs. Among these projects directly contributing to achieving the TEN-T Regulation standards, 53% are rail projects and 21% are road projects.

The deadline to achieve compliance with TEN-T requirements for the core network is 2030. The overview of NSB Corridor projects by completion time is presented in graph below.

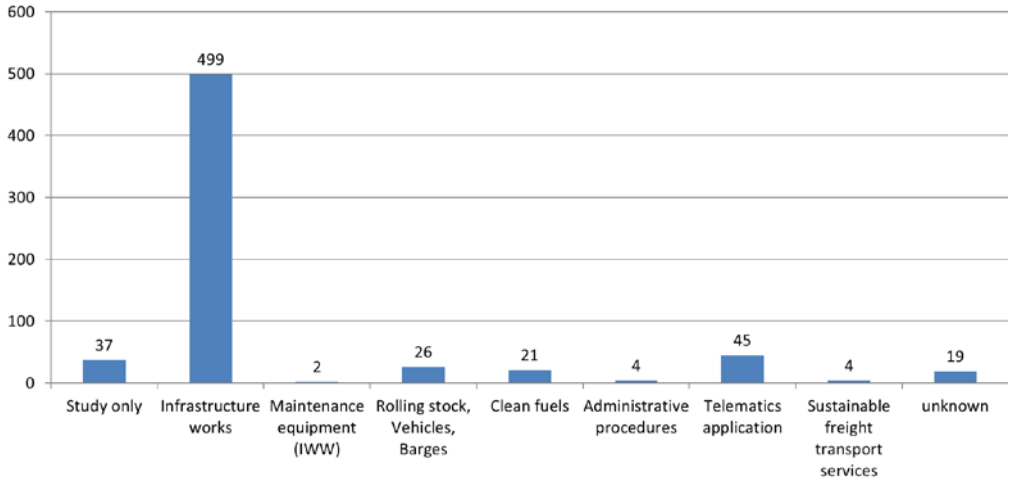
**Figure 12: NSB corridor projects by completion time**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects; Status: October 2019*

The maturity of the Corridor development is also characterised by type of projects and for the NSB Corridor the majority of projects (75%) relate to infrastructure works.

**Figure 13: NSB corridor projects by "scope of work"**

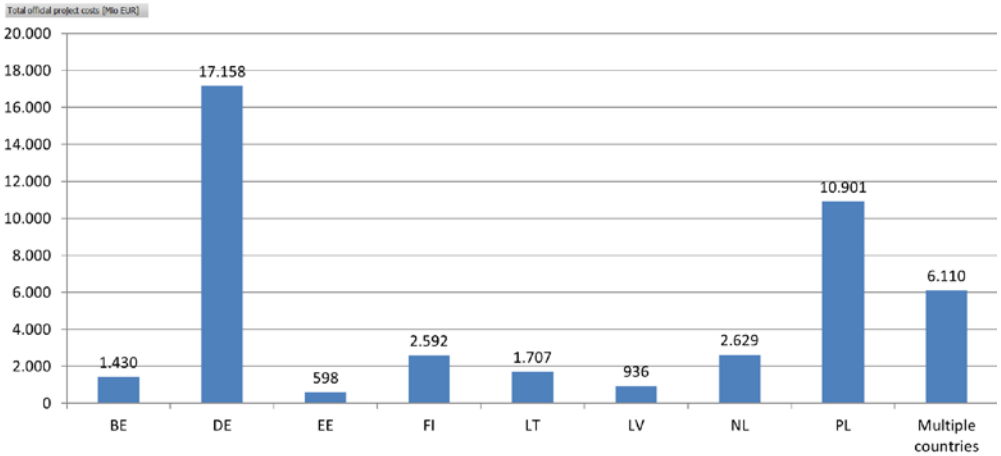



*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects; Status: October 2019*

## 4.1. Rail & RRT

The Rail category refers to rail projects and not to dedicated ERTMS projects, however, some of the Rail projects, especially large-scale upgrades and new constructions, often include ERMTS implementation as well. There are 163 Rail and 24 Multimodal projects ongoing and planned along the NSB Corridor. As shown in figure 15 below, **more than half of these projects are located in Germany or Poland,** which also have the largest shares on the Corridor rail network length. Thirteen Rail and seven Multimodal projects are allocated to more than one country ("Multiple countries"), referring to either pan-European studies, rolling stock modernisation / deployment or to the "Rail Baltica" project.

**Figure 14: costs of NSB corridor projects; category "Rail"**



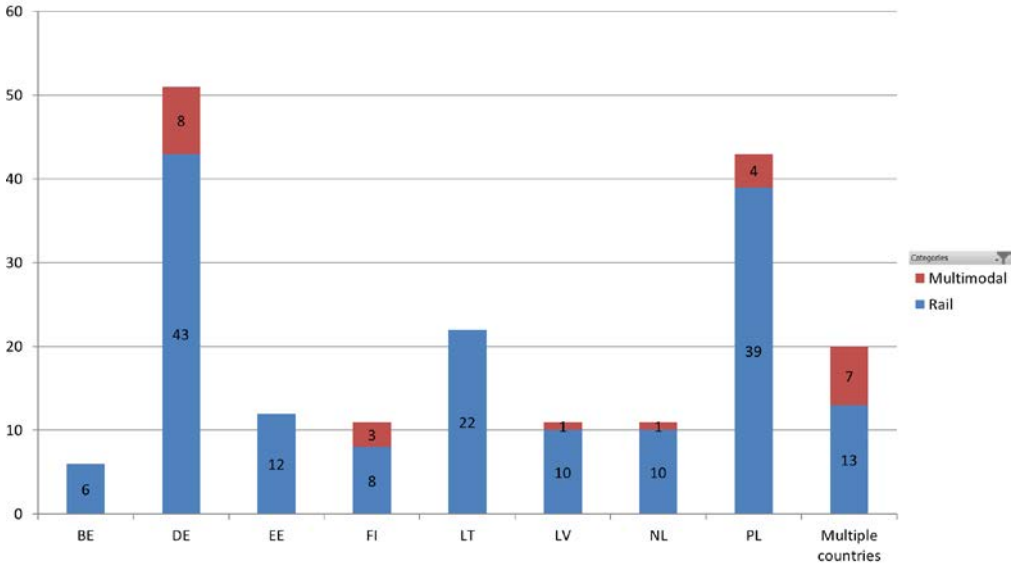

*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, thereof 163 "Rail" projects with costs of 44.1 bn €; Status: October 2019*

The costs of the **projects sum up to 44.1 bn € for Rail projects**. This figure represents project costs that were verified and approved by the Member States and stakeholders. Almost half of these investments are allocated to the following large-scale projects: Rail Baltica - section PL/LT border - Kaunas (LT) - Riga (LV) - Tallinn (EE), the High Speed Line "Y": Warsaw - Łódź - Poznań / Wrocław, the optimised Alpha E line Hamburg/Bremen-Hannover, railway line upgrade and new construction Hannover – Bielefeld, measures in the railway nodes Köln, Hamburg, Warsaw and Helsinki and the rail upgrade project Schiphol-Amsterdam-Almere-Lelystad. For Rail projects without official costs values, the consultants provided estimations, leading to additional costs of 2.7 bn €.

Out of the 24 Multimodal projects**, there are 10 RRT upgrade** or development projects in the following locations: Małaszewicze (PL/BY border), Duisburg (DE; Rhine-Ruhr Intermodal Hub), Hannover (DE; Megahub Lehrte), Köln (DE; Eifeltor), Berlin (DE; Großbeeren), Hamburg (DE, Billwerder). The costs communicated for RRT projects is 48 mn € and additional projects are estimated by the consultants to cost ca. 201 mn €.

The information on **proportion of RRT projects and Rail projects** is presented in the graph below.

**Figure 15: NSB corridor projects; categories "Rail" and "Multimodal"**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, thereof 163 "Rail" and 24 "Multimodal" projects; Status: October 2019*

With a view on the year 2030, it can be stated that 144 Rail (88%) and all 11 RRT projects are expected to be completed until then. **Rail and RRT projects will contribute to the achievement of one or more KPIs** in relation to the requirements of the TEN-T Regulation. For instance, the projects will contribute to the achievement of the following KPIs: "Train length" (44 projects), "Axle load" (44 projects), "Line speed" (34 projects), "Electrification" (29 projects). Moreover, 98 Rail projects aim at the elimination of capacity bottlenecks.

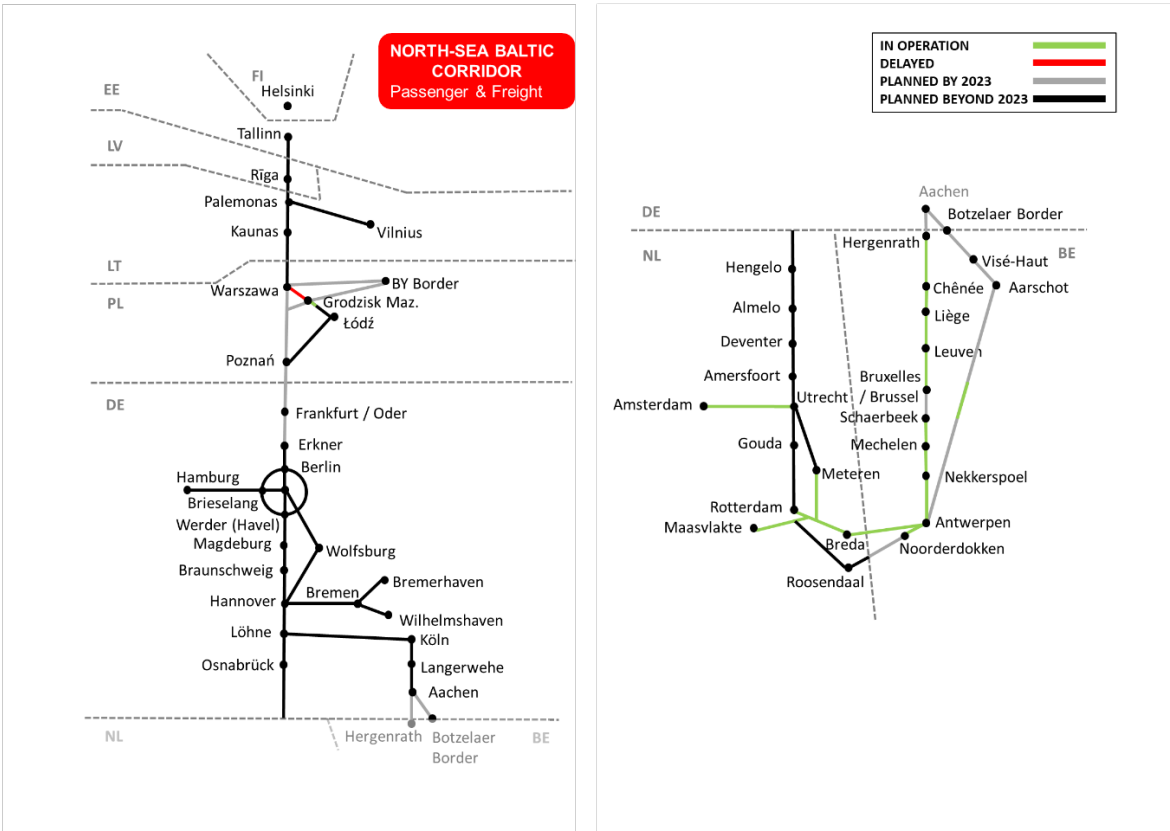
Rail and RRT projects will not only contribute to the achievement of KPIs but will contribute to the use of **market potential**, to meet market needs and **to make intermodal transport competitive to road,** for instance, "Capability of handling intermodal units", "740 m train terminal accessibility", "Electrified train terminal accessibility".

## 4.2. The ERTMS deployment 2023

Regarding the sections planned to be equipped before 2023 in the NSB Corridor, the Netherlands is in the most advanced situation; the Netherlands has already 190,59 km of ETCS in operation (representing 100% of what has to be equipped before 2023 and 40% of the total number of km in the country belonging to the NSB Corridor). Belgium has 223,18 km of ETCS in operation in the Corridor that represent 56% of what has to be equipped by 2023 and also of the total length of the corridor in Belgium. The Belgium ETCS deployment progress should gather pace to equip the pending sections (176,64 km) before 2023.

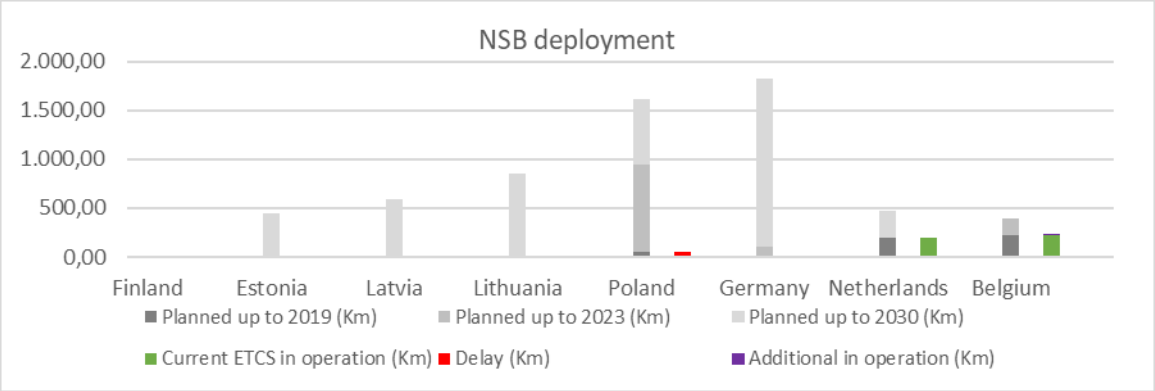
The following scheme shows the deadlines and the state of play for the ERTMS deployment in the NSB Corridor.

**Figure 16: Current status by country and deployment per status (ETCS)[10]**




It will be challenging for the rest of Member States to put in operation the planned sections before 2023, especially in Poland where the highest number of km of ETCS deployment are planned to be equipped before 2023 in the NSB Corridor (946,90Km) and where just 2% of these km are already equipped. ERTMS deployment level at NSB is presented in figure below.

**Figure 17: Current status by country and deployment per status (ETCS)**

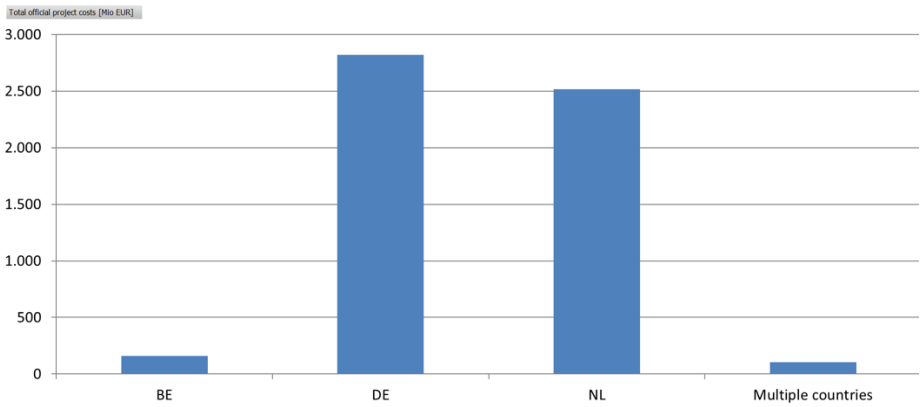



10 This scheme reflects the sectioning and the timing foreseen in the European Deplyoment Plan for ERTMS. In its National Deployment Plan, Poland plans to install ERTMS on the section between Warsaw and Bialystok by 2023 and by 2026 on the section Warsaw-Grodzisk Mazowiecki-PL/BY border.

## 4.3. IWW & inland ports including RIS deployment plan

There is **full compliance** on TEN-T requirements for IWW concerning the parameter "minimum draught" but there is a need to enhance the height under bridges. The information per investment planned for IWW projects per country is presented in the graph below.

**Figure 18: costs of NSB corridor projects; category "IWW"**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, thereof 61 "IWW" projects with costs of 5.6 bn €; Status: October 2019*

The projects are addressing partially capacity problems which mainly occur at locks, as these can create waiting time if the amount of traffic exceeds the lock capacity. Some of the Member States with projects identified go beyond compliance, for instance, there are projects covering a CEMT V upgrade. Additional investments are needed in Germany to achieve the parameter for bridge height on all sections of the Corridor.

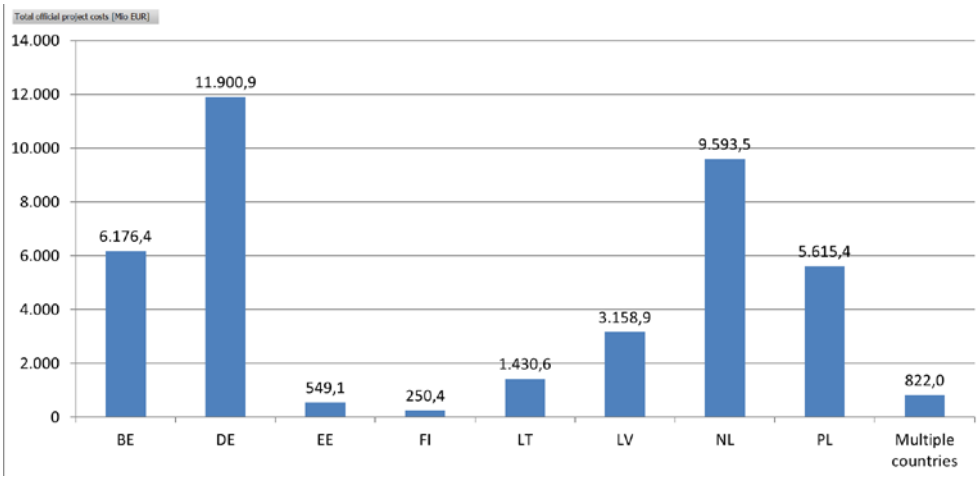
There are five RIS projects on the NSB project list, three of which are related to the CEF project RIS COMEX, a project developing an Intelligent Barge Information Service (River Information System) and optimizing Inland Waterway and Multimodal Transport. RIS related projects aim to contribute to a more coherent deployment of EU-wide harmonised information services contributing to safer, more efficient, and environmentally friendly inland navigation.

## 4.4. Road transport (incl. ITS deployment)

The road projects address **non-compliance issues** in some of the Member States and **capacity issues** in almost all Corridor Member States. At the western side of the Corridor the projects also address the problems mainly related to the densely populated and economically dynamic regions.

The project information per investment planned is presented in the graph below and projects mosty relate to the existing infrastructure upgrade.

**Figure 19: costs of NSB corridor projects; category "Road"**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, thereof 179 "Road" projects with costs of 39.5 bn €; Status: October 2019*

As there is **limited possibility for expanding existing infrastructure** due to spatial and financial constraints, as well as the impact on the environment and climate change, new comprehensive initiatives aimed at modal shift and multi-modal transport planning are required to avoid increased numbers of capacity bottlenecks.

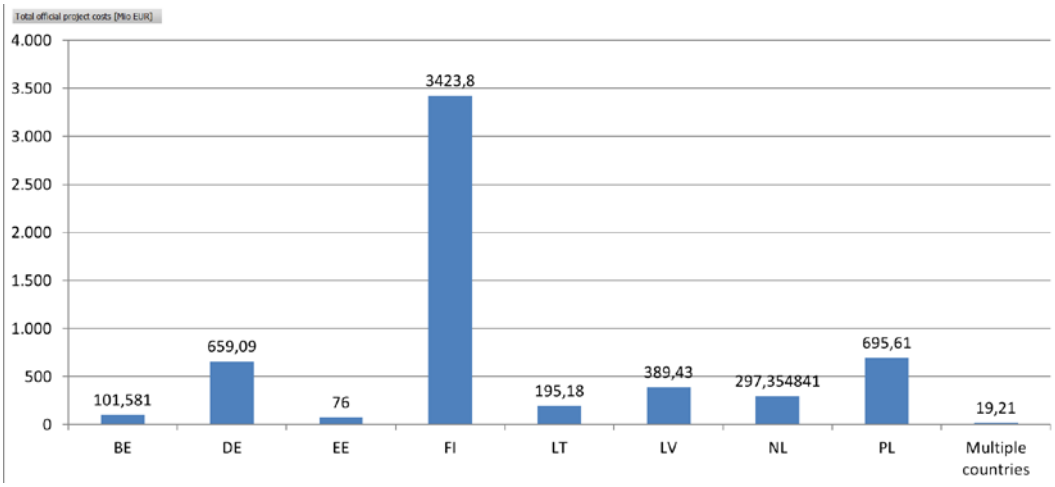
For some sections of the Corridor **road safety** is the main issue due to heavy road use and further actions on road safety improvements should be undertaken.

Deployment of **Intelligent Transport Systems (ITS)** along the Corridor can alleviate capacity issues, as available real time information on congested road sections can help the users to better plan their movements. At the same time, it would also contribute to increased road safety. The efforts made in the framework of the economic recovery can offer opportunities to advance on this aspect along with traditional infrastructure investments that remain necessary. It will be important to ensure sufficient funding and financing for both, including at EU level.

## 4.5. Airports

Due to peripheral geographic location of some of the Corridor Member States, **airports have a very important role for some of the Corridor countries.** Airport projects are planned in all Corridor countries with the highest investment in Finland to provide further connections for cargo and long-distance passenger trains in Helsinki airport.

**Figure 20: costs of NSB corridor projects; category "Airport"**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, thereof 84 "Airport" projects with costs of 5.9 bn €; Status: October 2019*

The second largest investment relates to **Poland** - Warsaw Chopin Airport intends to improve its internal road network in order to separate air-traffic-related vehicle flows from common urban traffic congestion. Poland is also working on a new Central Transport Hub development.

Due to the capacity issues at the existing airports in **Berlin**, a new airport is under construction and a medium-term expansion programme is ongoing. There are ongoing studies for capacity improvement of the airport in Hannover, and the airport of Hamburg is studying development of an additional rail link.

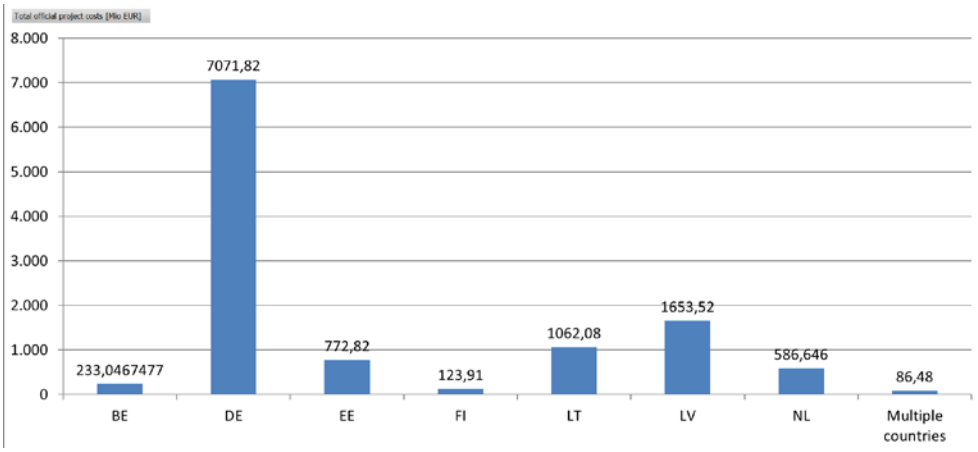
**Riga** airport has a requirement to be connected to the rail network by 2050. The solution is foreseen in the context of the Rail Baltica project, whereby the new fast conventional European-gauge rail line shall pass directly through Riga airport with a new rail passenger station to be constructed at the airport.

All Corridor airports have to assess the introduction of **clean fuels** for airplanes. Advanced biofuels and e-fuels are the only realistic option for this mode of transport.

## 4.6. Maritime Ports on the NSB Corridor, interactions and complementarity with the MoS Coordinator Implementation Plan for the NSB Corridor

The ports of the North Sea-Baltic Corridor are **among the busiest in Europe**. Together, they handled 1.1 billion tonnes of cargo in 2018 (around 27% of all cargo transiting through EU ports), of which roughly 100 million tonnes are transhipment traffic (mostly Hamburg and Bremerhaven). Hence, around 90%, or one billion tonnes of cargo are actually moving between the ports and the Corridor. It is the Corridor with the **second most important hinterland traffic volume**, underlining the importance of strong port-hinterland connections. The location of the largest ports in the Corridor is also reflected in the investments planned in the martime sector per Member State.

**Figure 21: costs of NSB corridor projects; category "Maritime"**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, thereof 84 "Maritime" projects with costs of 11.6 bn €; Status: October 2019*

A **modal shift from road to less carbon-intensive modes** is one way to reduce the carbon emissions of the transport sector. The North Sea-Baltic Corridor is a typical coastal corridor, and there are various regular maritime ro-ro and container services in parallel. Therefore, maritime transport is an alternative on the longer distances between the North Sea and the Baltic Sea. Regular ro-ro and container services in the North Sea and the Baltic Sea feed the Corridor with maritime traffic.

While developing the North Sea-Baltic Corridor projects it should be considered that **synchromodal concepts are possible**, with maritime transport carrying less time-sensitive cargo while road transport covering the priority cargo.

The North Sea-Baltic Corridor (both CNC and RFC, through investments and coordination efforts) shall make sure **to provide and develop the necessary rail capacity** to and from ports in the North Sea and the Baltic Sea in line with demand and work together with ports, forwarders and ship operators. This will help to improve the administrative procedures and data flow across all modes and assure the reliability of the network in order **to guarantee the smooth flow of goods between MoS and the corridor** as well as to avoid delays.

## 4.7. Innovation deployment and alternative fuels infrastructure

The **innovative potential** of the Corridor is reflected in its performance to apply better transport solutions that meet existing and new mobility needs. Innovative projects are considered those involving some form of sustainable and future-oriented mobility. For instance, deployment of alternative fuels recharging and refuelling infrastructure for IWW, maritime, road and air transport and associated mobile assets; transport telematics applications[11]; implementing sustainable freight transport services[12].

According to the Corridor Work Plan Project List, **7% of the investments allocated to the projects contain an innovative component. Telematics** related projects

11 According to Regulation (EU) 1315/2013. Projects involving ERTMS are left out of the analysis.

12 According to Regulation (EU) 1315/2013, Article 32; excluding Motorways of the Sea projects from the analysis.

receive 78% of all investments that go into innovative projects, while 19% goes to the realisation of **clean fuels infrastructure** and 8% to sustainable freight transport services. Looking at the transport modes, most innovation takes place for road and air transport, while IWW, multimodal or seaborne transportation represent a smaller share.

According to the TEN-T requirements, the supply of alternative fuels along the road corridor is already met. The Corridor has made significant developments and some implementation projects are ongoing for electricity, LPG, LNG or hydrogen refuelling stations. However, there are discrepancies with regard to the type of alternative fuel provided. Moreover, there is no centralized or unified paying system, which makes cross border travel with alternative fuel vehicles problematic. Alternative fuels supply for other modes remain uncertain. Of the inland ports, 15% currently provides alternative fuels, whereas the percentage is 42% for the Seaports. More LNG terminals are foreseen for Antwerp and Helsinki, slowly increasing the offer. Especially in smaller (inland) ports, supplies can be provided through truck-to-ship or ship-to-ship bunkering, though. No provision of alternative jet fuels is taking place, as the high technical requirements makes the feasibility of using alternative fuels for commercial aviation low, currently and in the near future.

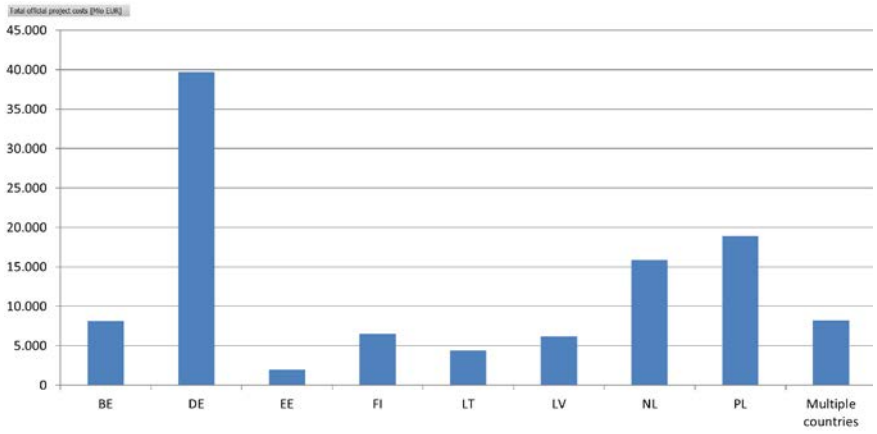
For an efficient and optimal transition, a coordinated approach with the energy and digital sectors is necessary, e.g. when creating Clean Energy Hubs.

# 5. Funding and Financing

## 5.1. The funding needs

Over the years, the project list has been enhanced by reflecting more projects not only to achieve compliance with TEN-T requirements but also to address bottlenecks and to develop the economic, social and territorial cohesion objectives of the Corridor development. To achieve those objectives, the number of projects has increased and the 4th Work Plan includes 657 projects with a total value of 110 bn € in comparison to 530 projects with the total value of 96.1 bn € included in the Third Work Pan. The graph below shows the identified investments by Member State, as well as cross-border or multi-country projects.

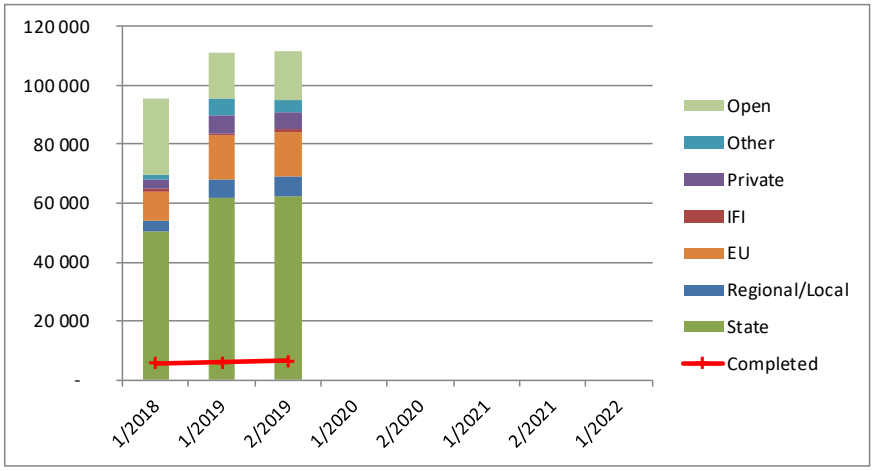
**Figure 22: costs of NSB corridor projects by country**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, 110 bn € project costs; Status: October 2019*

The project funding sources differ between Member States and change over time, based on the maturity and type of the project. The graph below shows how the project financing changed due to increased number of projets, project maturity and project funding options available.

**Figure 23: Evolution of project funding over the years**



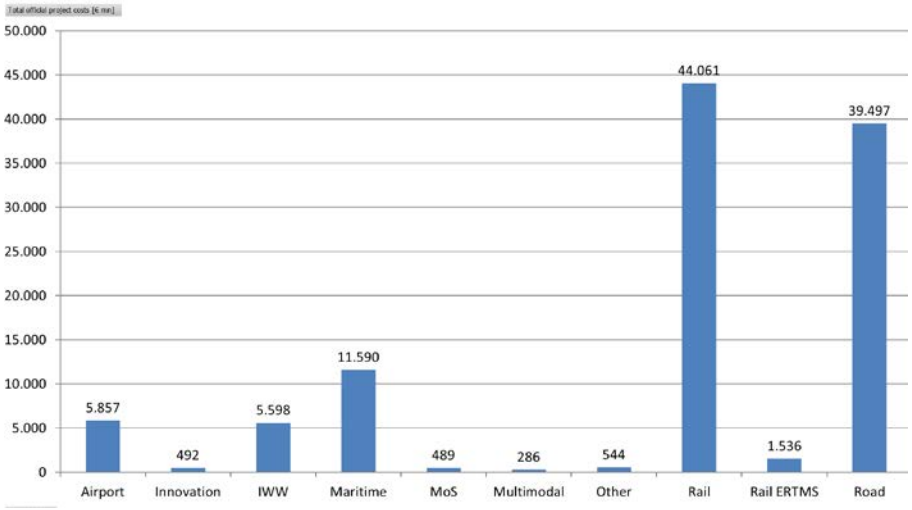

*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, 110 bn € project costs; Status: October 2019*

As it could be seen from the graph above, the main funding source is national or regional funding but the situation is different between Member States, and for some Member States the main funding source will be EU funds. EU funding is divided between EU grants (the biggest share) and loans or guarantees from EU institutions.

As described earlier, the projects are split between projects identified by Member States and stakeholders (590 projects with the total value 109.950 bn €) and additional projects identified by the Corridor consultants in order to achieve full compliance (67 projects with the total value of ca. 500 M €). For 590 projects identified by Member States and stakeholders the approved financing amounts to 62.466 bn € and potential or not-specified financing amounts to 31.917 bn €, with a gap of required financing without any information on the sources in the amount of 15.527 bn €.

Another way how to analyse the Corridor projects and their contribution to TEN-T goals is to look at project financing by transport mode. The highest share of investment is foreseen in rail, which can be seen as the most effective way to address the climate change issues, along with IWW investments. The second largest category is road.

**Figure 24: NSB project costs per category**




*Source: Consultants' analysis based on 2019 Project List of the NSB Core Network Corridor; Total: 657 projects, total costs: 110 bn €; Status: October 2019*

## 5.2. The innovative financial tools

The projects mostly are financed by Member States, regions and different other public funds, where different PPP mechanisms have been applied to ensure the required financing. EU grants represent only 12.3% from overall project financing, including ESIF financing (which represent 65.4% of that share), sometimes with the use of innovative financial instruments.

In addition, blending of grants and loans is a new mechanism under the CEF to leverage public grants for key priority projects. The smallest project funding category includes EIB loans and private financing sources, where different mechanisms have been applied likewise, such as fund of funds mechanism. Innovative financial instruments have a strong potential to leverage private investments in transport infrastructure, but certain types of projects in all transport modes will continue to rely on public grants.

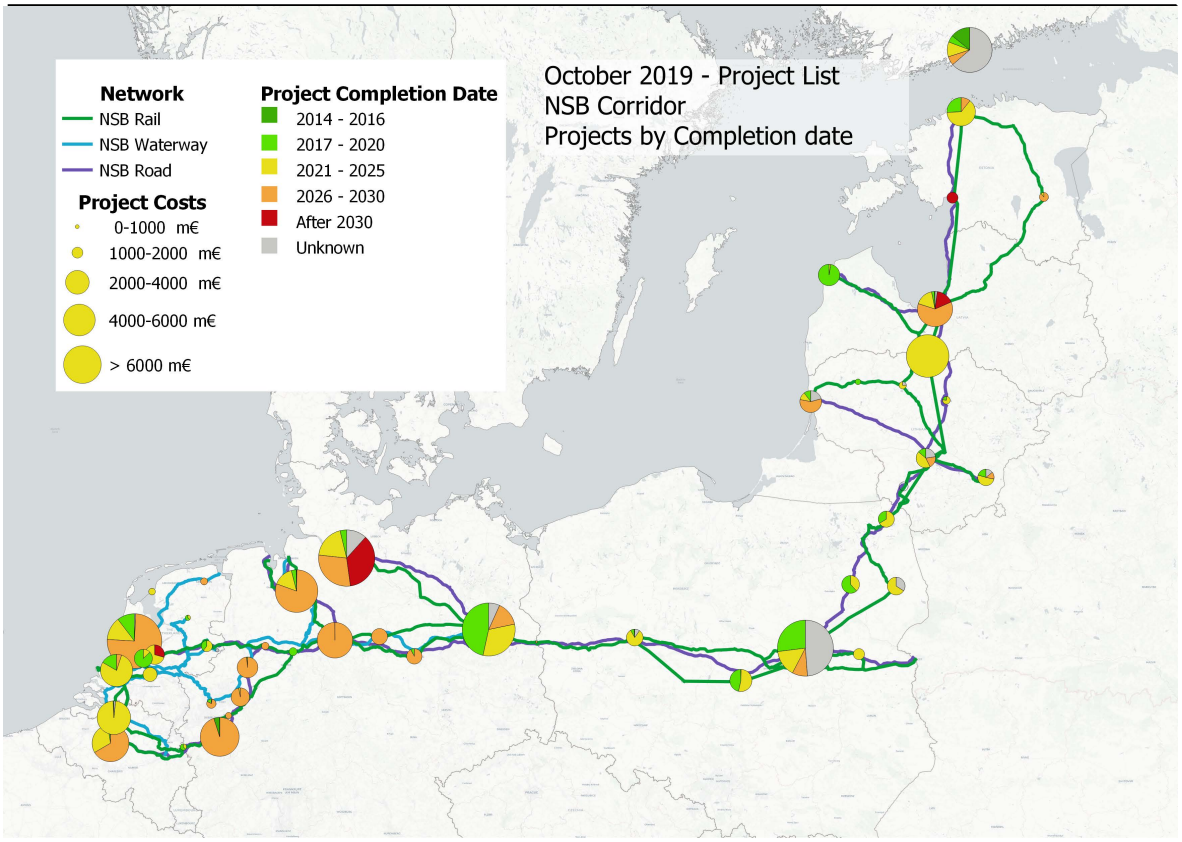
# 6. The European Coordinator's recommendations and future outlook

## 6.1. Achievements since the Third Work Plan

Significant progress has been made since the third Work Plan - 115 out of 657 projects were already completed. Examples of completed projects include modernisation of railway lines in Poland: Warszawa – Łódź, Warszawa Zachodnia – Skierniewice (Miedniewice); modernization of airport infrastructure in Poland; construction of ring rail line for Helsinki airport in Finland; ERTMS deployment in Germany and Belgium; twin port project in Tallinn and Helsinki; electrification projects in Lithuania and many other projects.

The graph below shows visually the projets already completed by 2020 (highlighted in green) and projects to be completed.

**Figure 25: Number of projects by completion time cluster and project costs**




## 6.2. Evolving regulatory environment

During the Third Work Plan period, many important studies have been carried out. The TEN-T Regulation requires to complete the TEN-T Core Network by 2030, and most of the studies have been devoted to supporting this goal. An example of a horizontal effort to speed up the implementation of TEN-T projects is the "*Study on permitting and facilitating the preparation of TEN-T Core Network projects" (2016)* and the subsequent impact assessment that led to the European Commission's "*Proposal for a Regulation on streamlining measures for TEN-T implementation*" (2018). In June 2020, a political agreement between the co-legislators was reached on a legal act in the form of a Directive.

The European Commission has started the review process of the TEN-T guidelines in April 2019. Depending on the outcomes, it will be determined, whether the TEN-T policy and guidelines require adjustment. In its Communication on a European Green Deal (November 2019), the Commission announced that a proposal for the revision of the guidelines would be tabled in 2021.

Besides this, the Commission has identified the value of the TEN-T network for the movement of military forces and equipment in the "*Action Plan on Military Mobility*" (March 2018).

Finally, a proposal for the establishment of the legal basis for Connecting Europe Facility (CEF) funding after 2020 has been tabled by the Commission (June 2018*)* and the legislative negotiations are well progressed. Once adopted, this Regulation will lead to the geographic extension of the NSB Corridor in Finland, Sweden, Poland and Germany.

## 6.3. Investment, growth, and job impact of the CNC

The impact of the TEN-T projects on jobs and growth are derived from the MTMS. Based on this forecasting model, all NSB Member States will benefit from the TEN-T implementation. A 527 bn € increase of GDP generated by the implementation of the TEN-T projects over the period 2017 - 2030[13] is expected for the countries. However, the positive impact is higher in Latvia (+6.0%), Lithuania (+4.1%), Estonia (+3.1%) and Poland (+3.0%) than in Finland (+1.18%), Belgium (+0.8%), The Netherlands (+0.5%) and Germany (+0.5%). The benefits will continue after 2030. The investments also stimulate extra employment. It is estimated that an additional 2.2 mn jobs are created if these projects are implemented before 2030, ranging from an increase of +0.08% to 0.87%, according to a similar distribution as the GDP growth. The forecasting model also shows what would occur if none of the TEN-T projects are completed before 2030. In this scenario, it is estimated that 64 bn € of GDP growth will not be realized and 0.2 mn jobs are not being created. The impact is highest for the Baltic States, followed by Finland and Poland, with the Western European States being impacted less.

## 6.4. Modal shift and impact to decarbonisation

Representing a quarter of Europe's GHG emissions, transport is a key sector for the EU in achieving its decarbonisation objectives. In 2015, the transport sector in the North Sea-Baltic Corridor Member States[14] emitted together around 293 million tonnes of CO2. While transport volumes are forecasted to increase over the period 2015 – 2030, modal shift and efficiency gains are expected to outweigh growth in transport volumes. CO2 emissions are estimated to fall by 10.0% in 2030 if all planned TEN-T projects on the Corridor are implemented. This is a further reduction of 1.5%

13 Most countries belong to more than one corridor. Hence, in countries with more than one Corridor, the number will include the transport network effect, i.e. synergies between all the 9 corridors and in case of analysing one country in particular synergies of all CNC crossing that country.

14 Emission values reflect the sum of the total emissions coming from the transport sector in each North Sea-Baltic Member State.

compared to a scenario *without* the implementation of all TEN-T projects, reducing CO2 emissions by an additional 4.1 mn tonnes.

The extra decarbonisation is the result of additional modal shift or the speeding up of the deployment of low-emission alternative energy for transport, in addition to developments already taking place. However, the effects from the expected modal shift on decarbonisation is limited, supposing that transport policies and technologies remain the same as assumed under the 2016 EU Reference scenario. The modal share of passenger transport for rail is expected to increase from 12.1% in 2016 to 15.0% by 2030. The share of rail freight transport increases by a modest 20.0% to 20.7%, however, the share of IWW transport is decreasing with the same amount, from 32.2% to 31.5%.

Still, much work is required to achieve the decarbonisation objectives. In the 2011 White Paper for Transport, the EU set out its goal to reduce GHG emissions from transport by 2050 to a level that is 60% below that of 1990. This includes the intermediate goal for 2030 of reducing GHG emissions from transport by 20% compared with 2008 levels. However, in 2017 GHG emissions from transport were still almost on par with 2008 levels. The transport sector is far from making its share of contribution to achieving the goals of the Paris Agreement. Further actions to increase the efficiency of the transport system, enabling multimodal logistic chains and to speed up the deployment of low-emission alternative energy for transport and transition towards zero-emission vehicles are urgently needed. For international rail passengers a consistent international network should be developed, which would reduce the need for continental flights.

## 6.5. Military mobility

Since the adoption of the Action Plan on Military Mobility, the Commission is working to improve movements of military forces by addressing shortcomings in the transport infrastructure. Under the military mobility envelope in the Connecting Europe Facility 2021-2027, the Commission would fund transport infrastructure built or upgraded for military purposes provided it is also useful for civilian transport (so-called dual-use infrastructure). It would be a win-win initiative for both defence and transport in the sense that it will allow a smooth mobility of armed forces within and beyond the EU while contributing to the completion of the TEN-T network.

## 6.6. Going forward

The main challenges and future action steps to achieve the Corridor goals and objectives are stated below.

Better coordination and implementation of **complex cross-border projects** will contribute to faster and better achievement of economic, environmental and other corridor objectives. The Rail Baltica project is the main cross-border project to integrate West and East, to achieve the Corridor economic development, greening, safety and shift between transport modes. There is also an active cooperation in the Western part of the Corridor between the regions and Member States of the Eurodelta, including on the improvement of port hinterland connections (for example, a tri-national working group is following up on the 3RX study).

Another Corridor objective will be the work on the new TEN-T Regulation implementation and fully taking into account the changes related to the **Corridor extension**. The work on the Corridor extension is also relevant in the context of opportunities such as the Arctic dimension and further development of EU-Asia connectivity.

The Corridor potential will be further developed by better combination and planning of different Corridor activities together with **RFC and other CNCs** – to make full use of network effects by enhancing the technical as well as operational interoperability. This will allow to link and align EU initiatives and priorities and by this ensuring better results with less investment.
To make rail and IWW more competitive the **robustness** of the corridor should be guaranteed for reliable operations, including in terminals, and for connections also under stress. Diversion routes and alternative routes should not be ignored in this respect.

The full Corridor potential could not be achieved without **cooperation with regions, cities and ports** and reflecting the geographic location of the Corridor. The cooperation with regions and cities in particular will help to address such issues as mobility as a service, seamless mobility, social aspects of mobility and climate change impact on households. Important cooperation results should be **social acceptance and social value** of infrastructure based on the common EU transport policy. The social aspects will be addressed not only via mobility but also by making the right investments that will help to reduce the air pollution in the urban nodes and contribute to road safety. Another aspect of social challenges will be to find the right balance by **reducing the negative impact of transport** on the everyday life of citizens (pollution, noise, climate change) and at the same time by allowing ctizens to **benefit from the economic development** and improving living standards of citizens in the greener environment. In addition, cross-sectoral collaboration is needed to enable the transition to zero-emission transport.

**Ports as important transport and logistics hubs are frontrunners of such economic developments**. Issues to be addressed in **port cities**, such as reducing noise and pollution, rely on good cooperation among all actors, both at the local level and between the ports of the different sea basins. As ports are an integral part of many cities, social and economic issues are intertwined and relate to better integration with other related industries in the value chain, including intermodal terminals, intelligent freight as a concept, different ways of organising logistics chains, rail as an answer to port challenges and demands. Efficient port hinterland connections, in particular by rail and inland waterways, remain a major priority on the NSB Corridor.

The implementation of those initiatives will be supported by development and use of **different digital tools**, also across modes, assessing the potential of new technologies, collecting the required data and using data in different mobile applications, for instance, ITS, blockchain and others. Digital solutions, such as mobility as a service and ITS, have a disruptive potential to enhance social and economic development and smart investments in transport infrastructure, including for the deployment of alternative fuels, will help to reduce the negative impact of transport and enhancement of intermodal transport. The improvement will also be achieved by working on alternative fuel infrastructure network development in the coordinated way and by using full potential provided by new technologies.

The Corridors have a potential to help ensure the continuity of these new developments across borders, avoiding a patchwork approach. Moreover, the transport sector can be a driver and enabler in fostering cooperation between different industries, as well as a circular and green economy.

## 6.7. Final remark

This Fourth Work Plan has been prepared since November 2019 and was finalised in June 2020.

In the meantime, the world has been affected by the SARS-CoV-2 pandemic and it has a great impact on our lives, our health systems and our economies.

We know only part of the pandemic‘s dramatic effects on people and economies so far.

The transport sector has been heavily impacted by the containment measures in Europe and worldwide. Continuity of service has been ensured by transport workers under difficult conditions, showing their critical function in serving the population’s basic needs. The transport sector will also be crucial in supporting the economic recovery.

It is too early at this stage to undertake a thorough analysis and to draw conclusions in this work plan.

Nevertheless, I propose that in the coming weeks, I will start an initial analysis with all the Member States and important stakeholders of our Corridor and gather insight on the impact of the crisis and related recovery plans on transport infrastructure investments, as well as views on the future possible orientation of the Corridor work and Work Plan priorities.

Without jeopardising the final objective of the realisation of the NSB Corridor, this approach is intended to further align our activities with current events which have considerably changed our social and economic life and will affect our approach towards mobility and transport, along with the climate and digital transitions.

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Corridor website:

http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/northsea-baltic_en.htm

**More detailed information can be found at:**

http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/corridor-studies_en.htm)

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