



Support study

for an impact assessment on measures for the streamlining of **TEN-T**

Final Report

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Abbreviations

AA	Appropriate Assessment (in relation to Natura 2000)
CEF	Connecting Europe Facility
CNC	Core Network Corridor
CO ₂	Carbon Dioxide
DG COMP	European Commission – Directorate General for Competition
DG ENER	European Commission – Directorate General for Energy
DG ENV	European Commission – Directorate General for the Environment
DG GROW	European Commission – Directorate General for the Internal Market, Industry, Entrepreneurship and SMEs.
DG MARE	European Commission – Directorate General for Maritime Affairs and Fisheries.
DG MOVE	European Commission – Directorate General for Mobility and Transport
DG REGIO	European Commission – Directorate General for Regional and Urban Policy
EIA	Environmental Impact Assessment Directive
EIAH	European Investment Advisory Hub (EIH)
EIB	European Investment Bank
EFSI	European Fund for Strategic Investments
EPEC	European PPP Expertise Centre (part of EIB advisory services)
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
EU	European Union
GDP	Gross Domestic Product
GVA	Gross Value Added
IA	Impact Assessment
ICT	Information and Communications Technology
IM	Infrastructure Manager
ISSG	Inter-services Steering Group
ITS	Intelligent Transportation System
IWT	Inland Waterway Transport
JASPERS	Joint Assistance to Support Projects in European Regions
KM	Kilometres
KV	Kilovolt
NGO	Non-governmental organisation.
NPV	Net Present Value
OSS	One-stop shop
PCI	Projects of Common Interest
PKM	Passenger Kilometre
PP	Priority Project
PPP	Public-private Partnerships
PV	Present Value
SEA	Strategic Environmental Assessment Directive
SG	Secretariat General
SME	Small and medium-sized enterprises.
TEN-E	Trans-European Networks for Energy
TEN-T	Trans-European Transport Network
TFEU	Treaty on the Functioning of the European Union
TKM	Tonne Kilometre
WFD	Water Framework Directive

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1. Introduction

1.1 Policy Context

The EU's trans-European transport network (TEN-T) policy¹ recognises the importance of a strategic approach for developing a Europe-wide network of transport infrastructure. The TEN-T comprises a dual layer structure in which the comprehensive network ensures connectivity of all regions of the EU whereas the core network consists of those parts of the network which are of the highest strategic importance for the EU. The TEN-T Regulation 1315/2013/EU defines legally binding targets for its infrastructure aims, with the core network to be implemented by 2030 and the comprehensive network by 2050. The TEN-T Regulation also establishes nine core network corridors (CNC) which are a further instrument by which to facilitate the coordinated and timely implementation of the core network.

Together with the TEN-T infrastructure development, the Transport White Paper² encourages the development of sustainable modes of transport with a focus on the delivery of climate objectives for 2020 by shifting long-distance traffic from carbon-intensive modes to railways, inland waterway transport and maritime transport. TEN-T can contribute in a significant way to these policy goals. Currently, the priorities on the core network corridors are to deliver rail and waterborne transport infrastructure projects, in order to achieve further modal shift. It is envisaged that streamlining the implementation of the TEN-T will lead to a faster delivery of investments in projects, leading to the development of low emission mobility and energy transition through the promotion of the most energy efficient modes.

Swift and effective delivery of the TEN-T core network is also necessary for the optimal functioning of the EU Single Market, by focusing on cross-border transport and on the parts of the network carrying long-distance traffic. Furthermore TEN-T policy contributes significantly to low-emission mobility and to the decarbonisation of transport necessary to reach the EU objectives under the Paris Agreement³. The vast majority of TEN-T projects involve the promotion of more sustainable modes of transport.

These strategic objectives cannot be realised without substantial investment in infrastructure, combining both public resources and the mobilisation of private capital. However, in order to optimise the flow of investment into successful infrastructure projects, there needs to be a streamlined and efficient process for generating, planning and delivering socially desirable projects. Such a process needs to balance the needs of project promoters and transport users with effective regulation, to ensure that permitting procedures do not lead to excessive delays or administrative burdens which might increase costs, uncertainties and potentially deter investors.

In line with the economic, environmental and social objectives set within TEN-T, the EU is investing heavily in the development of smarter and more sustainable infrastructure in Europe for both freight and passenger transport. Special attention is

1 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 and repealing Decision No 661/2010/EU

2 In the case of transport for example, the 2011 White Paper "Roadmap to a Single European transport Area –Towards a competitive and resources efficient transport system" which, in compliance with the commitments of the United Nations Climate Change Conference (COP 21), calls upon the achievement of 60% greenhouse emission reduction target in the area of transport

3 Agreement under the United Nations Framework Convention on Climate Change, Paris Agreement of 15 December 2015, FCCC/CP/2015/10/Add.1, http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

being paid to projects which involve two or more Member States and this, in turn, is strengthening international networks and regional cohesion across Europe.

This large-scale investment will help to promote economic growth, more jobs, as well as more efficient and more sustainable use of the infrastructure. However, there needs to be cooperation across the EU, between countries, between infrastructure managers, across transport modes, and between investors. To this end there is an important role for the EU in strengthening and optimising these processes, identifying barriers, and helping to find socially desirable solutions.

One of the challenges for the successful implementation of the TEN-T network arises when key projects encounter excessively complex regulatory and administrative arrangements. This situation was highlighted in 2014 when the Council of Ministers invited the Commission to take stock of good practices and to identify ways to streamline permitting procedures for projects of common interest (PCI) in the core network.

Simplification of administrative authorisation, permitting rules and regulatory procedures was identified as one of the recommendations to facilitate the implementation of the TEN-T in the 2015 CBS Report, "Action Plan⁴ - Making the best use of new financial schemes for European transport infrastructure projects", presented by European Coordinators Bodewig and Secchi, as well as former Vice President H. Christophersen.

Therefore, in 2015 the European Commission carried out an exploratory study⁵ which was published in December 2016, assessing permitting procedures of TEN-T Core network projects, in particular waterborne and cross-border projects. This investigation, which undertook much of the fact-finding work being used in this (current) impact assessment support study, identified:

- Barriers in the regulatory and administrative processes that impact the effective and efficient planning and implementation of TEN-T core network projects;
- Potential policy options and recommendations on how to address the barriers.

After consolidating information across national studies, case studies and public consultation, the study provided a full analysis of the problems and drivers that could be addressed through EU actions.

This present initiative on introducing streamlining measures to address administrative barriers involves cross-cutting issues. Therefore, a European Commission Inter-Service Steering Group (ISSG) with the involvement of several Commission services (SG, DG ENV, DG GROW, DG COMP, DG MARE, DG REGIO and DG ENER) has been created to discuss and validate the final policy options, indicating the types of options that would be feasible and indeed desirable.

In a broader context, the EC communication of 1 June 2016 on the implementation of the European Fund for Strategic Investments (EFSI), "Europe Investing Again: Taking stock of the Investment Plan for Europe and next steps" – emphasises the need to mobilise private investments in sectors critical to Europe's future and where barriers related to market failure may be found. Amongst these, investments related to cross-

⁴ Former European Commission Vice-President H. Christophersen, Professor K. Bodewig, European Coordinator, Professor C. Secchi, European Coordinator in the "Action Plan – Making the best use of new financial schemes for European transport infrastructure projects" ("CBS Report"), June 2015, available at: http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/doc/2015_06_03_cbs_action_plan_final.pdf

⁵ Study on permitting and facilitating the preparation of TEN-T core network projects, DG MOVE 2016
<http://ec.europa.eu/transport/sites/transport/files/2016-12-permitting-facilitating-ten-t.pdf>

border and sustainable transport are seen as key components of an overall strategy for Europe to shift to a low-carbon and resource-efficient economy. The communication of 20 July 2016, “A European Strategy for Low-Emission Mobility” also acknowledged the importance of the TEN-T network of transport links to enable Europe’s transport sector to become more sustainable, and to act as a catalyst for the transition towards lower emission mobility.

In the Rotterdam Declaration⁶, EU transport ministers called for the development and implementation of improved and coordinated procedures in procurement and state aid areas with the objective of facilitating project implementation. They also called on the European Commission to assess various ways to simplify procedures for projects of common interest on the TEN-T core network.

Actions towards this have already been taken at European Commission level. In order to ensure stronger convergence of the timelines of the different procedures regarding strategic infrastructure investment projects, the Commission has put forward a strategy to create a one-stop shop (OSS) for investors, bringing together all responsible Commission services, including its representation offices in the Member States, into a single investment policy team. This idea was outlined in the communication of 29 November 2016⁷.

In its 2016 report⁸, assessing the maritime strategies of the EC and Member States, the European Court of Auditors’ recommendations included reducing administrative burden and delays by promoting national one-stop shops for issuing permits and authorisations. In order to be effective in the delivery of the full range of TEN-T projects, this principle would need to be applied beyond the port sector.

In its report on improving the connectivity and accessibility of transport infrastructure in Central and Eastern Europe⁹, the European Parliament called on the Commission and the Member States *inter alia* to streamline and simplify procurement procedures, to issue guidelines for public-private partnerships (PPP), to ensure an adequate state aid framework and to simplify the permitting procedures, in order to facilitate the implementation of transport projects and in particular, cross-border projects.

Consequently, an impact assessment was launched in spring 2017 for an initiative on streamlining the implementation of the TEN-T (Investment Plan for Europe – EU strategy for low emission mobility) and a roadmap for the initiative was published and open for feedback in June/July 2017.

Three workshops were organised: in June 2017 on public procurement, in September 2017 on cross-border governance and financing and in October 2017 on efficient permitting for TEN-T projects.

The impact assessment process involved EC-wide consultation on various options and the present support study was launched to quantify the impacts of the options identified by the exploratory study and validated by the ISSG.

6 TEN-T Days, 2016, Rotterdam.

7 <https://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/COM-2016-764-F1-EN-MAIN.PDF>

8 See: <https://www.eca.europa.eu/en/Pages/NewsItem.aspx?nid=7359>

9 See: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A8-2016-0282+0+DOC+XML+V0//EN>

1.2 Impact Assessment Support Study

This present impact assessment study, “Support study for the impact assessment accompanying the proposal for a Regulation/Directive on streamlining measures for swifter implementation of the projects of common interest on the Trans European Transport Network” has been undertaken by consultants Panteia, M-Five, PWC and Rupprecht Consult, under the Framework Contract on Impact Assessment and Evaluation Studies (ex-ante, intermediate and ex-post) in the field of transport.

The objective of this study, carried out between November 2017 and February 2018 was to build upon the exploratory study finished early 2017 and to quantify the economic impacts of policy options designed to achieve a swifter implementation of TEN-T projects.

This report (final report) summarises the main findings of the study, and is organised as follows:

- Section 1: Introduction – and policy context.
- Section 2: Problem analysis – problem definition and analysis of drivers.
- Section 3: Policy options – three main policy packages.
- Section 4: Consultation methodology and findings – results of OPC survey, and targeted interviews.
- Section 5: Analysis of the impacts, including quantification of impacts per policy option.
- Section 6: Legal analysis and feasibility of the three policy options.
- Section 7: Comparison of the three policy options.

In addition, the report includes annexes covering the consultation methodology and results, the analytical models used by the consultants, and the results of the sensitivity analyses.

1.3 Legal Context

Transport infrastructure projects may be affected by or subject to a broad range of legislation working at different levels. The following table provides an outline of the legislation that currently needs to be considered. The list includes a number of EU Directives, which will differ according to how they have been transposed at national level, along with national requirements which are specific to particular Member States.

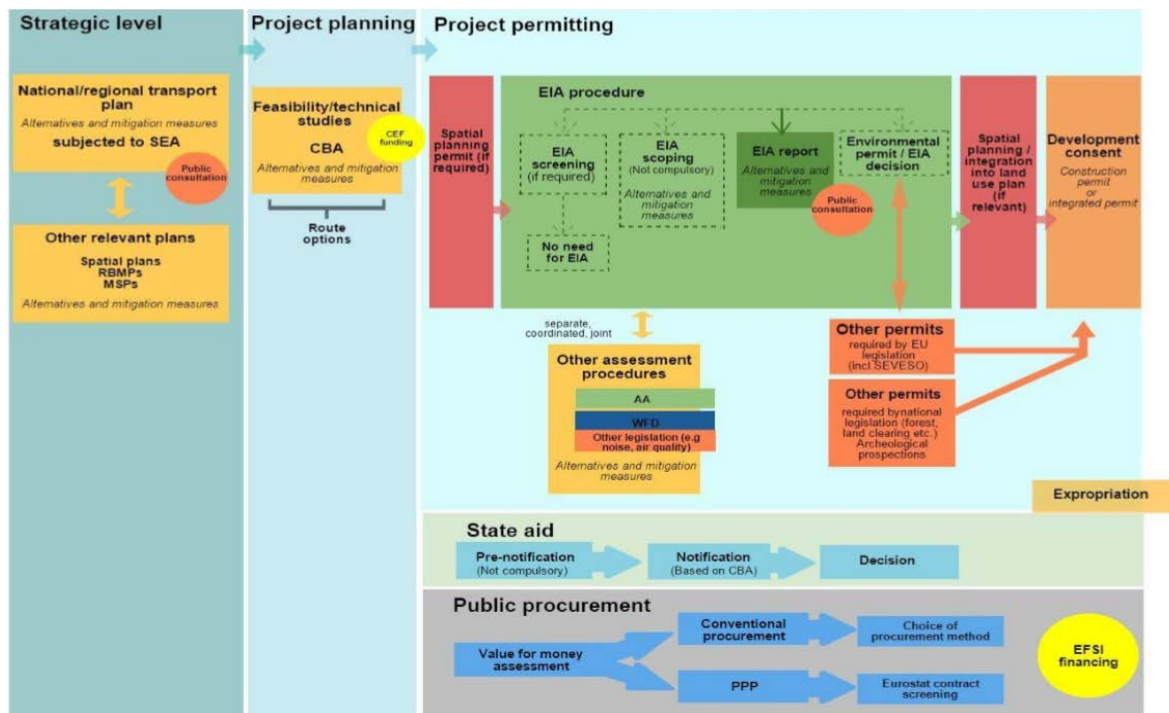
Figure 1: Overview of legislation affecting the various stages of TEN-T projects of common interest

Stage of procedure	Legislation
Strategic level	
National/regional transport plan	National
Spatial plan	National
River Basin Management Plans (RBMPs)	Water Framework Directive 2000/60/EC
Maritime Spatial Plans (MSPs)	Maritime Spatial Planning Directive 2014/89/EU
Strategic Environmental Assessment (SEA)	Strategic Environmental Assessment Directive 2001/42/EC
Project planning	
Feasibility studies, technical studies, CBA	National EU funding programmes (e.g. Structural Funds or CEF)
Project permitting	
Spatial planning permit	National
Environmental Impact Assessment (EIA) report report/environmental permit	Environmental Impact Assessment Directive 2011/92/EU amended by 2014/52/EU
Other environmental assessment procedures and possible permits	Water Framework Directive 2000/60/EC Habitats Directive 92/43/EEC Birds Directive 2009/147/EC Seveso Directive 2012/18/EU Others may be applicable
Other permits (e.g. forest, land clearing, archaeological etc.)	National
Public procurement	
Public procurement, including public-private partnerships (PPPs)	Concessions Directive 2014/23/EU Public Procurement Directive 2014/24/EU Utilities Directive 2014/25/EU Remedies Directive for the utilities sector 92/12/EEC amended by 2007/66/EC Remedies Directive for the public sector 89/665/EEC amended by 2007/66/EC
State aid	
State aid notification	EU Regulation laying down detailed rules for the application of Article 108 of the TFEU

(Source: Study on permitting and facilitating the preparation of TEN-T core network projects, Milieu Ltd & Tractebel Engineering, 2016)

The exploratory study (Milieu, Tractebel 2016) developed an overview of the authorisation framework from the perspective of project planning, indicating the linkages between the various processes. See Figure 2.

Figure 2: Generic authorisation framework



(Source: Study on permitting and facilitating the preparation of TEN-T core network projects, Millieu Ltd & Tractebel Engineering, 2016)

There are several EU directives setting the framework for environmental assessments of plans/programmes or projects.

At a strategic level, the Strategic Environmental Assessment (SEA) Directive 2001/42/EC requires certain public plans/programmes to undergo an environmental assessment before they are adopted. The public must also be consulted on the draft plans and the environmental assessment, and their views must be taken into account. The Directive applies for different types of plans/programmes, including, for example, spatial and transport plans which set the framework for transport projects. In the context of transport master plans, SEA can help to examine alternative solutions (e.g. locations/routes) when many options are still open, to avoid significant effects. SEA can help to identify projects and/or types of projects likely to have significant negative effects on Natura 2000 sites and the coherence of the network.

At a project level, the Environmental Impact Assessment (EIA) Directive 2011/92/EU as amended by Directive 2014/52/EU, requires that before authorisation (referred to as "development consent"¹⁰ in the directive) is given, projects likely to have significant effects on the environment should be subject to an assessment of their effects. The EIA process is composed of different steps: preparation of the EIA Report, publicity, consultation and decision-making.

The EIA Directive is applicable to many transport infrastructure projects. Projects listed in Annex I of the EIA Directive are automatically subjected to an EIA because their environmental effects are presumed to be significant. These categories of projects include, among others:

- Construction of lines for long-distance railway traffic;
- Construction of airports with a basic runway length of 2100m or more;

¹⁰ Development consent is a decision of the competent authority or authorities which entitles the developer to proceed with the project.

- Construction of motorways and express roads;
- Inland waterways and ports for inland waterway traffic which permit the passage of vessels of over 1,350 tonnes;
- Trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1,350 tonnes;
- Construction of overhead electrical power lines with a voltage of 220 kV or more and a length of more than 15 km, which is relevant for the electrification of railway lines.

Other transport infrastructure projects listed in Annex II of the EIA Directive require a determination (often referred to as “an EIA screening”) to decide whether they are likely to have significant effects on the environment, taking into account specific criteria in Annex III of the directive. If they are likely to do so, an EIA must be carried out. These projects include, among others:

- Construction of railways and intermodal transshipment facilities, and of intermodal terminals (projects not included in Annex I);
- Construction of airfields (projects not included in Annex I);
- Construction of roads, harbours and port installations, including fishing harbours (projects not included in Annex I);
- Inland waterway construction not included in Annex I, canalisation and flood-relief works;
- Elevated and underground railways, suspended lines or similar lines of a particular type, used exclusively or mainly for passenger transport.

Furthermore, the modifications of Annex I and Annex II of the EIA Directive fall under the scope of the EIA Directive and require EIA screening or a full EIA, depending on the nature of the modification.

Furthermore, environmental assessments for plans/programmes or projects are also required under other directives in certain circumstances.

Article 6(3) of the Habitats Directive 92/43/EEC requires that plans and projects likely to have significant negative impact on the Natura 2000 sites must be subject to appropriate assessment (AA). The competent national authorities can agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the sites concerned. Negative impacts can be reduced to acceptable levels by applying appropriate mitigation measures including technical adjustments to the project in question or revision of its location.

According to Article 6(4) of the directive, if there are circumstances where a plan or project must be carried out for imperative reasons of overriding public interest despite having significant negative impacts on Natura 2000 sites, and in the absence of alternative solutions, the Member State must take all compensatory measures necessary to ensure that the overall coherence of the Natura 2000 network is protected.

The Member State has to inform the Commission of the compensatory measures adopted. Where the sites concerned host priority habitats or species, the plan or project can only be justified on the grounds of human health criteria, public safety or,

subject to an opinion from the Commission, by other important reasons including socio-economic factors.¹¹

The Water Framework Directive (WFD) 2000/60/EC introduced a comprehensive river basin management planning system to protect and improve the ecological health of rivers, lakes, estuaries, coastal waters and groundwater.

The WFD sets out the environmental objectives for natural surface and groundwater bodies and artificial and heavily modified water bodies. For projects involving new physical modifications of surface water bodies or alterations to the level of groundwater with an impact on the status of water bodies, specific conditions have to be complied with for project authorisation. If a project may lead to the deterioration of the ecological status or ecological potential of a water body, it can only be authorised and implemented if the conditions as set out in Article 4(7) of the WFD are fulfilled.

In the context of TEN-T projects, particular attention should be drawn to inland waterway transport projects. Because of their nature, they may cause deterioration or failure to achieve good ecological status/potential and therefore they could only be implemented under the conditions of WFD Art. 4(7)¹². Specific guidance on the concept of "good navigation status" and the linkage to EU environmental legislation is being elaborated and should support the preparation and implementation of inland navigation projects.

Several directives also exist that relate to the public procurement process. Directive 2014/23/EU on the award of concession contracts was adopted in 2014. The directive creates a stable legal framework for public authorities and economic operators to ensure non-discrimination and fair access to markets and EU-wide competition for high-value concessions. It gives the most efficient providers a fair chance of winning contracts by proposing the best offers. The directive facilitates new investments, promotes a quicker return to sustainable economic growth, and contributes to innovation and the long-term development of infrastructure and services.

On 26 February 2014, the Council of the European Union and the European Parliament adopted three directives aimed at simplifying public procurement procedures and making them more flexible. Directive 2014/24/EU focuses on public procurement, and Directive 2014/25/EU relates to procurement by entities operating in the water, energy, transport and postal services sectors. Directive 2014/23/EU relates to the award of concession contracts. The new rules seek to ensure greater inclusion of common societal goals in the procurement process. These goals include environmental protection, social responsibility, innovation, combating climate change, employment, public health and other social and environmental considerations.

Given their links to the financial structure of an investment, State aid procedures are a potential source of risk and uncertainty for TEN-T projects, potentially contributing to uncertainty amongst project promoters and investors. State aid decisions can occur at any point in the project preparation process, and whilst the Commission applies a two-month time limit to decisions from the point of receiving a complete notification, it can take a while at the Member State level to complete the full notification file, including time to obtain any required guidance or assistance from the Commission. Late notification and poor quality of notifications are key factors introducing delays. Cases of late notification generally come from a lack of awareness from authorities or the project promoters' need to notify potential State aid cases to the Commission. Until

¹¹ Detailed guidelines on the application of Article 6(3)-(4) of the Habitats Directive are available on the Commission's website:

http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

¹² For details see CIS Guidance Document No. 36:

https://circabc.europa.eu/sd/a/e0352ec3-9f3b-4d91-bdbb-939185be3e89/CIS_Guidance_Article_4_7_FINAL.PDF

relatively recently, investments in transport infrastructure were considered to fall outside State aid rules so the lack of experience with State notifications may lead to notifications that are of a lower quality. This can result in the Commission requesting further information and thereby, delaying the final decision.

Project promoters that are uncertain about the applicability of State aid rules to their project may also need to seek expert opinions, which creates additional project costs. In recent years, a number of measures have been taken at the EU-level to modernise State aid procedures and to provide specific and up-to-date guidance on the application of State aid rules within the transport sector. Detailed guidance is currently available for railways and aviation. Analytical grids are available and provide guidance on ports, airports and local rail transport infrastructure. In addition, the Commission recently published guidance on the notion of State aid, which includes specific guidance on the public funding of infrastructure, including transport infrastructure (ports, airports, rail and roads). The Commission is also currently reviewing whether to extend of the State Aid General Block Exemption Regulation to ports and airports. This would greatly reduce the impact of State aid procedures on promoters of such projects, who only need to notify the Commission in cases where they do not meet the exemption criteria.

Establishing a fast-track State aid assessment process would be similar to the approach taken to investments receiving EFSI financing, whereby the Commission aims to complete assessments within six weeks of receiving a complete notification. A shorter timeframe for State aid decisions would increase legal certainty for project promoters and investors with regards to the financing of infrastructure projects. There is an option for this to be implemented through a legislative instrument and to become part of an EU legislative instrument adopted to streamline regulatory and administrative procedures for certain categories of TEN-T projects. As the procedure could have an important impact on the Commission's procedures, it would be relevant to apply this option only to a small number of selected projects.

In summary, these analyses of the policy and legal context for the current study and the ongoing impact assessment indicate on one hand the continuing political pressure for prioritised transport projects to be implemented in order to achieve a wide range of economic, environmental and social objectives, whilst on the other hand the need for a clear and comprehensive regulatory environment to ensure that environmental standards are upheld and that market access and State aid rules are adhered to. Through the adoption of the TEN-T Regulation, and with it, the commitment to complete the core network by 2030 and the comprehensive network by 2050, there is a renewed effort to identify administrative barriers, and find effective and socially advantageous solutions.

2. Problem Analysis

2.1 Problem definition

The problem definition stage of the IA support study aimed at achieving a better understanding of the scope and nature of the initially identified problems related to delays in the implementation of TEN-T core network and the level of uncertainty faced by project promoters in the permitting and preparation of TEN-T projects, building upon the consultation, interviews and case studies analysed in the exploratory study¹³.

This step addresses the following questions, in line with the Better Regulation Guidelines approach to defining and analysing policy problems¹⁴:

- What is the problem (or problems) to be addressed?
- What is the potential magnitude of the problem?
- When (i.e. at which stage of the project life-cycle) does the problem appear?
- What are the drivers behind the problem?
- Who are the stakeholders?
- What are the likely outcomes in the absence of EU intervention?

To track and analyse the problems clearly, the exploratory study followed a problem tree approach mapping the key problems, their causes and drivers and the inter-linkages between these factors. To do so, the study carried out four main research and analysis activities:

- Step 1: Desk study;
- Step 2: Screening of cases;
- Step 3: Initial interviews;
- Step 4: Development of problem trees and generic authorisation framework.

The problem definition is explored in depth in Annex 1 and Annex 2 of the (earlier) exploratory study¹³ for each category of problem (permitting, public procurement, state aid, as well the specific challenges for waterborne and cross-border projects). These findings were subsequently analysed and refined after the completion of the data collection phase of the current study and following feedback from the Commission's Inter-services Steering Group.

The problem definition was established in the exploratory study through:

- Interviews with European Commission staff experienced in the selection and preparation of TEN-T projects.
- Country studies and comparative analysis.
- Case studies.
- In-depth studies on waterborne and cross-border projects.
- Stakeholder consultation on the exploratory study (September 2016); stakeholders were consulted throughout the study via interviews, stakeholder meetings and an open public consultation survey. Interviews with authorities and project promoters were conducted as part of the country studies and case

¹³ Study on permitting and facilitating the preparation of TEN-T core network projects, Millieu Ltd & Tractebel Engineering, 2016.

¹⁴ European Commission, 'Tool #11: How to analyse problems', Better Regulation Toolbox.

studies. Four stakeholder meetings were held, gathering different audiences, including authorities, project promoters, NGOs and business organisations.

- TEN-T Coordinators Seminar, 27-29 January 2016, EIB (Luxembourg). Participants included TEN-T Coordinators and project promoters.
- Transport organisations and TEN-T Coordinators Seminar, 3 March (Brussels). Participants included TEN-T Coordinators, EU-level transport associations and NGOs.
- TEN-T Committee Meeting 16 March 2016. Participants included representatives of Member State competent authorities.
- Motorways of the Sea Forum, 17 May 2016. Participants included representatives of Member State authorities, waterborne transport project promoters, and EU-level transport associations.
- Final project workshop, 7 December 2016. Participants included national competent authorities (TEN-T Committee members), Commission services, and wider transport stakeholders. The purpose was to present and discuss policy options.

At each meeting, participants were provided with a background paper in advance of the meeting and were asked to provide comments based on their experiences of the permitting and preparation of TEN-T core network projects.

Interviews and stakeholder platforms have been a key input to the problem definition and have helped to ensure that the findings of this study are rigorous and informed by the experiences of stakeholders. With regards to the development of options and recommendations, stakeholders were mainly consulted through an open public consultation survey and a final project workshop.

An online public consultation survey was launched on 20 June 2016 and ran for a period of 12 weeks until 5 September 2016, in order to collect the opinions of stakeholders and interested parties on measures that could be adopted to streamline and facilitate the permitting and preparation of TEN-T core network projects. The feedback collected through the survey has supported the problem understanding, as well as development and analysis of some of the policy options. Results of the public consultation are presented in detail in Annex 5 of the exploratory study.

The present study continued the consultation process with stakeholders, as described in Chapter 4, through:

- The online public consultation (OPC) launched in August 2017;
- Workshop on smart and effective public procurement for TEN-T cross-border projects (Brussels, 2017);
- Workshop on cross-border projects, governance and financing (Tallinn, 2017);
- Workshop on efficient permitting for TEN-T projects (Brussels, 2017);
- Interviews with Member States.

All these consultation activities concluded that there is a general problem related to the practical application of regulatory and administrative arrangements leading to cost overruns of individual projects, delayed transport network benefits and delayed economic, social and environmental benefits. This was found to be detrimental for a wide range of stakeholders including private individuals, businesses, private investors, and potential project promoters.

For each area of the authorisation framework, different types of problems can occur, combining to cause delays, costs and uncertainty. Table 1 (below) summarises the main underlying problems identified in the exploratory study¹⁵, which cause the main problems of delay and uncertainty in the implementation of TEN-T projects.

Table 1: Summary of underlying issues that lead to the problems of delay and uncertainty for each option area.

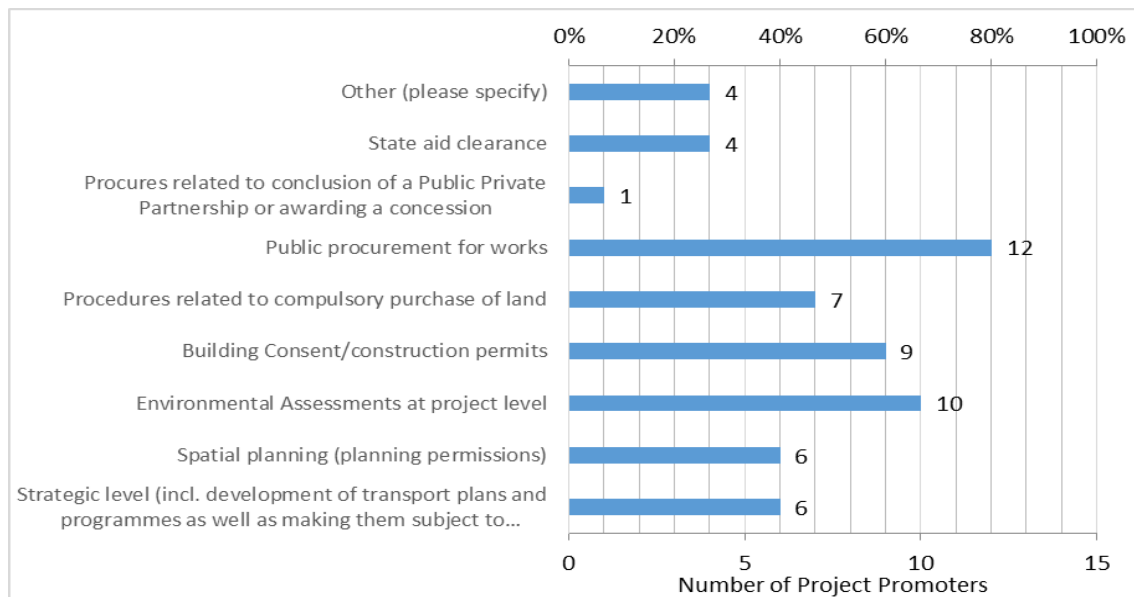
Areas	Underlying problems	Problems: delay and uncertainty
Organisation of the permitting procedure	<ul style="list-style-type: none"> Multiple stages and authorities involved in permitting procedures Lack of resources and technical capacity of permitting authorities Lack of consultation and coordination between permitting authorities Absence of project strategic planning Absent or unenforced time limits 	<ul style="list-style-type: none"> Request for further information by authority and suspension of the procedure until the documentation provided by the promoter is satisfactory Increased risk of conflict between permitting decisions Duplication of permits when obtained at regional or local level Necessity to gather decisions/opinions from a large number of authorities
Building public acceptance	<ul style="list-style-type: none"> Late or poorly timed consultation of stakeholders Ineffective stakeholder consultation Inefficient stakeholder consultation 	<ul style="list-style-type: none"> Public opposition during permitting and preparation phase. Permitting decisions might be challenged in Court Frequent and lengthy appeals
Environmental assessment	<ul style="list-style-type: none"> Poor quality and inefficient timing in environmental assessments Overlaps and inefficiencies in multiple types of environmental assessments Lack of coordination in transboundary environmental assessments Uncertainties stemming from EU environmental legislation 	<ul style="list-style-type: none"> Duplication of work – applications and assessment procedures Amendments to poor quality environmental assessments and project design Uncertainty and delays in permitting decisions where compliance with procedures is not certain
Public procurement	<ul style="list-style-type: none"> Complexity of legal framework Absence of time limits for the award procedure Characteristics of review procedures Limitations in capacity of contracting authority Fragmentation in procurement procedures for cross-border 	<ul style="list-style-type: none"> Lengthy procurement phase

¹⁵ Milieu Ltd, Study on permitting and facilitating the preparation of TEN-T core network projects, on behalf of DG-MOVE, 2017.

Areas	Underlying problems	Problems: delay and uncertainty
	projects <ul style="list-style-type: none"> Deficiencies in the design of the tender Organisational barriers to PPPs Statistical treatment of PPPs 	<ul style="list-style-type: none"> Project selected is of low quality or high costs Under-exploitation of PPPs for the preparation and delivery of TEN-T projects
<ul style="list-style-type: none"> State aid 	<ul style="list-style-type: none"> Lateness and/or poor quality of State aid notifications 	<ul style="list-style-type: none"> Uncertainty and risk concerning the timing of State aid decisions

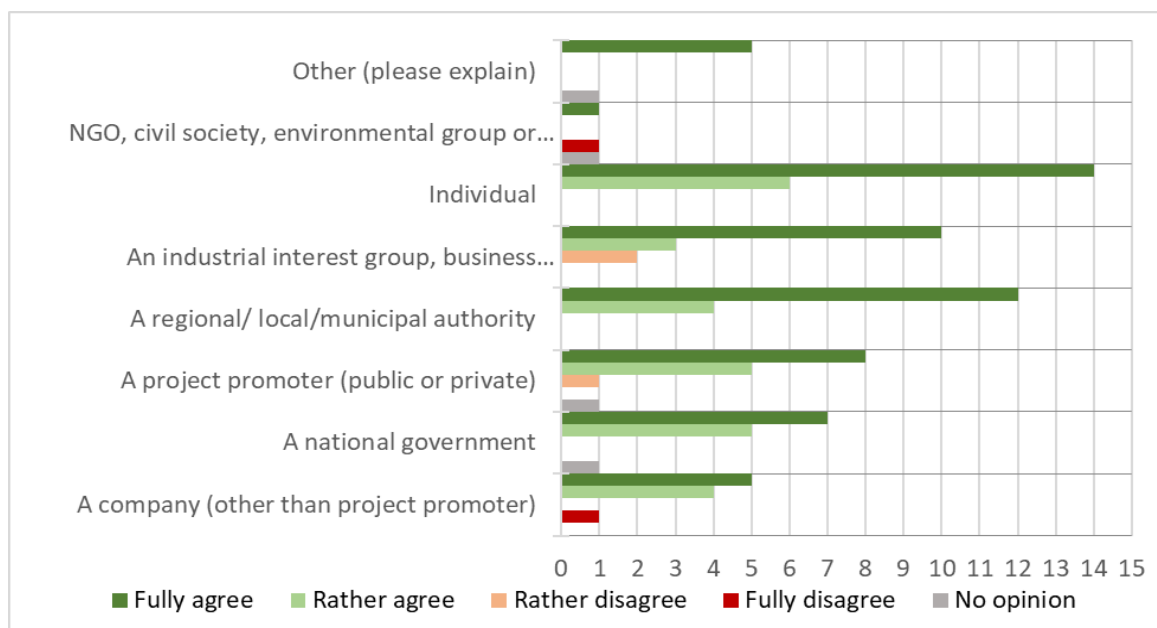
The following results from the latest online public consultation (2017) agree with these findings, showing that stakeholders expect almost all the steps of the authorisation process to affect the overall length of the planning phase and create administrative burden to project promoters (Figure 3). This suggests that the problem is not particularly linked to one specific legal requirement, but to the overall complexity of the combined requirements.

Figure 3: Which of the following steps do you consider affect the length and create administrative burden for you, as project promoter?



The figure below (Figure 4) illustrates that a broad range of stakeholders are of the opinion that TEN-T projects are subject to complex and lengthy permitting procedures and other processes.

Figure 4: Question 12: To what extent do you agree that TEN-T projects are subject to complex and lengthy permitting procedures and other processes?



2.2 What are the main drivers of the problem

The organisation of permitting procedures for TEN-T projects is considered as a critical source of delays. TEN-T infrastructure related projects require multiple assessments to be conducted, making it necessary to obtain a high number of permits. Given the size of projects, these procedures can fall under several jurisdictions if different parts are handled at national, regional or local levels.

Potentially, this multiple stage procedure causes duplication of efforts and lengthens the duration of the overall authorisation procedure. It concerns several areas, notably the environmental assessments (in extreme cases multiple procedures involving different authorities), as well as a public procurement phase (in particular, complex national legal frameworks, absence of time limits for decision-making and long review procedures to challenge the award decision). The implementation of large cross-border infrastructure projects may exceed ten years from early planning to construction, as evidenced by the exploratory study. In some cases, projects are not sufficiently well prepared and encounter delays due to suboptimal arrangements to coordinate processes at national level. Frequently there is an absence of adequate time limits applied to the individual steps of the process.

Final permit acquisition often occurs following the award of the contract to the contractor (as permit applications are based on the contractor's final design), which creates uncertainty and risk due to possible obstructions and delay in the permitting and possible claims or contract renegotiations. Lack of information or experience regarding the need for State aid notification is a potential source of risk and uncertainty for TEN-T projects.

The EU added value of the TEN-T policy is linked especially to the co-ordination and implementation of transport projects along or across national borders. However cross-border projects face the additional hurdle of having to follow different national

procedures in the participating Member States. This may be especially apparent for waterway projects, where for example a river forms the national border.

2.2.1 Summary of problem drivers

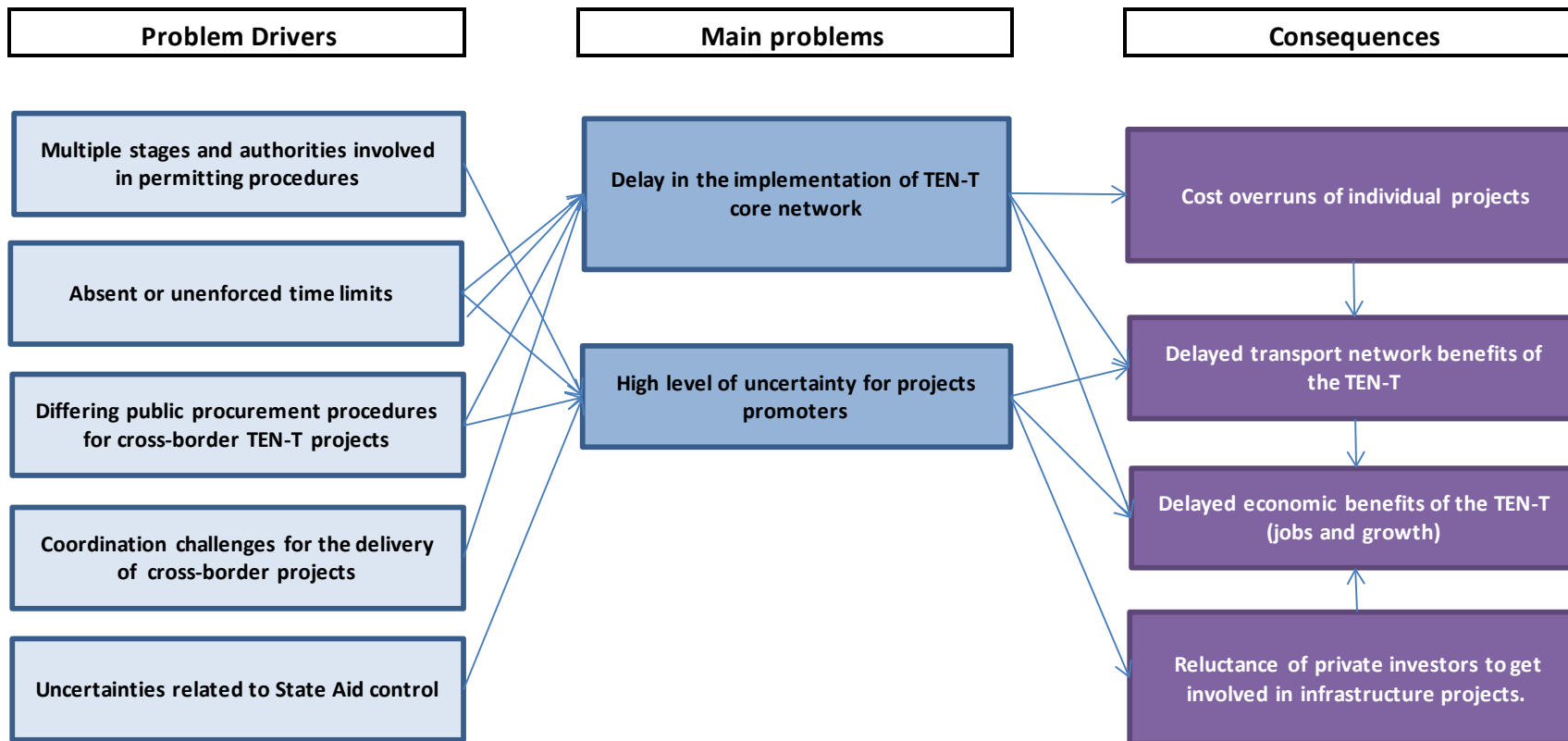
In summary the main drivers are:

1. Multiple stages and authorities involved in permitting procedures
2. Absent or unenforced time limits
3. Differing public procurement procedures for cross-border TEN-T projects
4. Coordination challenges for the delivery of cross-border projects
5. Uncertainties related to the timing of decisions on State aid control.

The following figure (Figure 5) presents the problem tree, illustrating the root causes, the drivers, the main problems and their consequences.

It shows how the inter-linked authorisation process can start to escalate in complexity, with multiple stages of decision making involving multiple authorities. At a certain point, the cost of managing the delays and the uncertainty start to become a deterrent for investors, with the outcome that project costs increase, their completion dates are set back and the expected benefits are cancelled or delayed.

Figure 5: Problem Tree



2.3 Key players and affected population

In the problem definition it is asserted, in essence, that projects designed to generate welfare benefits within the EU may be delayed, cancelled or left unpursued due to potential complexities encountered in the permitting process. Adjusting the balance between the direct beneficiaries of any given infrastructure project and the stakeholders and communities indirectly benefitting from the correct application of the planning legislation has potentially deep consequences. On one hand it affects the rate at which the TEN-T goals can be achieved, meaning that it has implications for the development of cross-border transport infrastructure, the functioning of the internal market and the achievement of economic, social, territorial cohesion and improved accessibility across the EU. On the other hand it affects the very stakeholders and communities that the planning legislation aims to protect through environmental safeguards. Projects can only be considered as socially desirable once they have satisfactorily passed the screening procedures and gained widespread acceptance, but the complexity arising from the same procedures, especially in the cross-border situation, should not act as a deterrent to their eventual realisation.

With the wide range of multimodal transport network upgrades envisioned in TEN-T, almost all stakeholders in the transport sector are affected by the problem:

- **Project promoters**, such as railway infrastructure managers or port authorities, both within the EU and in third countries, are directly affected by the efficiency of the authorisation frameworks, as it influences the risk of additional cost and uncertainty in the delivery of their projects.
- **Member States**, administrations, specialised technical and environmental authorities (at national, regional or local level) and regulators are responsible for implementing and applying the rules related to the identification of projects of common interest.
- **Transport users** (both citizens and businesses) are affected, as transport infrastructure investments contribute to higher mobility, lower congestion and more choice.
- **Landowners, and citizens** in the neighbourhood of new infrastructure, that might be affected temporarily (construction) or permanently (local environmental, safety and health impacts or visual impairment etc.), and corresponding stakeholder organisations (e.g. environmental NGOs).

As the majority of citizens are affected by both the transport system itself (as users) and its wider impacts (as nearby residents), there is an overlap between the latter two categories.

2.4 Why should the EC act?

Legal basis and subsidiarity

The analysis of the generic authorisation framework (see Figure 2) provides a basic reference for understanding the stages, procedures and steps, and an initial basis for distinguishing between areas of competence of the EU, and those belonging to the Member States. This helps to clarify the role to be played by the EU in promoting more streamlined decision-making.

The Treaty on the Functioning of the European Union (TFEU) provides for the EU and the Member States to share competence in the field of trans-European networks through Article 4(h). Articles 170 to 171 of the TFEU specify the EU competences in the area of trans-European networks. Article 170 states that the Union shall contribute to the establishment and development of trans-European networks in the areas of transport in order to help achieve the internal market and objectives relating to economic, social and territorial cohesion. The Union can establish guidelines covering the objectives, priorities and broad lines of measures envisaged in the sphere of trans-European networks; implement any measures that may prove necessary to ensure the interoperability of the networks and in particular, in the field of technical standardisation and may support projects of common interest supported by Member States. In line with Article 177, the Union may also contribute, through the Cohesion Fund set up pursuant to the financing of specific projects in Member States in the area of transport infrastructure. Member States shall, by liaising with the Commission, coordinate amongst themselves the policies pursued at national level that may have a significant impact on the achievement of the objectives referred to in Article 170.

In detailing what EU action in this area could include, Article 171(2) states that “Member States shall, in liaison with the Commission, coordinate amongst themselves the policies pursued at national level which may have a significant impact” on the objective of the establishment of trans-European networks, and the “Commission may, in close cooperation with the Member States, take any useful initiative to promote such coordination”. Furthermore, in 2014, the Council of Ministers invited the Commission to take stock of good practices and identify ways to streamline permitting procedures for projects of common interest of the core network¹⁶.

The first set of guidelines adopted by the European Parliament and the Council for trans-European networks for the transport sector were introduced 1996. New Union guidelines were introduced in 2013 through Regulation (EU) No 1315/2013, which outline plans for the nine strategically important corridors of the core network and targets for the implementation of a Comprehensive Network, accessible to citizens and businesses across Europe in no more than 30 minutes travel time¹⁷.

Since the objectives of this Regulation, in particular the coordinated establishment and development of the trans-European transport network, cannot be sufficiently achieved by the Member States and can therefore, due to the need for coordination of those objectives, be better achieved at Union level, the Union may adopt measures in accordance with the principle of subsidiarity, as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that Article, this Regulation therefore, does not go beyond what is necessary in order to achieve those objectives.

¹⁶ Council of the European Union, Council conclusions on Transport infrastructure and the Trans European Network, Council Conclusions, Brussels, 3 December 2014.

¹⁷ See: https://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/legal-basis_en

Therefore, EU action to set out a framework to streamline the permitting and preparation of projects integral to the establishment of the TEN-T network is consistent with the scope of the EU's right to act. However, because the EU shares competence in this area with the Member States, EU action must respect the principles of subsidiarity and proportionality. Therefore, there is a need to justify EU action and ensure that these principles are respected.

Under the principle of subsidiarity, EU action may be desired to the extent that the policy objectives cannot be sufficiently achieved by Member State action. The transnational nature of the TEN-T network is clear. This is particularly evident in relation to cross-border projects. Moreover, the corridor approach adopted in the TEN-T Regulation is inherently transnational. This approach is intended to “coordinate different projects on a transnational basis and synchronise the development of the corridor”. This coordinated, transnational approach is unlikely to be adequately addressed by Member State action alone. With regards to the principle of proportionality, EU action should not exceed what is necessary to achieve the objectives of the Treaties – in this case, the establishment and development of a trans-European transport network.

In this context, the legal feasibility chapter (see section 6, below) examines in more detail where the key problems lie and what measures can be considered to ameliorate the risk of delays and uncertainties in implementation. In some cases, these will cover areas where Member States retain competence – e.g. spatial planning – which may impact the role the EU can play in proposing measures aimed at streamlining. These considerations are reviewed for each of the proposed policy options.

2.5 Objectives

The over-arching goal of TEN-T policy, as stated in the TEN-T Regulation, is the creation of a single European transport area which is efficient and sustainable, and which increases the benefits for its users and supports inclusive growth. More specifically, to establish this transport area in a coordinated and efficient manner, the TEN-T Regulation aims to complete the core network by 2030.

However, current planned investments in the TEN-T core network face a number of potential obstacles arising from inefficiency or sub-optimality related to the process of gaining the necessary authorisations. These challenges contribute towards increased delays, costs and uncertainty during the planning and preparation of projects. They include environmental assessment procedures and procurement practices. Waterborne and cross-border projects present unique or especially complex challenges.

The general objective of the streamlining action is therefore to address the delays and high level of uncertainty which impact the delivery of TEN-T projects. In order to achieve this, two specific objectives have been defined:

- **SO1. Minimise the risk of delays faced by individual TEN-T projects.** If the problem of delay and uncertainty in project implementation is not tackled, it may jeopardise the delivery of TEN-T projects, including those with the highest EU added value, meaning that the benefits (direct user benefits and other economic benefits such as jobs and growth) from TEN-T implementation will happen later than scheduled.
- **SO2. Increase legal certainty for project promoters, thus attracting more private investors to transport infrastructure.** By helping to ensure that the authorisation framework is more transparent and less complex, this objective aims to reduce uncertainty for project promoters. Policy options

should simplify the relevant procedures necessary for the TEN-T implementation, to address this specific objective.

The policy options presented in this document aim to contribute towards the overall objectives of TEN-T policy by addressing barriers faced by TEN-T core network projects. They seek to streamline permitting, environmental assessment, procurement and State aid processes. Together, the recommended options aim to improve the regulatory and administrative framework for TEN-T core networks. In addition, they aim, in particular, improve the regulatory and administrative conditions faced during the planning and preparation of waterborne and cross-border projects.

3. Policy Options

This impact assessment support study investigates three policy options (policy packages) designed to tackle the problems encountered at all stages of the authorisation framework for TEN-T projects from strategic planning to the decision on development consent and procurement procedures. They range from relatively minimal changes, to limited binding action at national level, to the introduction of a single EU framework:

Table 2: Policy Options

Policy option	Description
Policy Option 1	Minimal change to the existing instruments and development of soft law as well as accompanying measures
Policy Option 2	Limited binding action to be implemented at national level
Policy Option 3	An EU framework for authorisation of the projects of common interest

3.1 Description of Policy Options

Policy Option 1 (PO1): Minimal change to the existing instruments and development of soft law as well as accompanying measures.

This option would consist in particular of developing a series of guidelines for TEN-T project promoters and better orientation of existing instruments (such as planned public procurement helpdesk, JASPERS or EIAH support) as well as developing targeted technical assistance measures for TEN-T projects of common interest. It would recommend indicative time frames for overall permitting procedures.

- *Authorisations and permits*
 - Guidelines for the permit granting procedures and application of the EU acquis in this field, including indicative time frames.
 - Systematic encouragement in soft law instruments (e.g. guidelines) to apply joint and/or coordinated procedures under Article 2(3) of the revised EIA Directive¹⁸.
- *Public procurement*
 - Guidelines for TEN-T project promoters and better orientation of existing instruments (such as planned procurement helpdesk, JASPERS or EIAH support).
- *State aid*
 - No change.
- *Other*
 - Targeted technical assistance measures for TEN-T core network projects (including high quality and efficient packaging of routine projects).

¹⁸ Commission guidance document on streamlining environmental assessments conducted under Article 2(3) of the Environmental Impact Assessment Directive (Directive 2011/92/EU of the European Parliament and of the Council, as amended by Directive 2014/52/EU), (2016/C 273/01)

- Effective technical assistance (e.g. Jaspers or the EIAH, or directly using these initiatives if a decision is made on their extending to the next MFF) to support project preparation and horizontal issues affecting the implementation of TEN-T projects, both at the Member State and EU level (systematically involving cooperating Member States-JASPERS-Commission to develop tailor-made solutions for individual Member States).
- Reinforced mandate of the TEN-T European Coordinators to facilitate the coordination of national permit granting bodies.

Policy Option 2 (PO2): Limited binding action to be decentralised and implemented at national level.

This option would set out a legal requirement for Member States to introduce a one-stop shop for the TEN-T core network projects and ensure that the most rapid treatment legally possible is given to them. The key elements of this option would consist of a set of the following measures:

- *Authorisations and permits:*
 - Establishment of a mandatory one-stop-shop (OSS) at national level. The OSS would continue to apply national permitting rules (transposed from EU directives).
 - Mandatory integration of various administrative procedures at national level (notably all environmental assessments: EIA, Habitats Directive, Water Framework Directive, Seveso Directive and Birds Directive). Integration is currently optional.
 - Introduction of time limits for overall permitting procedures.
 - Introduction of time limits for legal appeals while preserving access to justice.
- *Public procurement*
 - Requirement for a mandatory single legal framework for public procurement of cross-border projects (currently optional).
 - Guidelines for TEN-T project promoters and better orientation of existing instruments (such as planned public procurement helpdesk, JASPERS or EIAH support, or directly using these initiatives if a decision is made on their extending to the next MFF).
- *State aid*
 - No modification of legislative nature.
 - Priority treatment of State aid notifications for TEN-T core network projects, following a mutually agreed timetable between the Member State and the Commission.
- *Other*
 - Targeted technical assistance measures for projects of common interest (including high quality and efficient packaging of routine projects)
 - Reinforced mandate of the TEN-T European Coordinators to facilitate the coordination of national permit granting bodies.

Policy Option 3 (PO3) – An EU framework for authorisation of the TEN-T core network projects.

This option includes the elements of Policy Option 2 but instead of the mandatory one-stop-shop and integration of administrative procedures at national level it introduces a specific EU framework for the authorisation of TEN-T core network projects (including integrated procedures, time limits, cases for overriding public interest and directly applicable requirements) and the definition of a specific (supranational) set of rules to be applied in public procurement of cross-border projects.

Policy option 3 contains two sub-options which differ in the level of application and therefore include further measures:

- **PO3a:** the measures regarding EU authorisation procedure with time limits are defined at EU level but remain applied at national level, with national institutions implementing them in practice and following the national administrative procedural rules with possibility for appeal and access to justice based on the national administrative procedural law;
- **PO3b:** the measures regarding EU authorisation procedure with time limits are applied at EU level at EU level by the Commission (or its agencies). Usual EU rules on procedures and possibility for appeal apply with EU judicial remedies to the Court of Justice of the European Union.

3.2 Scope of the measures

The analysis of policy options will be made on a three different categories of projects which are the following:

- All TEN-T core network projects, as identified through the TEN-T framework;
- Projects identified on the core network corridors¹⁹ – with a particular role for the European Coordinators to identify these projects;
- Projects which are pre-identified as those eligible to benefit from Union financial support through the Connecting Europe Facility (CEF) as well as from other sources such as EFSI, and which would be reflected in Annex 1 of the CEF regulation.

It should be noted that policy options 2 and 3 differ mostly in the level at which the measures would be applied – directly by the EU or decentralised to be managed and implemented at national level.

¹⁹ Core network corridors are a pre-defined subset of the full core network.

4. Consultation Methodology and Findings

4.1 Methodology

The following data collection activities have been carried out by the support study:

- Desk research and data collection
- Workshops organised with the most affected stakeholders
- Online public consultation
- Interviews with selected stakeholders

4.2 Desk research and data collection

The desk research relied on the identification, extraction and analysis of secondary data sources (studies, reports, databases). All of the literature is referenced throughout the report.

4.3 Analysis of inputs from the open public consultation

The consultation was launched on the 1st August 2017 and remained opened for a period of fifteen weeks, until 9th November 2017. A total of 99 responses were received, 79 from organisations and 20 from individuals. The 79 organisations covered a variety of stakeholder categories as shown in the table below (Table 3).

Table 3: Breakdown of responses by type of organization.

Type of organizations represented		Number of respondents	%
A company (other than project promoter)		10	13%
A national government		13	16%
A project promoter (public or private)		16	20%
A regional/ local/municipal authority		16	20%
An industrial interest group, business association, sectoral association		15	19%
NGO, civil society, environmental group or charity		3	4%
Other:	Institution governed by public law	2	3%
	Cross-border cooperation	2	3%
	Reflection group on freight transport	1	1%
	Public organisation for regional collaboration	1	1%
Total		79	100%

Responses were received from 23 different Member States, as shown in the table below (Table 4). The largest samples of answers were from Germany, Hungary and Belgium. Additionally there were responses from Norway, the Republic of Macedonia, and from three international organisations.

Table 4: Breakdown of responses by Member States.

Country	Individuals	Organisations	Number of Respondents	
EU Member States	Germany	1	10	11
	Hungary	2	7	9
	Belgium	1	8	9
	Austria	2	5	7
	Italy	3	4	7
	Spain	1	5	6
	Sweden	-	5	5
	Finland	-	4	4
	Romania	2	2	4
	France	1	3	4
	Czech Republic	-	4	4
	Denmark	1	3	4
	Netherlands	2	2	4
	Slovak Republic	1	1	2
	Poland	-	2	2
	Bulgaria	1	1	2
	Portugal	-	2	2
	Latvia	-	2	2
	Lithuania	-	1	1
	Malta	-	1	1
Luxembourg	1	-	1	
Cyprus	-	1	1	
Ireland	-	1	1	
Non EU-MS	Norway	-	2	2
	FYROM	1	-	1
Other	EU, global or multi-national	-	3	3
Total		20	79	99

The responses to the open public consultation report have been analysed and a detailed overview of the results is provided in Annex 1 of this study.

4.4 Stakeholder interviews

Additional interviews were conducted in selected Member States, with either face to face or telephone interviews to complement some aspects related to the study. Those interviewed consisted of relevant staff in national administrations in France, Germany, the Netherlands, Poland, and Italy as well as in the Directorate General for Energy (DG ENER) in the European Commission.

The interviews were performed between 6 December 2017 and 17 January 2018.

4.5 Workshops

A series of three workshops was organised by DG Move in 2017, covering different topics:

- Smart and effective public procurement for TEN-T cross-border projects;
- Cross-Border projects, governance and financing;

- Efficient permitting for TEN-T projects.

Participants included Femern A/S, Rail Baltic JV, TELT, Canal Seine Nord, Koper-Divača, Emmerich-Oberhausen, Evora-Merida, RB Rail AS, Ministry of Transport Czech Republic, Danish Ministry of Transport, ÖBB-Infrastruktur AG, PKP, Tunnel Euralpin Lyon Turin, and Brenner Base Tunnel.

Table 5: Overview of workshops

Location	Date	Workshop	Participants
Brussels	15 th June 2017	Smart and effective procurement for TEN-T cross-border projects.	Approximately 100 participants.
Tallinn	21 st September 2017	Cross-border projects, governance and financing.	Held as a dedicated session of the Connecting Europe Conference, which altogether attracted 1300 participants.
Brussels	17 th October 2017	Efficient permitting for TEN-T projects.	Approximately 120 participants.

4.6 Analysis

4.6.1 Findings from workshop “Smart and effective public procurement for TEN-T cross-border projects”

The workshop, held in Brussels on 15 June 2017, was focused on smart and effective public procurement for TEN-T cross-border projects. The meeting was attended by representatives of, amongst others, DG MOVE, DG GROW and INEA. Key stakeholders also joined the meeting, in particular representatives of BBT, Femern A/S, Rail Baltic JV, TELT, Canal Seine Nord, Koper-Divača, Emmerich-Oberhausen, and Evora-Merida.

The need for standard EU legislation was discussed, understanding that the current transposition of directives leads to national differences in application. Some of the participants were in favour of the establishment of a single framework for cross-border projects. However, it was pointed out that differences in the transposition of EU directives in each Member State, are also problematic, as it is often difficult to find an expert in public procurement who speaks different languages and is familiar with several legal frameworks. It was stated that if there is no single EU framework available, project promoters should at least agree on using one legal framework for one project. Furthermore, it was discussed that the application of standard EU rules should be made obligatory for projects which benefit from EU funding.

It was made clear that the issue of language is delicate, as it causes additional costs and complexity. It was proposed, as a good practice, to agree on a working language for all cross-border projects. Still, the discussion showed that the language issue is a sensitive one and that it does not necessarily determine the participation of international companies in the tenders, as the size of the tender is deemed more important.

Moreover, certain participants suggested the creation of a European agency or entity to deal with public procurement remedies for TEN-T projects.

In relation to the possibility of introducing technical change to the projects during their execution, it was stated that currently the introduction of such alterations is limited, even though the new directives on public procurement are more flexible on this matter.

Social clauses in the public procurement procedures were discussed as a good practice to increase public acceptance of the projects, taking into consideration that they are allowed by the current directives and were successfully implemented in the case of the Canal Seine Nord.

Main message:

- There is a problem and should not be overlooked, as it causes additional costs and complexity.
- There is room for facilitation of public procurement procedures
- Standard EU legislation seems positive as the transposition of directives leads to differences in application
- Standard EU rules should be made obligatory for projects which benefit from EU funding

4.6.2 Findings from workshop “Cross Border projects, governance and financing”

This second workshop was part of the Connecting Europe Days workshop, held in Tallinn on 21 September 2017, on the topics of cross-border projects, governance and financing. The workshop was attended by representatives from the European Commission from, amongst others, DG MOVE, DG COMP and INEA. The key speakers were representatives of BBT, RB Rail AS, Femern A/S, TELT, Ministry of Transport Czech Republic, Ministry of Transport, Building, and Housing, Kingdom of Denmark, ÖBB-Infrastruktur AG.

During the event, the establishment of a general framework with common rules and best practices was suggested. In addition, the formation of a special purpose vehicle (SPV) to implement projects was identified as a jointly recommended approach. It was stated that this SPV should reflect a reasonable balance of power between involved Member States and the EC.

A stronger involvement of the EC was requested, either in the role of facilitator, or as an active party, e.g. having EC representatives in the advisory boards of the SPV companies. The role of the EC and its power, should depend on the share of EC funding for the project.

A benchmark of best practices was also proposed during the workshop, as an aid for guiding the streamlining process. Moreover, having a common framework for the entire duration of the project's implementation, such as applying only one of the countries' laws for the whole process, was seen as a facilitating element.

It was argued that all procedures and permits should occur in parallel, and the establishment of a one-stop shop was evaluated as an interesting concept. In addition, the stability and certainty of financial solutions were recognised as crucial for the smooth implementation of large cross-border infrastructure projects.

It was stated that infrastructure investments, in particular for PCIs, should not count for the Member State's balance sheet (deficit criteria). Additionally, some participants agreed that the creation of best practices guidelines would be better than setting up a harmonised procedure, as it might be too complex to reach an agreement between the EC and Member States on the latter.

Main message:

- Stronger involvement from EC is needed.
- Positive about a general framework with common rules and best practices.
- Benchmark of best practices had support from several stakeholders.
- One stop shop was evaluated as an interesting concept.

4.6.3 Findings from workshop “Efficient permitting for TEN-T projects”

The workshop, held in Brussels on the 17 October 2017, was focused on efficient permitting for TEN-T projects. The meeting was attended by representatives of, amongst others, DG MOVE, DG Environment, JSPERS and INEA. Key stakeholders also joined the meeting, in particular representatives of Seine-Scheldt Canal, PKP, Tunnel Euralpin Lyon Turin, Brenner Base Tunnel, and Slovenian promoters of the project of the second track Koper-Divača.

During this workshop, the main issues of project permitting were initially discussed. Participants signalled the duration of the procedures as the key problem for many project promoters. The high number of different reports to be presented in the various stages was also considered an important difficulty. In the same way, participants pointed out the lack of reliable data in order to assess impacts of the project, which leads to low quality documentation to support the procedures, and the issues related to language barriers and application of different provisions for cross-border projects, stemming from the same EU directives, as factors that affect the effectiveness of project delivery.

Furthermore, the opportune identification and involvement of key stakeholders was deemed crucial for a smooth administrative process. The stability of the legal regime was also identified as an important factor, since restarting procedures due to changes in the normative framework entails long delays. In addition, differences across Member States in the transposition of EU directives generates additional difficulties. Therefore, participants called for the harmonisation of rules across borders.

It was concluded that there is room for facilitation of permitting procedures in the form of a “smart evolution” to address the needs of key stakeholders, particularly integrating procedures to avoid duplications and simplifying rules for cross-border TEN-T projects. Solutions including the alignment of procedures, technical assistance, language rules, and the establishment of a joint body, were considered.

Moreover, the workshop concluded that good quality information is a necessary pre-requisite for smooth permitting procedures. In addition, the set-up of guidelines on the applicability of certain procedures, and the promotion of best practices of public consultation processes, are welcome. The lack of available data and expertise should be addressed. This can be achieved via a specific targeted technical assistance for project promoters, considering that some projects are very complex. It was

recognised that well-timed and undertaken public consultations can positively affect the process.

Main message:

- This workshop recognised the problem of long and uncertain duration of permitting procedures.
- There is room for facilitation of permitting procedures by integrating procedures to avoid duplication and simplifying rules for cross-border TEN-T projects, through the alignment of procedures, technical assistance, language rules, and the establishment of a joint body.

4.7 Main findings resulting from the consultation of stakeholders

The online public consultation was launched on 1 August 2017 and remained opened for a period of fifteen weeks, until 9 November 2017.

The consultation was developed with the objective of gathering opinions from the general public and stakeholders with regards to the main issues and proposed solutions for facilitating the implementation of the TEN-T projects. A total of 99 responses were received, representing 23 different EU Member States. Regional, local or municipal authorities (20%), project promoters (19%) and industrial, business or sectorial associations (20%) were the organisation categories with higher representation, closely followed by national governments (16%).

a) Overall scoping and confirmation of the problems

The consultation has provided evidence that the main issues identified in the permitting procedures of TEN-T projects, relate to the steps on the strategic level of a project's preparation, including the attainment of spatial planning permits, planning permissions and environmental assessments at project level.

For project promoters in particular, public procurement for works and obtaining final development consent or construction permits, and environmental assessments at project level, constitute the key obstacle.

All stakeholder categories (9 companies, 12 national governments, 13 project promoters, 16 regional/local/municipal, all 20 industry groups and 13 individuals) generally agree that TEN-T projects are subject to lengthy and complicated procedures, recognising the existence of the identified problem. Only 5 respondents do not agree that there is a problem of this nature (2 industry groups, a company, a project promoter and a NGO). Seventeen respondents (including 5 regional/local/municipal authorities, 5 industrial interest groups, 3 project promoters) recognised that cross-border projects are particularly impacted by regulatory and administrative obstacles. However, 29 of participants from all stakeholder type stated that all transport infrastructure projects are subject to such problems.

In general, 59 respondents from all category types (including 32 project promoters, national and regional governments, while individuals less so), mostly agreed that permitting procedures are not organised in an optimal way and therefore, identified there is room for improvement.

When asked to identify the biggest challenges for the procurement of cross-border projects, 60 respondents of all categories, selected the application of different national legislations and the difficulties on agreeing on the applicable one, as the foremost obstacles. Industrial and business associations, as well as other companies, highlighted the lack of experience of the contracting authorities and the insufficient promotion of best practices, as key challenges as well.

A high number of respondents also agreed on the existence of difficulties and need for improvement in the fields of State aid (45 respondents) and public consultation processes (80 respondents from all stakeholder groups), pointing out the lack of general understanding of the common socio-economic benefits from transport projects and the insufficient involvement of the population, as main causes for the latter. Individuals, industrial associations and other companies, also included the ineffective communication of information by project promoters as an important factor.

b) Evaluation of possible solutions

The consultation found that respondents, both individuals and organisations, agree that the EU should take action to address inefficiencies in the permitting procedure of TEN-T projects.

Integration of procedures under a “one-stop shop” (OSS)

Support for the integration of procedures under a national single entity, a one-stop shop (OSS) was expressed in particular, by project promoters, individuals and industrial interest groups. More reserved opinions were expressed by national and regional governments. This was also confirmed by the bilateral interviews.

A significant portion of national and regional governments altogether are reluctant towards this solution. However, the individual qualitative analysis of their comments shows that this apparent disagreement stems, in some cases, from the fact that some countries have already implemented integrated procedures with a single entity (including fast track procedures). The existence of a single entity that manages the permitting process of such projects can be seen as a best practice example of one-stop shop implementation.

In general, national governments believe that the integration of various administrative procedures for permit granting at national level – combined with time limits (see below) - are the most effective measures to reduce delays, speed up the process and give legal certainty. In their view, it creates a more attractive environment for private investors in the long-term.

Some national governments have expressed reservations with regard to the set-up of national one-stop shops. They consider that, although this entity would be beneficial if implemented properly and would effectively speed up the process, it might also result in the creation of additional administrative burden and lead to organisational problems. The authority that would be appointed to act as OSS might not have all the competences and it might take several years before it becomes effective. They have pointed out the importance of defining a clear and specific role for such an entity and to avoid conflicts when a one stop shop is already in place.

According to project promoters and individuals the OSS should have extended decision-making capacity that would manage all environmental assessments at project level, spatial planning permissions and construction permits. On the other hand, the opinions of national and regional governments varied as to the extent of the

integration of procedures and level of authority. A significant number of national representatives stated that such entities should have coordinating powers only.

Introduction of time limits

Respondents – primarily project promoters, individuals and industrial interest groups - agreed that the permitting process should not last longer than two years, and that the establishment of such time limit could help reduce excessive delays. Local and regional authorities as well as some national government were more reserved. They have provided critical views on time limits for the total duration of approval procedures for TEN-T projects, stating that since procedures for large-scale and complex projects are usually very time-consuming, such limits would have the risk of creating relative delays for small uncomplicated projects. In the context of bilateral interviews, some national governments also highlighted that the delays are often caused by investors themselves, for which time limits would have less effect.

Public acceptance and technical assistance

High levels of involvement of the general public throughout the whole project duration and effective communication of the common benefits it brings to society, were the preferred measures to overcome issues related to low public acceptance.

All respondents from all stakeholders type in general (see Figure 33 from the online public consultation report), and organisations more so than individuals, identified a need for technical assistance primarily in the fields of environmental assessments, financing structure development, including the designing of Public-Private Partnerships, and public procurement procedures.

Common set of rules at EU level

A common set of rules at EU level applied to cross-border projects was identified, in particular by project promoters and industrial groups, as the most effective solution to improve public procurement issues. National authorities stated that such a set of rules would be more effective when applied to cross-border projects benefiting from EU funding.

At EU level, respondents agreed that environmental assessments (24 respondents, from which 5 project promoters, 5 industry groups, 4 national governments, 4 individuals and others), funding decisions (21 respondents,) and state aid clearance (20 respondents, from which 4 national governments, 2 project promoters, 2 companies, 3 regional governments and 4 industrial groups, 3 individuals) should be handled under a single procedure. They also affirm that such a simplified framework would have the highest positive impact for projects from the TEN-T core network.

However, there is reluctance amongst some national governments, regional and local authorities, who have taken strong positions against the definition and handling of the procedures at European level. They have argued that it would not speed up the permitting process and could result in the duplication of efforts, since only national authorities could verify the individual approval requirements of each country, and therefore, some procedure would be duplicated.

Possible legal instrument

Amongst the available instruments for adopting measures to facilitate the permitting and preparation of TEN-T projects, the consultation showed a preference from respondents in general for the implementation of an EU Regulation on the permitting

procedures and other elements of preparation of priority status TEN-T projects, which would be directly applicable in Member States.

Nevertheless, some national governments have provided different opinions in relation to the considered instruments. They showed hesitation towards the implementation of an EU Directive or a Regulation, and recommended caution, mentioning that these actions could endanger the stability of European legislation in the respective areas. These views were expressed in the course of the bilateral interviews with some national administrations. Some national administrations consider that it would impact directly the approval procedure of TEN-T projects, arguing that such measure would conflict with ongoing procedures at national level, and may even generate further delays. They warned against any new processes that would be established in addition to the existing ones, in particular when a one stop shop already exists in the country.

A variety of stakeholders, and in particular from national and local authorities support the value and significance of knowledge transfer, the guidance that such instructions can provide, and the importance of promotion and dissemination of best practices. It is nevertheless important to note that the development of non-binding EU guidelines for permitting procedures was evaluated as less effective than binding rules. When deepening the analysis through bilateral interviews, some national governments considered that soft law instruments would leave them greater room to implement the measures in the most effective way according to their specific needs. Other national governments on the other hand doubt their effectiveness.

4.8 Experience from permit granting under TEN-E

4.8.1 Introduction

The European Union has implemented several policies to make energy supply more sustainable, secure, competitive and affordable. Adequate infrastructure for energy transmission is key to reaching these objectives. The Energy Union also acknowledges the importance of appropriate Energy transmission infrastructure as a “precondition to completing the energy market, integrating renewables and security of supply”.

Despite the clear benefits of enhanced interconnections, cross-border infrastructure projects often face additional barriers to national infrastructure projects. This is mainly due to the complicated nature of working with two separate national regulatory and permitting systems. The financing of projects that cross borders can also be more complicated, and there are also barriers that are faced by all large energy infrastructure projects, such as a lack of public acceptance. Addressing these barriers in order to realise the potential of a more fully integrated energy market is the core rationale for the TEN-E Regulation.

Amongst the institutional and formal requirements introduced by the TEN-E Regulation, there is a provision for the establishment of a National Competent Authority (one-stop shop based on article 8(1) of the TEN-E guidelines) on 16 November 2013 and the publication of the manual of procedures for PCIs on 16 May 2014. PCIs represent one of the most relevant measures put in place to guarantee a seamless implementation of the energy infrastructure at European level. The guidelines for trans-European energy infrastructure (TEN-E) regulation identifies priority corridors and thematic areas of trans-European energy infrastructure and provides guidelines for the selection of Projects of Common Interest (PCIs). Art.9 of Regulation No 347/2013 lays down rules for the timely development and interoperability of energy networks in the EU and sets guidelines for streamlining the

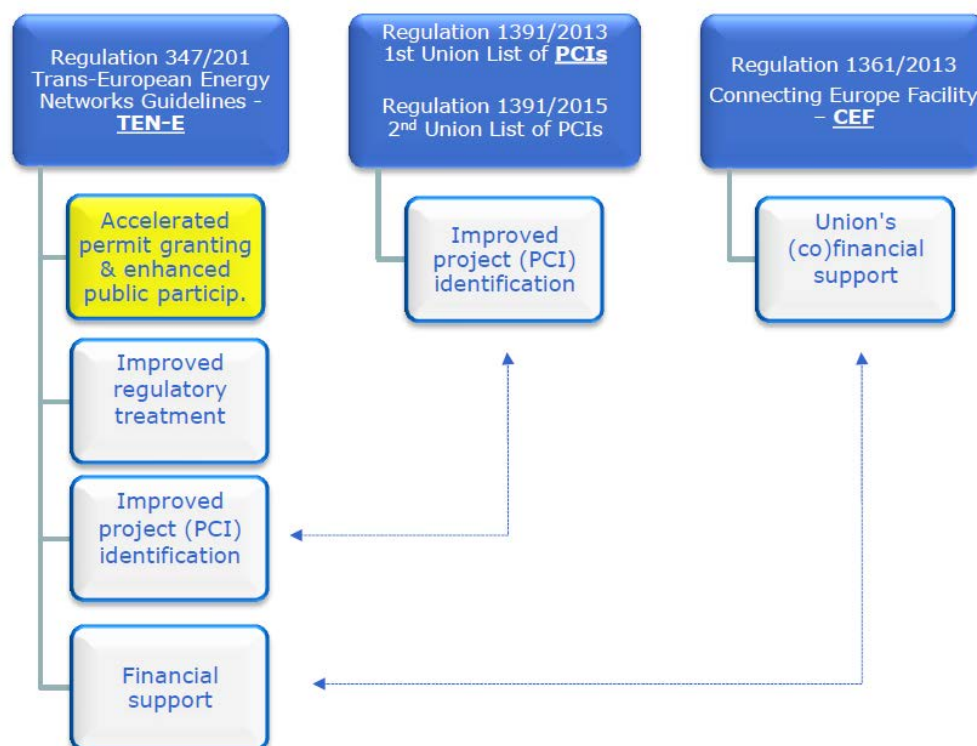
permitting processes for major energy infrastructure projects that contribute to European energy networks.

The introduction of one-stop shop is a measure directly considered under Policy Option 2, and could therefore, be of major importance when drafting a similar set of rules for the transport sector.

It is interesting to note how few Member States have decided to establish a completely new competent authority for the purposes of Article 8(1) of the TEN-E Regulation²⁰. These include Belgium and Estonia, which have appointed, respectively, the Permit Coordinating and Facilitating Committee and the PCI Working Group. Most Member States have granted the existing permit granting authority for energy infrastructure projects specific powers for the facilitation and coordination of the permitting of PCIs. Most Member States have then appointed a specific unit within the competent ministry or agency.

Amongst the problems that have been experienced in the application of the one-stop shops, it has to be noted that even though all Member States have appointed a one-stop shop (albeit, most of the time after the established deadline), the original appointment may meanwhile have changed due to a restructuring process in the central administration, and the fact that it is not always clear whether the subsequent name change of the one-stop shop should be communicated to the Commission.

Figure 6: New energy infrastructure package



Article 8(3) of the TEN-E Regulation requires Member States to organise their permit granting process in accordance with one of the three schemes: integrated, coordinated or collaborative. The schemes described in Article 8(3) of the TEN-E Regulation are

²⁰ Analysis of the manuals of procedures for the permit granting process applicable to projects of common interest prepared under Art.9 Regulation No 347/2013 – Millieu, 2014

one-stop shops intended to facilitate and accelerate the permit granting process, albeit at different levels:

- The integrated scheme: a comprehensive, binding decision is issued by the one-stop shop and other concerned authorities give their opinion as input to the procedure;
- The coordinated scheme: the comprehensive decision comprises multiple individual legally binding decisions issued by several authorities concerned, coordinated by the one-stop shop. The one-stop shop under this scheme has the right to disregard the decisions of other authorities or make decisions on their behalf in certain justified cases, without prejudice to other national or Union legislation;
- In the collaborative scheme, the comprehensive decision is coordinated by the one-stop shop based on individual, legally binding decisions by other concerned authorities. Where Member States opt to choose the collaborative scheme, they should inform the Commission of the reasons for that choice.

The majority of the European Member States opted for the third alternative, the collaborative scheme, with 17 Member States deciding to follow that path; 11 Member States decided to implement the coordinated scheme, and only 2 chose the integrated scheme²¹.

For this phase of the study, contacts were made with relevant national administrative bodies directly tied with TEN-E in two major European countries (Germany and the Netherlands) and with personnel from the European Commission, Directorate General for Energy. The consultation took place in various forms, including face-to-face interviews and analysis of material on the subject.

4.8.2 Main findings

General and individual set-ups

Project promoters in general welcome the higher level of cooperation between authorities, a crucial point in setting up a functioning scheme. Most Member States nevertheless decided to opt for the most flexible permitting scheme. The authorisation process has to be completed within 3.5 years; and both the European Commission and Member States administrations share the view that respecting the timelines set out in the regulation is essential for achieving the results of a more integrated energy networks and completing the Energy Union.

Two national set-ups were examined more closely in Germany and the Netherlands.

- The German one-stop shop for TEN-E has been established at the *Bundesnetzagentur*, which is an authority supervising grid infrastructures, including such issues as avoiding monopolistic markets and regulating charges for the use of grid infrastructure. However, the focus is on energy grids, telecom grids/markets, postal markets, and apart from rail, it does not address the transport sector. This, in the German Ministry of Transport's opinion, represents a difference between German energy and transport sectors, as the energy sector has an infrastructure regulator, while this is not the case for transport. Nevertheless, The Transport and Energy sectors have numerous

²¹ Some Member States decided to implement multiple solutions, thus the total exceeding 28

points of contact within the German framework, the most relevant of which is the strategic plan. The provision of a strategic plan was already established in the transport sector, but has also recently been established in energy sector.

- The Dutch Government implemented the elements set out in the TEN-E regulation on Projects of Common Interest. To this end, a manual has been created by RVO (Enterprise Agency) on the topic. Furthermore, a one-stop shop was established in the form of the Bureau *Energieprojecten*, under the responsibility of the Ministry of Economic Affairs and Climate.

The coordination role of the national government in energy PCIs was evaluated in 2016^[11], although the time period in which the evaluation took place is not mentioned.

4.8.3 Lessons learnt

The main findings concerning the feedback on the implementation of the TEN-E framework for permit granting are the following:

- Status of high national significance (article 7.3 of the TEN-E regulation) is meant to be granted to all PCIs as a priority. However, this is not always the case as some Member States would tend to require PCIs to fulfil the specific requirements of the national scheme while this status should be granted automatically.
- Some cross-border projects may still experience more problems and delays, and this is a shared opinion of both TEN-E and the project's promoters. The interviewees here seem to be inclined to request an enhanced level of supervision from the EC, providing increased monitoring.
- The stakeholders consultation at both national and European level showed that the cases where the pre-indicated timing is exceeded, this is the responsibility of Member States. In such case, the common practice is to take the matter before administrative courts, as an effect of the TEN-E regulation.
- The fact that the permit granting scheme was introduced in the form of a European regulation is perceived positively as it does not require any transposition but also because it creates direct rights for the projects promoters and can be directly enforced.

In addition, the following other issues should be taken into account.

Concerning the one-stop shop implementation, the main problem was represented by the coordination with the different national authorities, as there has been the case of some of them not wanting to give up the rights they had also by abiding to the timeline set by the competent authority. Some countries passed laws in which they put timeframes on administrative decisions or appeals, and other countries (this has been the case especially in Eastern Europe Member States) had bureaucracy issues within the Ministries. In this respect, the Commission services in charge of TEN-E suggest to organise trainings for all delegated representatives who would certainly benefit the whole process.

Despite these initial problems, there are elements to state that the implementation of one-stop shops has already had beneficial impacts. In fact, at this particular stage, some highly relevant and impactful projects are maturing, and the authorisation process has already started. The simplified process has helped the promoters and Member States to adhere more closely to the timeline, thereby giving a more

predictability to larger projects. This undoubtedly helped in the planning phase, and when looking for financing.

Another relevant aspect of the process is represented by the possibility that some problems eventually lead to the need for a part to appeal to the legal system to see their rights confirmed in court. In those cases, the first thing for a promoter to do is to go to the administrative court in the Member State (both Member States in case of a cross-border project). If that does not work – then the next step is to take it to the EU court. It's important to remember that the EU court can only come into play when all other options are exhausted, and that it follows typical procedure (the enforcement of the judgement goes back to the national jurisdiction).

5. Analysis of the Impacts

5.1 Introduction

The analysis of impacts set out in the following sections, covers the three policy options defined in Chapter 3 and compares them to the baseline. The key economic, environmental and social benefits and costs are analysed quantitatively at a level of detail consistent with the available data. Impacts are quantified where evidence suggests that there is sufficient data available to enable quantification, otherwise they are treated qualitatively.

Table 6: Identification of Impacts

Category	Impacts
Economic Impacts	<ul style="list-style-type: none"> • Impacts on investments • Impacts on transport users' costs • Impact on economic growth • Impact on administrative burden • Impacts on transport as a business • Impacts on small and medium enterprises
Environmental Impacts	<ul style="list-style-type: none"> • CO₂ emissions and air quality • Impact on noise emissions
Social Impacts	<ul style="list-style-type: none"> • Impacts on public participation in strategic planning • Impacts on public participation in the planning and approval of individual projects and on public acceptance • Impact on employment • Impact on public health – reduction of accidents • Impact on EU cohesion, local benefits, life quality and social inclusion

The problem definition focuses on delays and uncertainties in relation to the delivery of European transport infrastructure projects. For the impact assessment it has therefore been necessary to address the linkages between planned infrastructure projects and the timing of their associated benefits. For this part of the work, the analysis of economic, environmental and social impacts has been based on a defined set of projects, the basis for which being the TEN-T work-plan project lists compiled for the most recent core network corridor support studies (ending 2017)²².

In order to allow the impact of the investments and their expected benefits to be quantified, they have been modelled within the transport network. Two main categories of investment have been used, i.e. large projects which are modelled individually in the European network, and smaller projects which are modelled as packages which change the overall level of service in the modes and region to which they refer.

²² See: https://ec.europa.eu/transport/themes/infrastructure_en

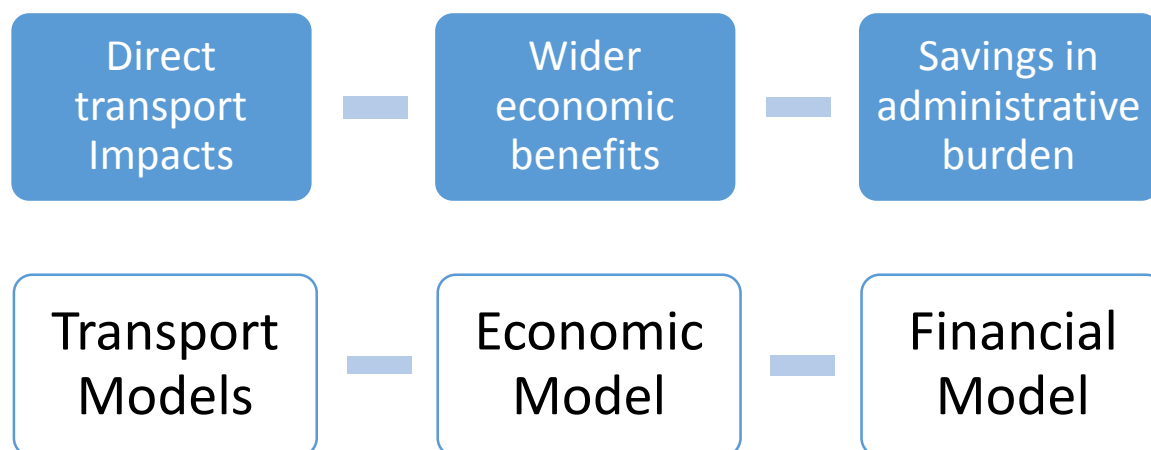
Since the assessment of impacts relates to project delays, and to the timing of future investments, certain criteria have been used to select the projects for the analysis. First of all, only projects which have not yet started construction, or which have not yet completed their authorisations, have been included. Projects which are already under construction are excluded from the analysis. Secondly, in order to model the projects and to include them in the project pipeline, there needs to be definite information about the locations of the projects (which network sections they affect), start and end dates of the projects and their budgets. Consequently, only projects with complete information on these parameters was used.

Finally, since the estimation of benefits relates especially to modal shift resulting from infrastructure upgrades, only infrastructure projects have been included. Other (non-infrastructure) categories of TEN-T projects such as ICT or vehicle-based projects were excluded. However, it should be noted that whilst these do not fall into the category of infrastructure projects, and have relatively small budgets and short timescales to realisation, they may still have relatively high economic impacts and environmental impacts.

The corridor work plan project lists cover the TEN-T corridors, but not the full core network. Therefore in order to estimate investments on the full core network, the sum of expected investments was scaled up from the original corridor project lists by 25%, following the methodology used in the TEN-T analysis of wider impacts²³. This additional investment sum was applied pro-rata across the different transport modes, but modelled as upgrades only on non-corridor sections of the core network.

5.2 Overview of approach

The quantitative steps for the impact analysis have been carried out using three different methods:



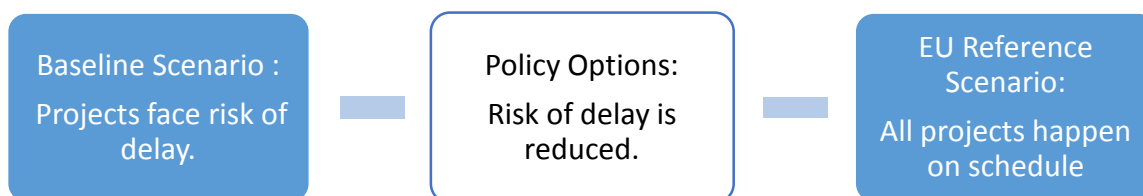
1. Direct transport impacts (e.g. modal shift and CO₂ reduction) have been estimated using a combination of transport models.
2. Wider benefits (jobs and growth) have been estimated with an economic model.
3. Savings in administrative burden have been calculated with a financial model (Excel model).

²³ M-Five et al, 2015, "Cost of non-completion of TEN-T". A study on behalf of DG-MOVE.

The three methodologies use common assumptions for the set of investments considered and for the definition of the baseline and the three main policy options.

There are two main benchmarks in the analysis:

- The **EU reference scenario**, in which it is assumed that all known policies and investments are achieved within their scheduled timescales. This is the outlook as published in the 2016 EU Reference Scenario.
- The **baseline scenario** for the impact assessment, which assumes that there are delays across the range of planned infrastructure investments, and therefore delays in achieving the improvements to the transport network.



The baseline is therefore defined to quantify the situation foreseen in the problem definition; i.e. where, as in the recent situation, permitting procedures cause delays in the programme of transport infrastructure investments currently set out in the TEN-T core network. These delays push back the completion of the projects and the delivery of benefits for users. Note that only the delays related to permitting and planning procedures are counted in the baseline, not other delays such as those related to the availability of investment funds.

The models are used to compare the policy options and to quantify effects related to the delay of investments within the transport system. In particular, the transport models estimate user benefits such as improvements in the level of service within the multimodal network, as well as non-user benefits related to lower levels of externalities including air pollution, noise, congestion and accidents. These benefits are then set against a timeline and the policy options are compared in terms of their ability to generate benefits sooner than in the baseline. A similar approach is used for the economic model (growth and jobs) and the estimation of administrative burden under the three options.

This approach allows the comparison of the three policy options with the baseline:

Table 7: Policy Options Modelled

Policy option	Description
Policy Option 1	Minimal change to the existing instruments and development of soft law as well as accompanying measures
Policy Option 2	Limited binding action to be decentralised and implemented at national level
Policy Option 3	An EU framework for authorisation of the TEN-T core network projects

For the baseline, it is assumed that all projects on the TEN-T face a risk of experiencing delays, and when testing the policy options it is assumed that the measures can reduce a part of the delay across the whole range of projects.

Across the range of options it is assumed that the three policy measures affect the transport system by changing the rate of completion of proposed TEN-T investments and thus, the time by which the benefits are realised and their present value. The options are all compared to a single baseline in which it is assumed that no specific measures for streamlining TEN-T investments are implemented.

5.2.1 Approach - Direct transport impacts

Direct benefits for transport users and direct transport externalities related to the timely implementation of TEN-T, have been estimated with a network-based transport model (NEAC) using data from the 2016 EU Reference Scenario and projections to 2030 and 2050 (estimated with Primes-TREMOVE). The model and its assumptions are explained in detail in Annex 4.

Network effects and choice of model

One of the reasons that project co-ordination and timing of project delivery is so important is that the TEN-T is setting out an overall strategy for the development of cross-border and long distance transport, linking together national infrastructure and different transport modes. This involves the achievement of compatible technical standards across the network, amongst other things, and solving transport bottlenecks. There is consequentially some inter-dependence across the network and synergies between different projects. If a series of separate upgrades is required to open up a long-distance route for rail freight or for inland waterway, for example, then the network benefits are only fully realised when all the upgrades have been completed. Thus, the timing of a single project can have more widespread consequences on the network, extending further than its own individual perimeter.

To analyse these network effects in more detail, the sets of proposed network upgrades have been modelled in NEAC network model. The main objective here is to estimate the degree of modal shift and related benefits that can be attributed to the TEN-T projects as a full package. The modal shift caused by the investments is the key source of user and non-user benefits in the transport network, as it frees up capacity, lowers transport cost, and leads to a greater use of services with lower levels of externalities, i.e. air pollution, climate change, noise, accidents and congestion.

For freight, the model measures shifts from road transport to all other modes; rail, inland waterway and maritime. NEAC does not model passenger transport flows, but the network upgrades modelled for freight, including road and rail infrastructure also serve passenger transport, so the supply-side results, linking investments to network levels of service have been used to estimate passenger modal shifts, primarily just road to rail on long distance routes.

By using a multimodal network model, it is possible to capture the interdependencies and other network benefits implied by the TEN-T strategy. Thus it is possible to capture the way in which the non-completion of any specific project affects the rest of the network.

5.3 Definition of the Baseline

The baseline is defined as the main benchmark for the comparison of policy options. It is assumed to be the situation in which the expected programme of TEN-T projects are implemented, but with delays. Thus, for this exercise, the baseline represents a

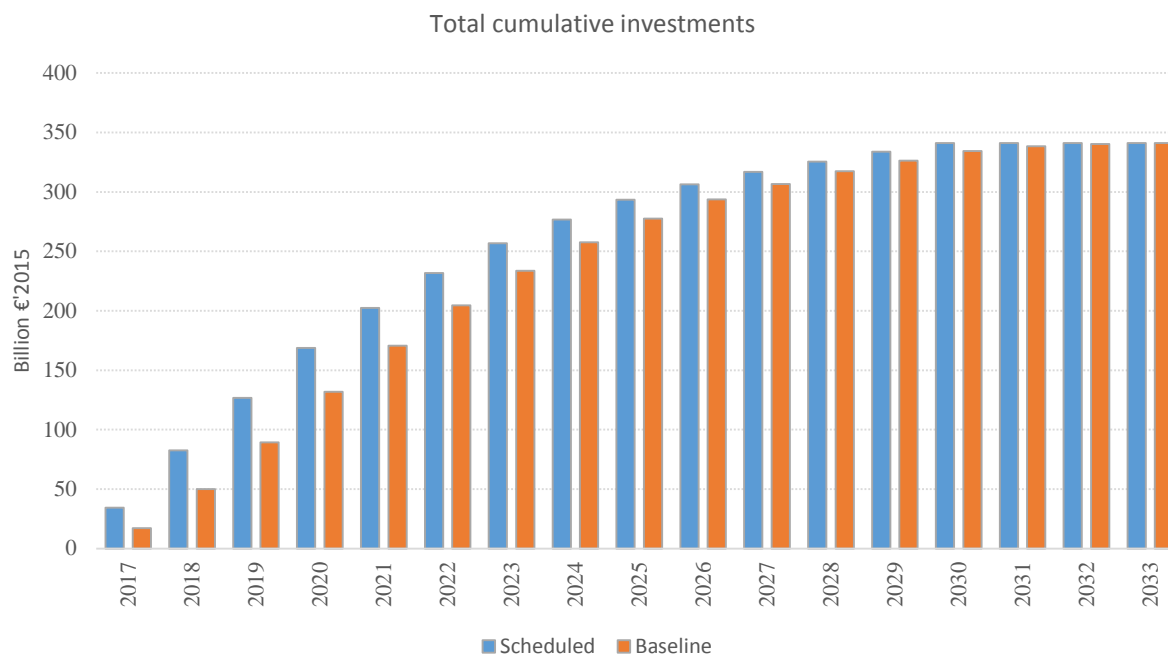
pattern of investments where delays are occurring. These assumed (future) delays are based on historical trends.

Analysis of project delay risks

An analysis of the likely pattern of delays has been made, based on the findings from previous priority project reports (2012). A selection of 34 projects was made. Amongst these projects, four projects finished earlier than expected (on average 1.5 years earlier), 14 projects finished as scheduled, and 16 projects finished later than planned, delayed, on average 4.25 years. The cross-border projects were on average delayed more than the others. Amongst the 34 projects, delays were caused by a range of factors; technical, political, funding, and procedural. Thus, it was not possible to isolate empirically the level or probability of delay linked to specific permitting procedures, or to establish whether these were critical path delays. However, it is possible to conclude that delays did not occur on all projects, and that the delays attributed to permitting procedures are less than the total length of the delays, as other delay factors are present. We also assume that the exceptionally long delays occur in situations where several factors, including funding delays, are occurring. In this analysis, a delay refers to the time spent, over and above the expected or scheduled time allocated for achieving the necessary authorisations, and not the overall length of the planning phase.

In the model analysis, following these 2012 results, we therefore apply the assumption that 50% of the investments occur on schedule, and for the remaining 50%, that delays related to permitting procedures do occur, but in diminishing probabilities according to the length of delay. Thus, we apply the assumption that 25% of the investments are delayed by one year, that 15% are delayed by two years, and 10% are delayed by three years.

The impact of these assumed (baseline) delays is shown below in the cumulative investment profile. See Figure 7.

Figure 7: Cumulative Investment profile – All Projects – scheduled and with delays (baseline)

According to these assumptions, the outcome is that instead of realising the full set of investments by 2030, there are delays affecting a proportion of projects meaning that the full programme of investments scheduled to be finished by 2030 is not completed until 2033. The effect is greater in the earlier years, when the annual rates of investment are higher. Road, rail, maritime and inland waterway projects are modelled with the same assumptions.

Limitations of the assumptions used

This schedule of investments is based on currently planned TEN-T projects, but it should be noted that in the medium term, later generations of TEN-T projects will be launched. These are excluded from the analysis because their network benefits cannot be modelled without basic knowledge of the scale, purpose and location of the investments, so the current projection is likely to be a conservative estimate of the total investment up to 2030. Beyond 2030 and up to 2050, the TEN-T strategy is to complete the wider comprehensive network, but this extension in timescale is not modelled here. Finally, given that the efficiency of the planning and permitting framework affects the willingness of investors to generate new projects, there could be additional second-order impacts affecting the future scale of the TEN-T programme. These are also not taken into account in this step of the analysis.

Transport activity in the baseline

In the baseline scenario, as in the EU Reference Scenario, EU transport activity is expected to continue growing steadily beyond 2015. Freight transport activity for inland modes is projected to increase by 28% between 2015 and 2030 (51% for 2015-2050). Passenger traffic growth would be lower than for freight at 17% by 2030 (36% for 2015-2050). Road transport would maintain its dominant role within the EU for both passenger and freight transport. Rail transport activity is projected to grow faster than for road: passenger rail activity would go up by 33% between 2015 and 2030 (70% for 2015-2050); rail freight activity by 39% by 2030 (75% for 2015-2050).

Inland navigation (i.e. inland waterways and national maritime) activity is projected to go up by 23% by 2030 and 43% for 2015-2050. However, delays in investments due to permitting procedures would lead to lower activity than in the updated EU Reference scenario for both rail and inland navigation already over 2015-2020.

5.3.1 Modelling three policy options

Three policy options have been tested, in line with the descriptions as set out in Chapter 3. These three policy options function differently but all aim to reduce delays. In the model, they influence the extent to which the baseline delays can be reduced. Lower investment delays compared to the baseline lead to positive (earlier) modal shifts in the transport network, meaning in turn that user benefits and external costs savings take place earlier in the timescale. These benefits have been first calculated as monetary values per year. Then, their present value over the lifetime of the projects (2018-2030) have been calculated using a discount rate of 4%.

Following the description of the policies, option one and two are assumed to have earlier start dates compared to option three, but option three is assumed to be more effective in eliminating delays, and faster to reach full effectiveness. These assumptions are based on the different types of legal instruments involved. Option one involves voluntary actions, and no binding time limits, but it can be implemented quickly. Option two involves the establishment of national one-stop shops following the approach adopted in the energy sector, where it was found that it took longer than expected to transpose the legislation and establish the one-stop shops. Option three involves the most complexity to initiate since it would require a new EU framework, but once established it would potentially eliminate a greater proportion of the delays, including those related to duplication of permitting procedures either side of a national border.

The calculations use the assumptions below:

Table 8: Assumptions regarding effectiveness of options to reduce delays

Assumption	PO1	PO2	PO3
Year of launch	2020	2022	2023
Effectiveness	15%	60%	80%
Build Up period	5	3	0

These are derived from the consultation report which found that:

- (Q31) 75% of 93 respondents fully or rather agreed that a one-stop shop would facilitate and accelerate the permitting of TEN-T projects
- (Q34) 73% of the 96 respondents fully or rather agreed that such overall time-limit would be useful in accelerating permitting procedures
- (Q47) 68% of 88 respondents expected that an EU Regulation on permitting procedures, directly applicable in all Member States would be either effective or very effective.
- (Q47) 26% of 86 respondents expected that EU Guidelines (not legally binding) would be either effective or very effective.

Thus PO2 and PO3 which include mandatory provisions for a one-stop shop and time limits were assumed to have higher effectiveness rates in reducing delays in procedures than PO1 which contains measures which are not legally binding. PO3,

which includes an overall EU framework directly applicable in all Member States was assumed to have higher effectiveness than PO2. The year of launch assumption depends upon the legal complexity of the policy option involved. Effectiveness of the policy option depends upon the extent to which it applies mandatory rules, and the degree to which these are harmonized. The build-up period, which is defined as the number of years it takes for the policy option to reach its maximum effectiveness level, depends upon the assumed rate at which Member States are adjusting their procedures.

5.4 Economic Impacts

The aim of the three policy options is to reduce delays and uncertainties in the planning and preparation of TEN-T infrastructure projects. By streamlining the procedures, the benefits associated with the projects such as lower user on non-user costs can be realised more quickly generating higher levels of present value. In certain cases, where investments address bottlenecks in the transport network, the scale of network benefits can be relatively high in comparison to the size of the investment. In addition to these direct benefits, the infrastructure investments also generate regional economic growth via the multiplier effect. For the stakeholders involved in the planning process itself, these aspects are analysed in turn.

Table 9: Economic Impacts

Category	Impacts
Economic Impacts	<ul style="list-style-type: none"> • Impacts on investments • Impacts on transport users' costs • Impact on economic growth • Impact on administrative burden • Impacts on transport as a business • Impacts on small and medium enterprises

5.4.1 Impact on investments

Using the baseline assumptions for the schedule of investments, and the assumptions concerning the timing and effectiveness of the policy options in reducing investment delays, the following table (Table 10) shows the cumulative investments assumed across all modes for the medium term period between 2020 and 2025, where the options are expected to come into force. Investments for in the rail and waterborne transport networks are split out from the total, as these sectors are the major beneficiaries of TEN-T investments.

Each row of the table shows the cumulative percentage of total planned investments (up to 2030) achieved by a given date. Therefore these figures imply, for example, that in the baseline, 81.4% of total investments (all modes) will be achieved by 2025. Under policy option 1 this would increase to 82.1%, with 84.2% for policy option 2, and 85.1% for policy option 3.

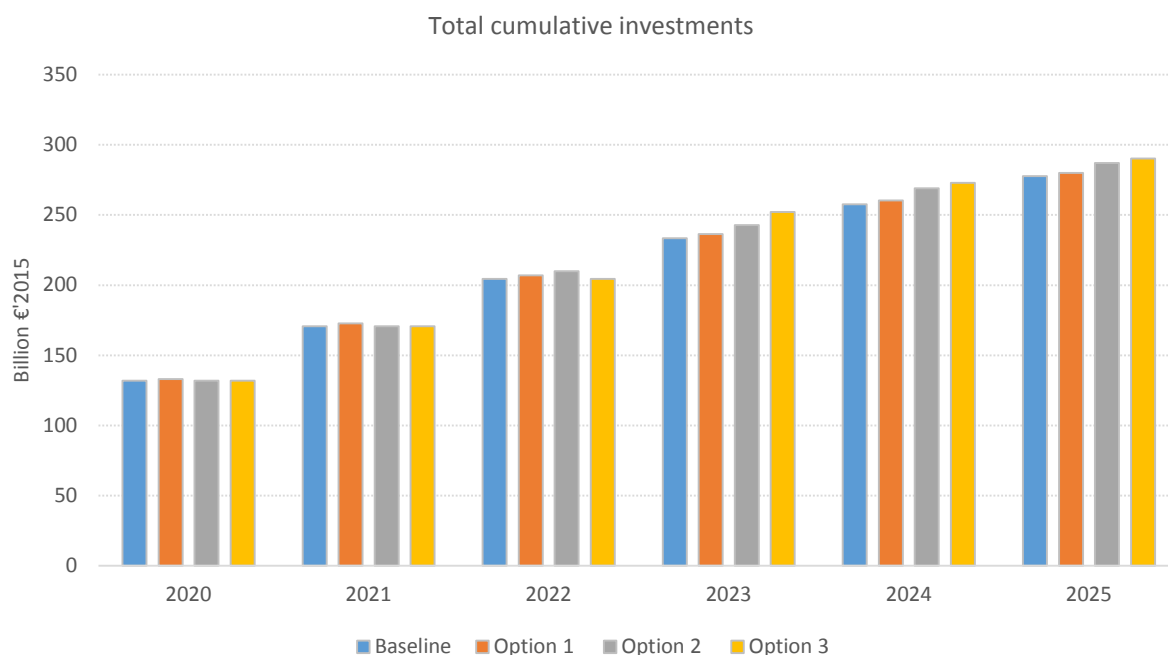
Table 10: Share of total investments in the policy options for 2020-2025 over the lifetime of the projects.

Cumulative investments (share of total investments over the lifetime of the projects)	2020	2021	2022	2023	2024	2025
Total investments						
Baseline	38.7%	50.1%	60.0%	68.5%	75.5%	81.4%
Option 1	39.0%	50.6%	60.7%	69.3%	76.4%	82.1%
Option 2	38.7%	50.1%	61.6%	71.2%	78.9%	84.2%
Option 3	38.7%	50.1%	60.0%	73.9%	80.0%	85.1%
Rail transport						
Baseline	36.1%	46.9%	56.1%	64.3%	71.2%	77.2%
Option 1	36.4%	47.4%	56.8%	65.1%	72.0%	77.9%
Option 2	36.1%	46.9%	57.6%	66.9%	74.5%	80.1%
Option 3	36.1%	46.9%	56.1%	69.5%	75.6%	81.0%
Waterborne transport						
Baseline	40.6%	53.8%	65.8%	75.2%	82.9%	89.0%
Option 1	41.0%	54.5%	66.7%	76.1%	83.8%	89.7%
Option 2	40.6%	53.8%	67.7%	78.2%	86.5%	91.8%
Option 3	40.6%	53.8%	65.8%	81.1%	87.7%	92.7%

Note: waterborne transport covers inland waterways and maritime.

In 2020, only option one is assumed to be in operation, but by 2022, it is estimated that option 2 has overtaken it in terms of investment, and by 2030, option 3 has overtaken the other two. These options can therefore be seen as a comparison between relatively soft measures which can be implemented quickly, and stronger measures which require longer to introduce, but which can ultimately apply to a greater number of projects, and which can reduce complexity in the planning of the large cross-border projects which potentially yield the highest EU value added.

The same schedule of investments is shown below in Figure 8, where the cumulative investments are shown in monetary units. In 2025, the baseline (with delays assumed) is expected to have realised €278 billion of TEN-T projects. The three policy options are expected to realise €280, €287, and €290 billion respectively (PO1, PO2, PO3).

Figure 8: Total cumulative investments 2020-2025

As the time series is extended to 2033 the policy options converge because the baseline is defined to include only projects identified within the 2017 corridor work-plans. Most of these investments are scheduled for the period up to 2025, and even with long delays, most of these will be completed by 2030. The difference between the policy options is therefore most visible in the period 2020-2025.

5.4.2 Impacts on transport users' costs

Transport investments are designed to improve the performance of the overall network by increasing capacities, allowing the use of more efficient forms of transport (e.g. longer trains), creating modal shift, and reducing traffic congestion. These changes have the potential to reduce user costs across the network. By reducing delays on the investments, the changes in the transport network can be introduced faster, and any cost savings can be calculated in terms of their present value.

The calculation of user costs has been made using projections of traffic volumes for all modes and EU member States (passenger and freight), combined with projections of transport costs. All of these projections are derived from the 2016 EU Reference Forecast. The network model (NEAC) has then been used to calculate the transport impacts arising from the TEN-T investments, and the timing of these changes in the transport network have been calculated according to the assumptions of the baseline (delays to projects), and for the three policy options. Benefits for the three policy options arise in circumstances when transport user cost reductions are introduced more quickly than in the baseline.

It is estimated that the total present value of transport user costs on the TEN-T core network for the baseline is €2,460,763 million, covering both freight (40%) and passenger transport (60%). The three policy options bring forward investments by reducing planning delays, and create net benefits either through savings in travel time, or by shifting traffic to a lower cost option. See Table 11.

Table 11: Impacts on user costs relative to the baseline, TEN-T network, 2018-2030

	Baseline*	PO1	PO2	PO3
Total user costs (net present value in million €)				
Core TEN-T network, of which:	€2,460,763	-1,838	-5,069	-6,648
		-0.1%	-0.2%	-0.3%
Core network corridors		-1,379	-3,802	-4,986
		-0.1%	-0.2%	-0.2%
CEF projects		-1,020	-2,813	-3,690
		0.0%	-0.1%	-0.1%
Note: * The baseline figures relate to the traffic on the core TEN-T network.				

The table shows the level of reduced cost (indicated as a negative change in total costs) per policy option (PO1,2,3), arising from the implementation of the full set core network projects, as well as the subset of projects located on just the core network corridors, and the CEF project subset. The impacts are lower overall if the policy changes are assumed to apply to smaller sets of projects. For the core network as a whole, it is estimated that the total reduction in transport user costs arising from PO1 is €1.8 billion, rising to €5.1 billion and €6.6 billion respectively for policy options PO2 and PO3. These savings are expressed as the net present value of reductions in cost for the period 2018-2030. The relative scale of the reduction compared to total transport users' costs (also in present value) is also shown e.g. PO1 saves 0.1% of total costs across the full set of core network projects.

5.4.3 Impacts on transport as a business

Streamlining the process of implementing TEN-T projects means that the targeted benefits within TEN-T can be realised more quickly. The majority of investments are in the rail and waterborne (maritime and inland waterways) sectors, aiming to improve the capacities of these modalities, thereby causing modal shift, and helping to reduce the overall level of emissions within the transport sector.

The policy options have therefore been analysed in terms of the level of modal shift they create. As described above, the calculation has been made by comparing the baseline, in which planning delays are occurring, with the situations anticipated under the three policy options, in which a greater number of projects are realised on time. By accelerating the delivery of projects, the impacts are realised earlier. Therefore, it is possible to show for a given year in the middle of the trajectory being modelled (e.g. 2025) the differences in transport mode share.

Table 12: Traffic shifted to rail and waterborne transport in 2025 relative to the baseline (in million pkm/tkm)

Traffic shifted to rail and waterborne transport in 2025 (in millions pkm/tkm and % change to the baseline)	Baseline*	PO1		PO2		PO3	
Core TEN-T network projects							
Passenger transport	259,998	-14	0.0%	-56	0.0%	-75	0.0%
Road	216,310	-565	-0.3%	-2,261	-1.0%	-3,015	-1.4%
Rail	43,688	551	1.3%	2,205	5.0%	2,940	6.7%
Freight transport	626,552	-15	0.0%	-62	0.0%	-83	0.0%
Road freight	171,596	-648	-0.4%	-2,593	-1.5%	-3,457	-2.0%
Rail	105,579	273	0.3%	1,093	1.0%	1,458	1.4%
Waterborne transport	349,377	359	0.1%	1,437	0.4%	1,916	0.5%
Core network corridors projects							
Passenger transport	259,998	-11	0.0%	-42	0.0%	-56	0.0%
Road	216,310	-424	-0.2%	-1,696	-0.8%	-2,261	-1.0%
Rail	43,688	413	0.9%	1,654	3.8%	2,205	5.0%
Freight transport	626,552	-12	0.0%	-46	0.0%	-62	0.0%
Road freight	171,596	-486	-0.3%	-1,944	-1.1%	-2,593	-1.5%
Rail	105,579	205	0.2%	820	0.8%	1,093	1.0%
Waterborne transport	349,377	269	0.1%	1,078	0.3%	1,437	0.4%
CEF projects							
Passenger transport	259,998	-8	0.0%	-31	0.0%	-42	0.0%
Road	216,310	-314	-0.1%	-1,255	-0.6%	-1,673	-0.8%
Rail	43,688	306	0.7%	1,224	2.8%	1,632	3.7%
Freight transport	626,552	-9	0.0%	-34	0.0%	-46	0.0%
Road freight	171,596	-360	-0.2%	-1,439	-0.8%	-1,918	-1.1%
Rail	105,579	152	0.1%	607	0.6%	809	0.8%
Waterborne transport	349,377	199	0.1%	798	0.2%	1,064	0.3%
Note: * The baseline figures relate to the traffic on the core TEN-T network.							

As before, the results are calculated per policy option (PO1, PO2, PO3) and for the three sets of projects (all core network, corridor projects, and CEF projects), and shown for passenger transport (measured in million passenger kms) and freight (measured in million tonne km). Traffic figures have been calculated based on flows occurring within the core TEN-T network.

It is therefore estimated for PO1 that there would be reduction of 565 million pkm in the year 2025 compared to the baseline if this policy option were applied to all identified projects on the core network. Most of this shift is expected to go towards rail (+551 million pkm). Under PO3, the shift from road is 3,015 million pkm and the net shift to rail is estimated at 2,940 million pkm, implying a 1.4% shift away (negative shift) from road on the core network, and a shift of 6.7% for rail. For freight there is an expected shift of between 648 million tkm and 3,457 million tkm across the range of policy options, with most of the diverted traffic expected to shift to rail.

In 2030, the impact of reducing delays appears lower, due to the fact that the majority of known projects will have been completed before 2030, even allowing for delays. However this is considered to be an underestimate of the true position because new (as yet unknown, and therefore not possible to model) projects will be introduced, and they will also be subject to delay. The calculated figures for 2030 are shown below.

Table 13: Traffic shifted to rail and waterborne transport in 2030 relative to the baseline (in million pkm/tkm)

Traffic shifted to rail and waterborne transport in 2030 (in millions pkm/tkm and % change to the baseline)	Baseline*	PO1		PO2		PO3	
Core TEN-T network projects							
Passenger transport	273,775	204	0.1%	815	0.3%	1,087	0.4%
Road	224,195	-116	-0.1%	-463	-0.2%	-617	-0.3%
Rail	49,580	320	0.7%	1,278	2.9%	1,704	3.9%
Freight transport	680,578	92	0.0%	366	0.1%	489	0.1%
Road freight	182,889	-136	-0.1%	-545	-0.3%	-727	-0.4%
Rail	118,483	160	0.2%	642	0.6%	856	0.8%
Waterborne transport	379,206	68	0.0%	270	0.1%	360	0.1%
Core network corridors projects							
Passenger transport	273,775	153	0.1%	611	0.2%	815	0.3%
Road	224,195	-87	0.0%	-347	-0.2%	-463	-0.2%
Rail	49,580	240	0.5%	959	2.2%	1,278	2.9%
Freight transport	680,578	69	0.0%	275	0.0%	366	0.1%
Road freight	182,889	-102	-0.1%	-409	-0.2%	-545	-0.3%
Rail	118,483	120	0.1%	481	0.5%	642	0.6%
Waterborne transport	379,206	51	0.0%	203	0.1%	270	0.1%
CEF projects							
Passenger transport	273,775	113	0.0%	452	0.2%	603	0.2%
Road	224,195	-64	0.0%	-257	-0.1%	-343	-0.2%
Rail	49,580	177	0.4%	709	1.6%	946	2.2%
Freight transport	680,578	51	0.0%	203	0.0%	271	0.0%
Road freight	182,889	-76	0.0%	-303	-0.2%	-404	-0.2%
Rail	118,483	89	0.1%	356	0.3%	475	0.4%
Waterborne transport	379,206	37	0.0%	150	0.0%	200	0.1%
Note: * The baseline figures relate to the traffic on the core TEN-T network.							

5.4.4 Impact on small and medium enterprises

The main impacts on small and medium enterprises are related to economic growth and job creation which are discussed in following sections. Direct economic impacts on small and medium enterprises in terms of lower transport costs, lower congestion and more choice in terms of transport services were not found to be highly differentiated according to the size of the enterprise.

5.4.5 Impact on economic growth

This section describes the impacts on growth of the three policy options and compares the results with the baseline scenario. The term “Growth impacts” means the creation of additional GDP by the implementation of the policy options the time horizon until 2030. Impacts on employment are discussed below under the heading, social impacts.

The multiplier methodology

An economic *multiplier* constitutes a factor of proportionality that measures how much an endogenous or dependent variable changes in response to a change in some exogenous or independent variable. In our analyses the independent variable are the investments into the TEN-T defined in the policy options (and underpinned by the EU corridor studies on the core network corridors) and the dependent variables that respond to the investments are gross domestic product (GDP) and employment.

To capture the total scope of economic effects of the policy options it is necessary to measure the wider economic impacts, which is only possible by a fully-fledged macro-economic model. Such a macro-economic approach has been followed with the application of the ASTRA model in the study on cost of non-completion of the TEN-T (Schade et al. 2015), which has estimated the full growth and jobs impacts of not implementing the TEN-T by 2030, i.e. the study modelled the whole sequence of direct effects, indirect effects, second round effects, i.e. the wider economic impacts.

This study delivered multipliers as a side product, which refer to impacts generated over the whole period 2016 until 2030. They include the impacts during construction in the first phase of the planning horizon and the impacts stemming from the use of infrastructure after opening of the projects in later phases. Table 14 exhibits the average GDP multipliers.

Table 14: GDP Multipliers applied for the analysis

bn€ / bn€ in €2015	2016 to 2030 <i>Schade et al. 2015</i>	year 1 to 5	year 1 to 10	year 1 to 15
All projects, average	4.24*	1.95	3.43	5.49

* All TEN-T projects

Source: M-Five, own calculations

Modelled results for GDP

The following formulas show the mapping between the investment profiles and the multipliers for GDP:

$$\text{Additional GDP until 2030} = \sum_{t,c} \text{investment}_{t,c} * \text{GDPmultiplier}_{t,c}$$

With: t = three five-year periods
c = project categories (e.g. for CNC or CEF funded projects, not used for this summary).

The results for additional GDP over the years of the time horizon 2018 to 2030, are summarised in Table 15.

Table 15: Annual average economic benefits relative to the baseline for 2018-2030

	Baseline	PO1	PO2	PO3
Economic benefits (in billion € and % change to the baseline)				
Core TEN-T network projects, of which:	95	0.6	1.6	2.1
		0.6%	1.6%	2.2%
Core network corridors projects		0.4	1.2	1.6
		0.4%	1.2%	1.6%
CEF Annex 1 projects		0.3	0.9	1.2
		0.3%	0.9%	1.2%

Policy option 3 comes out as with the best economic results (€2.1 billion GDP on average per year over 2018-2030), while the difference between option 3 and option 2 is not very large (€1.6 billion GDP on average per year over 2018-2030 in policy option 2). Applying this analysis to the narrower scope of core network corridors or to the CEF-funded investment projects would reduce the impacts.

All options underline that a streamlining of planning processes with a subsequent reduction of implementation times are economically beneficial. Option 1 will not lead to major economic impacts while options 2 and 3 come out as being clearly favourable in terms of economic growth.

5.4.6 Administrative Burden Impacts

This section presents the changes of the administrative cost under each policy option. In line with the Better Regulation Guidelines, a quantitative analysis was carried out for the measures entailing relatively significant impacts on administrative costs.

In this case the administrative costs relate to:

- administrative personnel from public administration processing applications;
- administrative personnel from public administration providing feedback on the outcome of the applications;
- administrative personnel from the project managers, infrastructures managers, or any other stakeholder required to produce documentation related to an assessment;
- project managers and staff requiring time to follow the assessment procedures, i.e. to obtain, renew and modify the application process.

The methodology undertaken to perform such analysis comprised a mix of primary and secondary data, gathered from literature reviews and outcome of the interviews performed.

The (2011) TEN-E impact assessment is a good source of information as there are several lessons learnt which can be taken from such IA (for further details see Section 4.8.3 of this report).

Assumptions on administrative burden per measure package

A detailed analysis of the impact on the administrative burden of each policy option has been undertaken and presented below. The analysis has been developed on the basis of the results of the interview process, the literature review, the TEN-E Impact Assessments, and the consultants' expertise.

In Table 16, the individual measures which comprise the overall policy options have been assessed. In particular, a specific numerical value (expressed as a percentage) has been allocated to each measure. The percentage represents the administrative cost/saving that each measure might achieve against the administrative cost currently incurred in any given year. However these impacts do not occur in the same years and often they are not recurrent, as they include a combination of implementation and recurrent costs/benefits.

The quantification of the administrative burden for the authorities and project promoters required the definition of several assumptions, which have been described below.

The authorities' administrative burden considers both the costs for the EU institutions and the Member States. In PO1, the introduction of guidelines for permit granting, is expected to produce a saving in administrative burden for the TEN-T project promoters applying. However the authorities' administrative burden is expected to slightly increase as a result of having to determine the guidelines and to implement them (on voluntary basis). Effective technical assistance for project promoters both at

EU and Member State level is expected to provide important benefits for the industry players. The establishment of a one-stop shop (OSS) at national level has been previously considered for the TEN-E impact assessment. During that study, a majority of stakeholders interviewed (over 75%) stated that the OSS could bring substantial decreases in administrative burden. The one-stop shop solution proposed in the TEN-E was expected to generate a 25% reduction of cost for the project promoters. This data is in line with the results presented in Table 16. Furthermore, several measures included in the different policy options require similar actions, therefore, when the administrative costs of two measures were overlapping, their two figures have been combined.

Table 16 shows each measure identified under the three policy options provided, considering four main areas of intervention:

- Authorisation and permits;
- Public procurement;
- State aid;
- Other.

Table 16: Administrative cost per measure package: maximum potential cost or saving against the baseline scenario

Option / Description	Measures	Details	Promoter Admin. Cost	Authorities Admin. Cost	
Option 1: Minimal change to existing instruments and development of soft law as well as accompanying measures	Authorisation and permits	Guidelines for the permit granting procedures and application of the EU acquis in this field.	-4.0%	1.0%	
		Systematic encouragement in soft law instruments (e.g. guidelines) to apply joint and/or coordinated procedures under Article 2(3) of the revised EIA Directive			
	Public procurement	Guidelines for TEN-T project promoters and better orientation of existing instruments (such as measures encompassed in COM(2017) 573 “Helping investment through a voluntary ex-ante assessment of the procurement aspects for large infrastructure projects”, JASPERS or EIAH support	-4.0%	1.0%	
	State aid	No modification	0.0%	0.0%	
	Other		Targeted technical assistance measures for carefully selected projects of common interest (including high quality and efficient packaging of routine projects).	-4.0%	2.5%
			Effective technical assistance (e.g. Jaspers or the European Investment Advisory Hub) to support project preparation and horizontal issues affecting the implementation of TEN-T projects, both at the Member State and EU level (modelled on the JASPERS initiative and/or systematically involving cooperating Member States-JASPERS-Commission to develop tailor-made solutions for individual Member States).	-7.5%	2.5%
Facilitation support provided by the European Coordinators, where appropriate, in line with the mandate defined in the TEN-T regulation.			-4.0%	1.0%	
Option 2: Limited binding action to be implemented	Authorisation and permits	Establishment of a one-stop shop (OSS) at national level. The OSS would continue to apply national permitting rules (transposed from EU directives) – legal requirement	-10.0%	2.0%	

Option / Description	Measures	Details	Promoter Admin. Cost	Authorities Admin. Cost	
at national level		needed/similar to TEN-E			
		Integration of various administrative procedures at national level (notably all environmental assessments EIA, Habitat, Water, Seveso, Waste, Birds etc. currently optional) – legal requirement needed/similar to TEN-E.	-7.5%	2.0%	
		Introduction of time limits for permitting procedures (possibly also for legal appeals while preserving access to justice) – legal requirement needed/similar to TEN-E	-7.5%	4.0%	
	Public procurement	Requirement to opt for a single legal framework for public procurement of cross-border projects (currently optional) – legal requirement needed	-2.5%	2.5%	
		Guidelines for TEN-T project promoters and better orientation of existing instruments (such as, measures encompassed in COM(2017) 573 “Helping investment through a voluntary ex-ante assessment of the procurement aspects for large infrastructure projects”, JASPERS or EIAH support).	-4.0%	1.0%	
	State aid	No modification	0.0%	0.0%	
		Shorter deadlines for State aid clearance – similar to EFSI projects.	-5.0%	2.0%	
	Other	Targeted technical assistance measures for carefully selected projects of common interest (including high quality and efficient packaging of routine projects).	-4.0%	2.5%	
	Option 3: An EU framework for authorisation of the project of common interest	Authorisation and permits	Definition of a specific framework for the authorisation of carefully selected projects of common interest. This would include integrated procedures, time limits, cases for overriding public interest and make requirement under existing Directives directly applicable – legal requirement needed.	-7.5%	7.0%
		Public procurement	Definition of a specific framework for single rules to be applied in public procurement of cross-border projects – legal requirement needed.	-5.0%	5.0%
State aid		No modification	0.0%	0.0%	
		Shorter deadlines for State aid clearance – similar to EFSI projects.	-5.0%	2.0%	
Other		Targeted technical assistance measures for carefully selected projects of common interest (including high quality and efficient packaging of routine projects).	-4.0%	2.5%	

The results in the table above show that the establishment of the one-stop shop is the single measure which will generate the highest administrative saving to project promoters (10%), as well as the definition of the EU framework for the authorisation of carefully selected projects of common interest (7%). The latest measure is also expected to be the most burdensome (7% increase in administrative costs), however the majority of these costs will be allocated to European Institutions.

Administrative burden on baseline

In order to assess the impacts of the different policies on the administrative burden, it was necessary to calculate the administrative costs incurred by the authorities and the

project promoters in the baseline scenario. This has been calculated considering: the current time spent (in person-hours) by the Promoters and the Authorities²⁴ (both national and European), the labour cost per hour²⁵, the number of new projects launched per year.

The total administrative cost in € million for the period 2018-2030, expressed as present value, is presented in Table 17.

Table 17: Administrative burden in the baseline scenario

Target group	Time spent per project (hours)	Labour costs (€ per hour)*	Average number of projects starting per annum	Total administrative costs in € million (2018-2030)
Promoter	29,788	25.40 ²⁶	125	937
Authority	5,872	25.40	125	185

According to the data provided by the TEN-E study, project promoters are expected to spend up to 29,788 hours for the preparation activities necessary prior to submit the project to the authorities. The time necessary for the authorities for the pre-planning activities, scoping, checking and monitoring of the submitted documents, coordination, public consultation and elaboration of permits is of 5,872 hours per project.

The number of projections assumed to start each year has been defined in line with the investments profile. On average, these represents around 125 projections starting per year. This corresponds to the scope covering the core TEN-T network.

As a result, the NPV of the administrative burden in € million in the baseline scenario is €937 million for Project Promoters and €185 million for public authorities.

Impacts on the administrative costs in monetary terms

This section provides for the administrative cost/savings over the period 2018-30, in monetary values, for each policy option.

The NPV of the future monetary savings of the administrative burden has been calculated by projecting the authorities' costs and the promoters' savings until 2030.

²⁴ Regulation of the European Parliament and of the Council on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC

²⁵ Eurostat:

http://ec.europa.eu/eurostat/statistics-explained/index.php/Hourly_labour_costs

²⁶ Source: Eurostat http://ec.europa.eu/eurostat/statistics-explained/index.php/Hourly_labour_costs

The policy options have different impacts on projects and different implementation dates therefore the model compares relatively soft measures which can be implemented quickly, and stronger measures which require longer time to implement, but which can ultimately apply to a greater number of projects. Therefore, the impact of the three policy options on the administrative burden is different over the years, and so are the costs related to it.

The evolution of the administrative burden following the implementation of the three Policy Options has been assessed both for authorities and project promoters. Table 18 presents the Overall Impact of each policy option broken down in *Administrative burden for Promoters; Administrative Burden for Authorities; and Combined Impact*.

Table 18: Impacts on administrative burden relative to the baseline scenario, over the period 2018 – 2030, expressed as present value

	Baseline (€ million)	Policy options	Difference in costs relative to the baseline (€ million)	% change in costs relative to the baseline
Promoter	937	PO1	-27	-3%
		PO2	-166	-18%
		PO3	-120	-13%
Authority	185	PO1	9	5%
		PO2	13	7%
		PO3	20	11%
Total	1,122	PO1	-18	-2%
		PO2	-153	-14%
		PO3	-100	-9%

In order to assess the cost savings to Project Promoters, the number of projects being affected by each policy option (presented in *Chapter 5*) has been multiplied to the potential cost saving per project. The result of this calculation from 2018 to 2030, allowed to estimate administrative savings incurred by the project promoters over the years. The results highlighted that policy option two is expected to generate the highest savings for project promoters.

The estimation of administrative burden incurred by the authorities considers the potential additional administrative costs per project generated by each single measure and the expected effort over different periods to develop, deploy and manage new measures. As a result, the assumed yearly effort per policy option is coherent with the previous analysis of the impacts of the policies. It considers the necessary implementation time for each policy, and it splits costs into recurring and starting up costs.

In this case the policy option with the largest increase in administrative burden is PO3. It is however necessary to specify that the current study combines the administrative burden incurred by the national authorities, the Member States and the European authorities. Furthermore, PO3 would define an EU framework for authorisation of the core TEN-T projects, and therefore it will shift part of the administrative burden from the national authorities to the European institutions.

The difference between the administrative savings experienced by the project promoters, and the administrative costs incurred by the authorities provided the

combined impact of the Policy Options on the administrative burden of the baseline. As presented in the table above PO2 generates the greatest administrative savings with an overall NPV of €153 million. PO3 follows with an NPV of €100 million savings. PO1 offers lower savings on administrative burden (€18 million) as it is not introducing any legislative change but rather providing guidance to the applicants.

5.5 Environmental Impacts

Environmental impacts have been assessed in terms of impacts on CO₂ emissions, total costs of air pollution as well as impacts of noise. These results are calculated from the outputs of the direct transport impacts, using emission and noise ratios which are in line with the EU Reference Scenario for the period 2018-2030. Changes in transport volumes and changes in transport mode contribute to changes in external costs. As before, the calculations are made by comparing the cumulative effects over the period 2018-2030, and converting the quantities of pollutants into monetary units, expressed in their present value.

Table 19: Environmental Impacts

Category	Impacts
Environmental Impacts	<ul style="list-style-type: none"> • CO₂ emissions and air quality • Impact on noise emissions

CO₂ emissions and air quality

Table 20 shows the climate change related impact of the policy options with the results calculated for changes in the total level of CO₂ emissions. Results have been shown for the scope of the whole core network, for the corridors, and for the subset of CEF projects. The table compares the three policy options to the baseline.

Table 20: Impacts on CO₂ emissions and costs relative to the baseline over the lifetime of the projects (2018-2030)

		Baseline*	PO1	PO2	PO3
CO₂ emissions (thousand tonnes CO₂)					
Core TEN-T network, of which:			-917	-2,686	-3,543
			-0.1%	-0.2%	-0.2%
Core network corridors	1,602,292		-688	-2,015	-2,657
			0.0%	-0.1%	-0.2%
CEF projects			-509	-1,491	-1,966
			0.0%	-0.1%	-0.1%

Baseline*		PO1	PO2	PO3
Costs (net present value in million €)				
Core TEN-T network, of which:	85,939	-68	-193	-253
		-0.1%	-0.2%	-0.3%
Core network corridors		-51	-144	-189
		-0.1%	-0.2%	-0.2%
CEF projects		-38	-107	-140
		0.0%	-0.1%	-0.2%
Note: * The baseline figures relate to the traffic on the core TEN-T network.				

This shows for example that PO2 and PO3 have the largest impacts, when applied to the full core network (the maximum scope considered). PO3 results in a saving of 3.5 million tonnes of CO₂, 0.2% less than the baseline. This equates to a monetary benefit of €253 million over the period up to 2030. PO2 results in a 2.7 million tonne saving in CO₂ emissions, worth €193 million in present value, and PO1 results in a saving of 0.9 million tonnes of CO₂, or €68 million equivalent.

In Table 21 the same analysis has been carried out for air pollutants, including NO_x and particulate matter (PM_{2.5}).

Table 21: Impacts on external costs of air pollution relative to the baseline over the lifetime of the projects (2018-2030)

Baseline*		PO1	PO2	PO3
External costs of air pollution (present value in million € and % change relative to the baseline)				
Core TEN-T network, of which:	49,344	-2.9	-5.6	-7.6
		0.0%	0.0%	0.0%
Core network corridors		-2.2	-4.2	-5.7
		0.0%	0.0%	0.0%
CEF projects		-1.6	-3.1	-4.2
		0.0%	0.0%	0.0%
Note: * The baseline figures relate to the traffic on the core TEN-T network				

The results follow a similar pattern with PO3 giving the highest overall level of external cost savings, although the changes relative to the baseline are less than 0.1% in all cases. In monetary terms, the savings, when the policies are applied to the whole core network are estimated to be in the range €2.9 million to €7.6 million expressed as present value over the period 2018-2030. These benefits arise from the faster implementation of projects designed to increase the share of less polluting forms of transport.

Impact on noise emissions

In a similar way, all three policy options are estimated to lead to benefits in terms of savings in external costs of noise relative to the baseline linked to the reduction in

road traffic. PO1, in its largest scope (core TEN-T network), would result in about €10 million external costs savings over 2018-2030, expressed as present value. PO2 and PO3 show somewhat higher impacts (€27 to 35 million) relative to the baseline, equivalent to around 0.1-0.2% decrease. This outcome is linked to the higher amount of traffic shifted away from road in PO2 and PO3 relative to PO1.

Table 22: Impacts on external costs of noise relative to the baseline over the lifetime of the projects (2018-2030)

	Baseline*	PO1	PO2	PO3
External costs of noise (present value in million € and % change relative to the baseline)				
Core TEN-T network, of which:	19,319	-10.2	-26.9	-35.1
		-0.1%	-0.1%	-0.2%
Core network corridors		-7.6	-20.1	-26.3
		0.0%	-0.1%	-0.1%
CEF Annex 1 projects		-5.6	-14.9	-19.5
		0.0%	-0.1%	-0.1%
Note: * The baseline figures relate to the traffic on the core TEN-T network.				

5.6 Social Impacts

The planning and permitting systems affecting the design and development of the transport infrastructure projects under consideration form part of the interface between the transport system and civil society. Apart from aspects such as mobility and accessibility, which have been considered under economic impacts, the policy options affect local communities in a variety of ways. On one hand, acceleration of planning for transport projects can help to create local employment and generate other social benefits such as the reduction of accidents, but on the other hand it can have an impact upon the ways in which different stakeholders can participate in the planning, selection, and approval of projects. This section therefore presents the impacts on public participation in strategic planning, on public participation in the planning and approval of individual projects and on public acceptance and also on employment, health and EU cohesion, local benefits, life quality and social inclusion.

Table 23: Social Impacts

Category	Impacts
Social Impacts	<ul style="list-style-type: none"> • Impacts on public participation in strategic planning • Impacts on public participation in the planning and approval of individual projects and on public acceptance • Impact on employment • Impact on public health – reduction of accidents • Impact on EU cohesion, local benefits, life quality and social inclusion

5.6.1 Impacts on public participation in strategic planning

Changes in the procedures for granting permits and authorisations to transport infrastructure projects can be expected to have an impact upon public participation in strategic planning. For the three policy options the strategic planning concerns TEN-T projects of common interest, typically infrastructure projects affecting cross-border transport. In this instance the strategy in question is the development of the TEN-T core network, for which there is a high degree of participation. Typically TEN-T projects are generated at national level, integrated into the TEN-T corridor work plans, under the supervision of the European Coordinators, and submitted for funding under the various financial instruments made available through EU programmes. Normally it is considered best practice for public involvement to be started and public acceptance to be achieved at an early stage of the cycle. Thus environmental concerns raised by residents affected by a scheme should have been fully addressed by the time that detailed plans (mature projects) enter into the EU funding schemes.

Policy Option 1 has no effect on public participation, as it aims only to encourage best practices amongst Member States and to increase the level of technical assistance available. It does not change strategic planning nor limit public involvement.

Policy Option 2 focuses on the establishment of a one-stop-shop at national level for coordinating the permitting procedures. As such, the planning processes are still managed at national level, and the permitting rules and the decision-making structures remain the same. Measures to enforce time limits for permitting procedures and for appeals can potentially speed up the planning process but this does not diminish the role of civil society in influencing strategic planning.

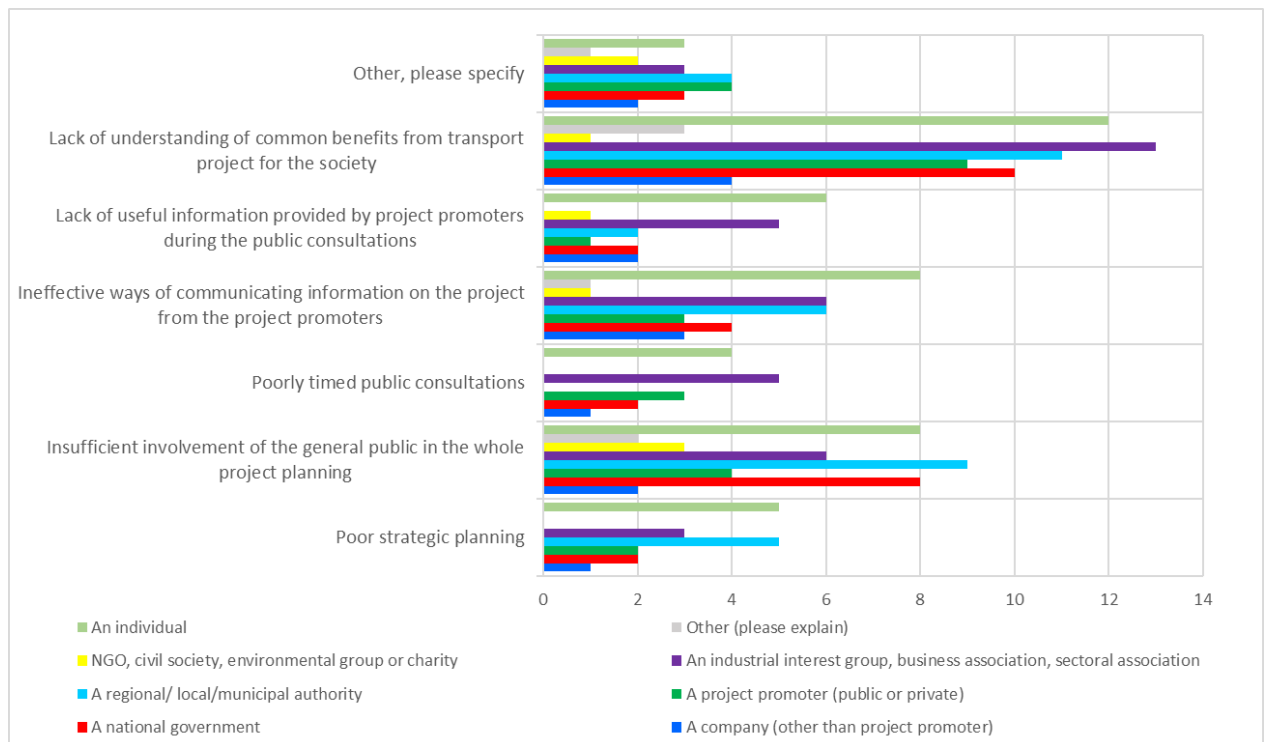
Policy Option 3 involves the establishment of an EU framework for handling permitting procedures for TEN-T projects, with the procedures being handled either at national level or at EU level. Whether this offers advantages or disadvantages to affected citizens largely depends upon the transparency and effectiveness of the existing frameworks, which may differ substantially from region to region. Nevertheless, transferring procedures from local or national level to EU level, runs the risk of losing some degree of public participation, and losing some degree of local influence.

5.6.2 Impacts on public participation and acceptance in the approval of projects

Public participation in the planning and approval of projects is largely undertaken during consultations based on national procedures. Provisions for consultation arising from European directives are transposed into national rules, which may differ across Member States. As a result, consultation processes may differ greatly across Europe.

Respondents to the OPC survey indicated a broad range of factors affecting public acceptance of transport infrastructure projects. See Figure 9.

Figure 9: (Q23): According to your knowledge and experience, what may be the reason for a lack of public acceptance of certain transport infrastructure projects? Breakdown by type of respondent.



Source: Open Public Consultation (OPC)

The results are quite consistent across different groups of stakeholders. They indicate symptoms of poor communication between project promoters and society (either of the project benefits or in general) and insufficient involvement of the general public.

This implies that the new measures, by changing the permitting process can impact on the quality of, or time spent during public consultation and therefore affect public acceptance of individual projects. In cases where cross-border projects face different consultation procedures and different planning rules on either side of the border, and

where effectively a project has strong popular support on one side but is blocked on the other, the situation can be highly time-consuming to resolve.

Policy Option 1 does not contain any binding measures, but if there is a greater alignment amongst Member States towards best practices in terms of public involvement in transport infrastructure projects, this would be beneficial in organising effective consultation across borders.

Policy Option 2 likewise maintains the national frameworks, but it does contain binding measures which would affect the way in which authorisations are handled. A national one-stop-shop could affect the role of the regions in the planning stages, and the imposition of time limits could reduce the time available for consultation or the thoroughness of the consultation stages.

Policy Option 3 makes the greatest difference to current procedures by introducing a European framework, in addition to the measures proposed in PO2. Compared to the other options, this creates the greatest risk that there will be adverse effect upon public involvement and acceptance of new transport infrastructure projects, as potentially some areas of decision making are moved from local authorities to Brussels.

5.6.3 Impact on employment

Job impacts have been estimated using the same multiplier methodology used for calculating economic growth. This is defined as the creation of additional employment measured as full-time equivalent job years (i.e. one job-year is one full-time employee that is employed for one year).

A few such employment multipliers can be identified in the literature on European TEN-T infrastructure. The EIB reports in their 2015 Annual Report 2015 (page 4)²⁷ that their operations to invest in strategic EU transport infrastructure in 2015 of EUR 15.8 billion generated 635,000 jobs leading to a job-multiplier of 40,190 jobs per billion € invested. According to a European Commission Press Release the EIB estimates an average temporary employment multiplier, which is equal to the direct employment mentioned before, being 11,000 job-years created by one billion Euro invested.²⁸ Based on these figures average job multipliers in an interval between 10 thousand and 40 thousand job years per €billion of investment appear plausible, depending on the type of investment (e.g. severity of removed bottleneck or fostering new technology).

Table 24 presents the resulting employment multipliers. The time profile reveals the same pattern, with increasing project lifetime the number of additional jobs increases such that the multipliers grow with the number of time periods of project life.

²⁷ European Investment Bank (2015) 2015 Annual Report on EIB operations inside the EU – With the three-pillar assessment methodology. Luxemburg.

²⁸ EC press release IP/16/2198: Commission injects €6.7 billion into transport infrastructure to boost jobs and growth

Table 24: Employment multipliers applied for the analysis

FTE job-years / bn€	2016 to 2030 <i>Schade et al. 2015</i>	year 1 to 5	year 1 to 10	year 1 to 15
All projects, average	16,566*	11.624	15.124	19.024

* All TEN-T projects

Source: M-Five, own calculations

Investment expenditures for the core network from 2017 to 2030 for the baseline and the three policy options have been used for assessing the impacts. Total employment impacts are shown below:

Table 25: Annual average impacts on employment relative to the baseline for 2018-2030

	Baseline	PO1	PO2	PO3
Employment impacts (in thousand job-years and % change to the baseline)				
Core TEN-T network projects, of which:	344	1.7	5.6	7.5
		0.5%	1.6%	2.2%
Core network corridors projects		1.3	4.2	5.6
		0.4%	1.2%	1.6%
CEF Annex 1 projects		1.0	3.1	4.2
		0.3%	0.9%	1.2%

In line with the impacts estimated for economic growth, PO3 and PO2 are expected to have the highest impact on increased employment, with PO3 creating 7500 job years, and PO2 creating 5600 job years per year on average for the period 2018-2030. This is compared with the number of job years created in the baseline scenario. PO3 produces a 2.2% increase in job creation per year relative to the baseline.

In the short and medium run the employment effects per unit of investment will be the highest in countries with high unemployment rates. In particular Greece (20.7/39.5%), Spain (16.4/37.9%), Cyprus (11.3/36.8%), Italy (10.8/32.7%), Cyprus (11.3/25.0%) and Croatia (10.0/25.3%) are suffering from unemployment rates (first figure) higher than 10% and unemployment rates for young people (15-24 years; second figure) higher than 25% (figures from Nov. 2017). These countries will profit most from an investment push.

When it comes to the longer-term effects stemming from infrastructure use the dynamics point to two directions: First of all, it is known from ex post studies on regional impacts of high-speed rail that agglomerations will benefit most. Some modelling approaches for wider economic benefits of large transport investments even focus primarily on agglomeration benefits, which stem from the shift of economic activities from low to high density regions, because the latter show higher productivities (see Graham, 2006²⁹; Venables, 2007³⁰). Other approaches of integrated assessment of long-term investments come to the conclusion that also

²⁹ Graham, D.J. (2006) *Wider Economic Benefits of Transport Improvements: Link between City Size & Productivity*. Study on behalf of the DfT. London.

³⁰ Venables, A. (2007) 'Evaluating urban improvements. Cost-benefit analysis in the presence of agglomeration and income taxation', *Journal of Transport Economics and Policy*, 41.173-186.

peripheral regions can benefit if the transport investment policy includes improvements of regional connectivity including better access to the major nodes and hubs. This can be ring-fenced by combining transport with regional development policy to increase the competitiveness of peripheral regions (see Rothengatter, 2017³¹).

It follows from the above that the options have clearly positive short and medium-term impacts on countries with high unemployment, positive long-term impacts on agglomerations and positive long-term impacts on peripheral regions including border crossing areas with low population density if transport investment policy is integrated into regional structural development concepts.

5.6.4 Reduction of accidents

The impacts on safety would be small but positive, resulting from the reduction in delays for projects that in turn aim to decrease the level of road traffic at the margin and shift traffic to safer modes such as rail. As in the case of environmental benefits, the policy options do not directly target or influence safety, but affect the realisation of projects which will have been selected for their net contribution to a range of economic and social benefits including safety.

Table 26: Impacts on external costs of accidents relative to the baseline over the lifetime of the projects (2018-2030)

Baseline*		PO1	PO2	PO3
External costs of accidents (net present value in million €)				
Core TEN-T network, of which:	91,581	-105.3	-297.0	-389.0
		-0.1%	-0.3%	-0.4%
Core network corridors		-79.0	-222.8	-291.8
		-0.1%	-0.2%	-0.3%
CEF projects		-58.4	-164.9	-215.9
		-0.1%	-0.2%	-0.2%
Note: * The baseline figures relate to the traffic on the core TEN-T network				

The net benefits arising in the area of safety are calculated for the three policy options applied at three different levels of scope, using the traffic estimates as the basis for estimating the number of accidents, and their monetary equivalents, expressed in present value for the period 2018-2030. The highest savings in terms of external costs of accidents are achieved in PO3 (€389 million relative to the baseline or 0.4% decrease) when applied to the largest scope of projects, i.e. to all the TEN-T core network projects. However, PO2 also achieves significant savings in the external costs of accidents, in the order of €297 million relative to the baseline. All options and all scopes of application show positive impacts relative to the baseline.

³¹ Rothengatter, W. (2017): *Wider Economic Impacts of Transport Infrastructure Investments – Relevant or Negligible?* In: *Transport Policy*. 59. 2017. 116-123.

5.6.5 Impact on EU cohesion, local benefits, life quality and social inclusion

Impacts on social inclusion relate to the planning phase and the phase of use. In the planning phase an appropriate participation of stakeholders as well as mediation processes in the case of large projects are important to avoid conflicts. Problems with cost and time overruns can be increased by missing social acceptance as several studies on the EU and wider international level have shown (see for instance OMEGA Centre, 2015³²). The social conflicts about the largest rail investment project in the EU, the Stuttgart 21 project, underline the importance of social inclusion in the planning phase even if this leads to a prolongation of the legal approval procedures.

In the phase of use such effects depend on the type of project and the combination of policy measures beyond transport investment (see the above paragraph on employment). The impact on income redistribution point to the positive direction because unemployment can be reduced. Impacts on regional distribution depend on the distribution of construction work in the early phase and the integration of transport and regional structural development policy (see the paragraph on employment).

³² OMEGA Centre (2012): Megaprojects. Executive Summary. Bartlett School of Planning. UCL. London.

6 Legal analysis and feasibility

6.1 Policy Option 1 – Soft law

The **legal impact** of this policy option would be limited as it would be voluntarily applicable by the Member States. To begin with, soft law is the term applied to EU measures, such as guidelines, recommendations, declarations and opinions, which – in contrast to regulations, directives, and decisions – are not binding on those to whom they are addressed. However, it is important to distinguish soft law's lack of legally binding effect from its potential impact in practice. Soft law may affect policy development and practice precisely because it exercises an informal 'soft' influence, and can therefore be sometimes presented as a more flexible instrument in achieving policy objectives. A possible choice of soft law measure under this option could be recommendations, which while have no binding force might have certain legal effects and allow the Commission to make its views known.

From a **feasibility perspective**, this option pursues a legitimate objective within the scope of Article 170 TFEU in relation to setting up trans-European networks. Specifically related to the TEN-T guidelines, this option is also in line with Article 4 of Regulation No 1315/2013, namely strengthening the social, economic and territorial cohesion of the Union and contributing to the creation of a single European transport area which is efficient and sustainable, increasing the benefits for its users and supports inclusive growth. This policy option is considered to be in line with the principles of subsidiarity and proportionality, as it would leave the implementation of measures to the Member States on a voluntary basis. However, due to the fact that the soft law option has no binding effects the envisaged outcome by this initiative cannot properly be achieved. The current Directives would remain in place under this option, and would still be applicable to the Member States in whatever form they have been transposed therefore maintaining possible divergences not necessarily contrary to EU law. This option would not result in changes to EU competences and would remain in line with the principle of subsidiarity. Recommendations would have limited legal impacts upon the relevant directives transposed by the Member States in particular as regards the uniform interpretation of EU law.

6.2 Option 2 – Limited binding action

Definition of this option

Under policy option 2, there would be a requirement for the Member States to introduce most favoured procedures for core network projects of common interest. It would involve the establishment of a **one-stop shop (OSS)** which would apply national permitting rules that have been transposed from EU directives, and integrate various administrative procedures at national level, including all environmental assessments carried out under the various applicable directives. The requirement to establish a one-stop shop for the purpose of coordinating and issuing development consent for TEN-T projects would need to be set forth in an EU legislative instrument. This option would apply to all projects on the TEN-T core network. This option also includes the adoption of certain limited provisions of public procurement legislation as well as targeted technical assistance and streamlined procedures at the EU level when applicable (State aid).

Precedents

This option has been applied within the TEN-E Regulation and the measures foreseen for energy PCIs have been explained in Section 4.8. This option would follow the TEN-

E precedent with the application of additional measures in the public procurement field.

Appropriate legal instrument

A regulation would be an effective instrument as it would be directly applicable in the legal order of the Member States upon adoption and would not require a long transposition period before taking full legal effect like for directives. This is very much in line with the objective of removing discrepancies resulting from the transposition of EU directives and of speeding up the time required for project preparation and authorisation procedures.

The complexity of existing permitting regulations in the Member States should not be underestimated, both in terms of legislation and procedure, as well as the fact that many actors – both authorities and project promoters – are accustomed to doing things a certain way and will require some learning curve to make changes, even if these ultimately aim at optimising the process. At the same time, most key TEN-T infrastructure projects are cross-border projects with significant impacts on multiple Member States. Fragmented rules across these different Member States, including those derived from EU legislation, frequently hamper the realisation of these critical infrastructure projects, resulting in the need for harmonised rules that can be rapidly applied for selected projects. Given these considerations, it may make sense to use a directly applicable instrument and to extend the scope of instrument beyond that currently envisioned by the TEN-E Regulation.

Legal impact

From a **legal perspective**, an impact of such a system would depend on the one-stop shop approach selected by a Member State, being more extensive for the integrative approach than for the coordinated approach. Feasibility of this sub option has been proved for the TEN-E system in those Member States where full one-stops with different forms of decision-making power have been established. Failure to improve granting procedures would be caused by the lack of powers given to the one-stop shop.

Respect of requirements in place is inherent to the permit granting process as authorities have to ensure that permits can withstand administrative or judicial reviews. Although this option may facilitate procedures and could contribute to increasing efficiency of procedures, one of the legal implications of this system is that although it allows for Member States to retain the power to regulate their own territory, this creates legal complications concerning cross border issues and disputes. There would therefore need to be a conflict rule to determine which authorities and which tribunal would have jurisdiction over any disputes.

There is wide variety in permitting systems amongst the Member States, which creates difficulties to applying EU wide requirements. In addition, different regulatory frameworks, including those referring to the protection of the environment, cause delays in the implementation of projects of common interest.

In particular, the EU environmental law also mainly governs how Member States must carry out **public consultation procedures** for projects likely to impact the environment, such as those in the transport sector.

Current public information requirements for TEN-T projects are also specified in Article 50 of the **TEN-T Regulation** on Engagement with public and private stakeholders. It should be noted that this article refers only to 'directly concerned stakeholders', defined as Member States as well as regional and local authorities, managers and users of infrastructure as well as industry and civil society. In respect of the relevant

environmental legal acts, these contain few specific requirements on the way in which public consultation procedures should be carried out, leaving flexibility to the Member States to determine that the public is given sufficient information about the environmental assessment procedures.

In addition, the **SEA Directive** specifically states that the 'detailed arrangements for the information and consultation of the authorities and the public shall be determined by the Member States (Article 6(5)).

The **EIA Directive**, which has greater direct bearing on TEN-T projects, leaves the detailed arrangements to the Member States (Article 6(5)), but it does also specify the general content of what shall be made available, including practical concerns such as the times and places for which information will be made available and other details of the arrangements for public participation (Article 6(2)). Article 7 of the EIA Directive contains provisions for consultations with regard to projects with cross-border impacts, and the 2014 amendments suggest that such consultations 'may be conducted through an appropriate joint body'. The Directive also requires the establishment of time-frames for these consultations, which shall be sufficient to 'enable the public concerned in the territory of the affected Member State to participate effectively' in environmental decision-making procedures (Article 7 (5)).

Given the frequent delays that projects face when challenged by the public or stakeholders, **there are two key aspects to the problems related to the way in which public participation procedures are carried out for transport infrastructure projects** in the EU: 1) the quality of the procedures used to engage the public; and 2) the timing, i.e. the point at which those procedures take place during the process of project preparation, from concept to final development consent.

Regarding time limits, if changes are implemented by a regulation this means that the adaptation of national legislation is not necessary. However, the time limits established by some of the Member States for the entire statutory permit granting procedure, which are generally shorter than one year, or for individual steps of the process can be well accommodated within the time limit, such that there would be no need for adaptation of national procedural law. Member States would not be prevented from setting more ambitious deadlines than the ones foreseen by the legislative act. The time limit established by the EU would only define the point in time when EU sanction mechanisms apply, but leave Member States the flexibility to set and enforce time limits according to their national practice. The measures foreseen are in line with the principle of proportionality, as the need to adapt national legislation is limited compared to the positive impacts, and as this policy option would set conditions for a general permit granting framework, within which Member States will be able to carry out their procedures according to national specificities. As the time limit envisaged is expected to accommodate well already existing time limits in some Member States, including for EIA procedures (average duration 1 year) and public consultations (average duration 4-8 weeks), no substantial change of procedural law should be necessary.

Judicial review

In some Member States, several levels of jurisdiction for appeals exist, and ongoing appeals may have a suspensive effect on project progress. An ideal measure would contain two elements for TEN-T projects: 1) the responsible court should be the highest-level court possible; and 2) an appeal against a decision regarding a TEN-T project would not have a suspensive effect on the permit. A time-limit applicable to court decision-making could also be proposed. This option would be important in cases where legal appeals are not handled with priority and allowed to carry on longer than necessary, as going straight to the highest-level court lowers the risk of multiple appeals. Removing the suspensive effect would mean that other project activities,

such as the preparation of documentation and other processes required for procurement, could continue during the period of legal review. Both would have an important impact on timing. However, this option would not be feasible due to the lack of competence of the EU to regulate the judiciary systems of Member States. As a general rule of law, the right to appeal a decision should also be ensured.

Public procurement

The legal framework for public procurement within the EU is set out in Directive 2014/23/EU, on the award of concession contracts; Directive 2014/24/EU, on public procurement; and Directive 2014/25/EU on procurement by entities operating in the water, energy, transport and postal services sectors. The 'new' EU Public Procurement Directives had to be transposed into the Member States' national legal orders by 18 April 2016. The main objective of the new Directives is to simplify procedures and at the same time make these procedures more flexible. However, serious problems exist linked to cross-border cooperation and differences in the ways in which Member States have transposed the legislation.

Separate directives – the Remedies Directives modified in 2007 – govern the mechanisms for the revision of award decisions: Directive 92/13/EEC, coordinating the laws, regulations and administrative provisions relating to the application of Community rules on the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors; and Directive 89/665/EEC, on the coordination of the laws, regulations and administrative provisions relating to the application of review procedures to the award of public supply and public works contracts.

Legal and language barriers have been identified as two of the main obstacles to cross-border procurement. Under this option a special **provision for cross-border projects will be required**, which would make mandatory the application of the national procurement rules of the Member State where the joint entity has its registered office and the publication of the tender and contracting documents in a single language. Under the current procurement directive (Directive 2014/24), simplification for both economic operators and contracting authorities could be obtained by means of a standard form for self-declarations, which could reduce problems linked to the precise drafting of formal statements and declarations of consent as well as language issues. It also proposes that the Internal Market Information System (IMI) established by Regulation (EU) No 1024/2012³³ could provide a useful electronic means to facilitate and enhance administrative cooperation managing the exchange of information on the basis of simple and unified procedures overcoming language barriers. This option would aim at simplifying procedures by the use of a single law and a single language. This would likely increase legal certainty - not only because the same rules would apply to the whole project and this would be known early in the process, but also because there would be less room for problems in the interpretation of the relevant documents, as they would be published only in a single language. It is expected that this option would result in the speed-up of procedures (including review procedures), reduce costs and overall impact positively in the levels of cross-border procurement.

This option would require a legal mechanism to implement. For the reasons explained above, it is suggested that it would be part of an EU legislative instrument adopted to streamline regulatory and administrative procedures for certain classes of TEN-T projects, rather than re-initiating the revision process of the EU Procurement

³³ Regulation (EU) No 1024/2012 of the European Parliament and of the Council of 25 October 2012 on administrative cooperation through the Internal Market Information System and repealing Commission Decision 2008/49/EC ('the IMI Regulation')

Directives. As the procedure is likely to be highly efficient once established, it might make sense to apply it to all cross-border TEN-T projects.

State Aid

Regarding state aid and the links to the financial structure of an investment, these procedures are a potential source of risk and uncertainty for TEN-T projects. Any uncertainty about State aid decisions potentially contributes to significant uncertainty among promoters and investors. In addition, a State aid decision can occur at any point in the project preparation process. While the Commission applies a two-month time limit to decisions from the point of receiving a complete notification, often it takes quite some time at the Member State level to complete the full notification file, including time to get any required guidance or assistance from the Commission.

Establishing a fast-track State aid assessment process that would be similar to the approach taken to investments receiving EFSI financing, under which the Commission aims to complete assessments within six weeks of receiving a complete notification. A less protracted procedure would assist in removing some of the uncertainty for project promoters. Under EFSI, projects may also benefit from financial support (co-funding) by EU Member States, for instance through ESI Funds or financing provided by NPBs. Such cofunding provided to undertakings, unless granted on market terms, may entail State aid which is subject to EU State aid rules. EFSI-supported EIB interventions do not constitute State aid and are not subject to State aid consistency controls. However, the Commission will assess EFSI projects with Member States cofunding entailing State aid on the basis of its modernised State aid framework. To facilitate the deployment of EFSI, the Commission will assess such EFSI projects as a matter of priority, and give it fast-track treatment, thereby reducing uncertainty among promoters and investors.

Overall assessment of Option 2

In respect of striking the best balance between effectiveness in terms of reduction of the duration of the permit granting process and the principles of proportionality and subsidiarity, this option would be appropriate and legally feasible to consider. It takes into account the experience in Member States where the introduction of a one-stop shop approach has been successful in reducing delivery times of the permits, and where decision-making power of the one-stop shop has been crucial for the authority to effectively drive the management process forward. The issues at stake, in particular with regard to environmental challenges, would continue to be adequately addressed by this centralised approach, as under both the integrated and coordinated approach the authority in charge could continue to issue opinions/permits for its particular field of environmental competence, although a full one-stop shop would reduce the administrative costs spent on the handling of the procedures, as decisions could be taken more quickly. The one-stop shop is considered also as a crucial element in addressing the obstacles with regard to public resistance, as it would be responsible to issue transparency guidelines and enforce certain rules related to public involvement which would be part of the legislative act, e.g. with regard to the appropriateness of the consultation strategy of the project promoters, the enforcement of early public consultations and participation in communication activities. It is expected that an authority with responsibility for the final decision has an intrinsic interest in effectively managing the communication process.

6.3 Option 3 – EU Framework

Definition of this option

Under policy option 3, a **European framework** would be created for the authorisation of TEN-T projects of the common interest, along with the development of a framework

of single rules to be applied in public procurement of cross-border projects, state aid rules and environmental assessments. For selected projects, this framework would replace all national rules and regulations including both those deriving from EU legislation. This option would clearly have legal implications for both the EU and the Member States. Placing responsibility and authority for issuing development consent for infrastructure projects at the EU level would likely be highly effective in reducing delays and uncertainties caused by administrative procedures, particularly in the case of cross-border projects. In particular, there would be a higher-level authority in place for mediating any cross-border differences – whether related to timing and style of carrying out procedures or different incentives or preferences related to the projects.

Authorisation and planning

Concerning authorisations and permits, a defined legal framework would need to be considered. There would need to be universal rules to integrate procedures, time limits, cases for overriding public interest, and it would be necessary to make requirements under existing directives directly applicable, which would be through the form of a new Regulation and/or amendment to the TEN-T Regulation. This would result in a different way the EU legislative power is exercised with much less room left for the Member States for interpretation or discretion in how the law is applied. The requirements of the Directives that are currently applicable to projects of common interest would therefore directly applicable and would take this power of interpretation and discretion from the Member States. Compared to the current system, this option would be more effective as language rules and different provisions across the borders stemming from the same EU directives affect the effectiveness of the delivery of projects.

However, areas such as **spatial planning and land use** are the sole competence of the Member States. The only exception to be found in the Treaty is Article 192 TFEU which allows measures concerning town and country planning insofar as they directly contribute to achieving environmental protection (Article 191 TFEU). However, there are certain EU rules in a number of sectors related to spatial planning, such as regional, transport, environment, agriculture or urban policies.

For instance, in the field of environmental policy, the SEA Directive directly affects the procedures for physical planning in all Member States. Under an EU Framework for authorisation of projects of the common interest, the permitting of a TEN-T project might require changing the classification of pieces of land and updating the spatial plan(s). This competence will be maintained by the Member States, which will impact the role the EU can play in proposing measures aimed at streamlining. Therefore, a single decision-making framework at EU level would apply only to those parts of the authorisation procedure that derive from EU legislation, i.e. are within the areas of legislation and policy under EU competence. Other permitting sub-steps, including spatial and sectoral planning, cultural heritage / archaeological permitting, and others would remain subject to authorisation at national level. These national-level decisions remaining outside the EU single authorisation framework should be issued or coordinated by a single authority or 'one-stop shop' as proposed in Option 2. All procedures deriving from EU legislation (environmental assessment, public procurement and State aid) would be coordinated and issued by the relevant EU-level authority. Procedures would need to be put in place to ensure **subsidiarity** concerns are met – i.e. that those closest to the substance of the decision have the possibility to contribute through consultation or another process.

An EU level permitting procedure will have significant impact on competences that usually remain with the Member State authorities. Others – such as the detailed technical clarification for projects impacting water bodies or Natura 2000 sites under the relevant environmental legislation – would require costly expertise and

management to carry out. It therefore makes sense to apply these potentially highly effective but challenging options only in the most critical cases.

This degree of EU significance can be determined by several factors:

- Importance for the functioning of transport networks / core network corridors in the EU
- Particular complexity to implement, either because of cross-border activities; complex environmental impacts; suitability for complex PPP arrangements or other factors
- Projects benefitting from Union support through CEF or EFSI

A process is required to determine how such critical cases or projects would be selected. Such a process needs to be credible and transparent, and would ideally be part of the existing TEN-T framework, which already has in place participatory mechanisms for assessing transport infrastructure needs across the EU.

Additional environmental requirements

Also, many different environmental requirements can apply to TEN-T projects. These include requirements related to overall environmental assessment at the strategic level for plans and programmes (**SEA Directive**) and at the project level (**EIA Directive**); as well as those applicable to projects impact specific areas of the environment, such as water resources (**Water Framework Directive**), the marine environment (**Maritime Spatial Planning Directive**) and the prevention of accidents (**Seveso Directive**). Other requirements stemming from EU legislation may apply to certain TEN-T projects, such as **noise standards, air pollution or waste management**. These then have to be considered in the EIA, and influence the granting of the development consent. Streamlining in this case refers to coordinating or joining the environmental assessment procedures applied to a project, to avoid overlaps and redundancy, while also taking full advantage of synergies and minimizing the time needed for authorisation.

Another related problem is that of cooperation in **environmental assessment procedures** for cross-border projects. The EIA Directive establishes that, when a Member State is aware that a project is likely to have significant effects on the environment in another Member State, or where a Member State likely to be significantly affected requests it, the Member States planning the project must provide affected Member States a description of the project, together with any available information on its possible transboundary impact and information on the nature of the decision which may be taken (Article 7(1)). The affected Member State(s) can then decide to participate in the EIA, and if so, make available the documentation to the authorities and the public likely to be concerned by the project. Member States involved in projects likely to have transboundary effects will be expected to consult with each other on these effects and measures to reduce or eliminate these effects, and agree on a reasonable timeframe for consultations. The 2014 amendments to the Directive take this a step further, and provide the Member States with the option of conducting transboundary consultations through an appropriate joint body (Article 7(4)).

A mandatory joint assessment would broaden the mandate of the environmental assessment and would be likely to encourage the different parties to take a more strategic approach to planning and conducting the assessment, addressing the problem of lack of strategic planning early in the project preparation process. If conducted in a clear, organised and coordinated manner, a joint process should make data collection, public consultation and the assessment process itself more efficient, thereby reducing the time required.

By creating an EU Framework for authorisation, this would entail making the requirements of existing environmental directives directly applicable, meaning that this option would require a legal mechanism to implement, and would be part of an EU legislative instrument adopted to streamline regulatory and administrative procedures for certain classes of TEN-T projects. This streamlining should only apply where relevant, i.e. where projects are subject to multiple environmental assessment procedures and projects of highest strategic importance. However, this is likely to be considered in breach of subsidiarity principles, as the responsibility for conducting environment assessment procedures and issuing relevant related decisions should remain with the Member States, as they would lose the capacity to determine the implementation of the various directives. Another consideration is that a completely new set of rules would need to be developed at EU level to govern the permitting procedures e.g. technical standards for buildings and structures, technical standards for environmental assessments at project level, administrative rules on the neighbouring pieces of land, rules on compensations related to compulsory purchase of land, rules on communication of interested parties, amongst other things.

There is also the element of ensuring the access of citizens to the relevant procedures and securing their basic rights. By having a European framework that authorises projects at the European level, there is the potential for this measure to impose limitations on the rights of citizens. Procedures that previously existed at national or local level in the native language would suddenly come under EU rules, which would be unfamiliar, and have to be applied in a different language.

Public procurement

The same rules as for the Option 2 would apply.

Regarding **State aid**, as this competence already exists with the EU, there would be no requirement to modify the legal framework. Similar to the explanation provided in option 2, there is also the option to implement shorter deadlines for state aid clearance, similar to EFSI projects.

Judicial review

Regarding **access to justice**, there are several options to ensure this if authorisations are delivered at Commission level instead on National level; parties still have access to Courts. Transport projects involve very large numbers of stakeholders, and decisions issued by competent authorities granting development consent for projects face legal challenges by stakeholders. Such legal appeals are likely to cause delays in the preparation and implementation of some TEN-T projects. Under the current system, these legal challenges are most likely to be heard at national level. As a new EU framework regulation would fall under EU law, there competent court would be the EU general court.

Overall assessment of Option 3

Creating an EU Framework for authorisation would entail making the requirements of existing environmental directives directly applicable, meaning that this option would require a legal mechanism to implement, and would be part of an EU legislative instrument adopted to streamline regulatory and administrative procedures for certain classes of TEN-T projects. This streamlining should only apply where relevant, i.e. where projects are subject to multiple environmental assessment procedures and projects of highest strategic importance. However, a completely new set of rules would need to be developed at EU level to govern the permitting procedures e.g. technical standards for buildings and structures, technical standards for environmental assessments at project level, administrative rules on the neighbouring pieces of land, rules on compensations related to compulsory purchase of land, rules on communication of interested parties, amongst other things.

7 How do the options compare?

7.1 Summary of impacts

A summary of the total costs and benefits linked to the three policy options is shown below. It includes the direct and indirect impacts arising from the faster introduction of investments into the transport system, but note that it does not include the net benefits related to economic growth and job creation, which have either a different basis for calculation, or are measured in different units (e.g. job years created). Administrative costs are included in the net benefits.

Table 27: Costs and benefits of the policy options relative to the baseline, 2018-2030

Net benefits (in million €, constant prices 2015)	PO1	PO2	PO3
Core TEN-T network projects			
Benefits			
User costs savings	1,838	5,069	6,648
External costs savings	273	724	947
Air pollution	3	6	8
Noise	10	27	35
Congestion	86	202	263
Accidents	105	297	389
Climate change	68	193	253
Total benefits	2,111	5,793	7,595
Reduction in administrative costs	18	153	100
Net benefits (present value)	2,129	5,946	7,696
Core network corridors projects			
Benefits			
User costs savings	1,379	3,802	4,986
External costs savings	205	543	710
Air pollution	2	4	6
Noise	8	20	26
Congestion	65	151	197
Accidents	79	223	292
Climate change	51	144	189
Total benefits	1,583	4,345	5,696
Reduction in administrative costs	14	115	75
Net benefits (present value)	1,597	4,460	5,771
CEF projects			
Benefits			
User costs savings	1,020	2,813	3,690
External costs savings	151	402	526
Air pollution	2	3	4
Noise	6	15	19
Congestion	48	112	146
Accidents	58	165	216
Climate change	38	107	140
Total benefits	1,171	3,215	4,215
Reduction in administrative costs	10	86	56
Net benefits (present value)	1,182	3,301	4,271

7.2 Policy Option 1

This option has no new binding requirements as it consists of developing a series of guidelines for TEN-T project promoters and better orientation of existing instruments, as well as developing targeted technical assistance measures for core TEN-T projects. As such it aims at widening the application of best practices, and targeting technical assistance, without creating re-distributive effects or affecting the principle of subsidiarity.

In terms of **direct impacts**, it is the policy option that involves the lowest degree of change, as it does not contain legally binding measures. Without these it is difficult to ensure consistency and coherence of application across borders, to target it effectively towards specific projects with high European value added or to tackle the delays occurring in the most complex situations. It is not a measure that can guarantee higher levels of legal certainty.

It can however, be implemented sooner in time and benefits can be reached sooner when compared with PO2 and PO3. Since the aim of the policy is to reduce delays in the realisation of projects, the fact that PO1 can start to take effect in the short term is advantageous. It can potentially reduce certain delays as it gives guidance and can broaden the use of best practices, which can reduce the complexity of some procedures for project promoters, which leads in turn to a reduction of delays in terms of the implementation of TEN-T.

The **legal impact** of this policy option would be limited as it would be voluntarily applicable by the Member States, which makes it less effective when compared to the others. This policy option is considered to be in line with the principles of subsidiarity and proportionality, as it would leave the implementation of measures to the Member States on a voluntary basis. This option would not result in changes to EU competences and would remain in line with the principle of subsidiarity, as explained in detail above (Section 6).

The policy option does not result in a high level of compliance cost or a large saving through the simplification of procedures.

In terms of **economic, environmental and social impacts**, it is neutral or have very small positive impacts, related to the anticipation of benefits related to the implementation of TEN-T.

The results from the consultation show that this measure had no objection from stakeholders and it is generally seen as positive as they agree that soft measures will leave the necessary room for Member States to implement the measures in the most effective way, according to their specific needs. It is also agreed that it would facilitate project promoters and Member States activities, especially if it contains best practices in terms of procedures.

7.3 Policy Option 2

This option would have limited binding action, decentralised and implemented at national level and envisages a requirement for the Member States to introduce the most favoured procedures for core TEN-T projects. It is a similar policy option to the one adopted by TEN-E in 2013, where a national one-stop shop applying time limits for the procedures was implemented.

This one-stop shop would apply national permitting and authorisation rules that have been transposed from EU directives, and integrate various administrative procedures

at national level, including all environmental assessments carried out under the various applicable directives. The requirement to establish a one-stop shop for the purpose of coordinating and issuing development consent for TEN-T projects would need to be set forth in an EU legislative instrument. Compared to PO1, in terms of direct impacts, PO2 is able to affect a larger number of projects and thereby enable a more significant reduction of delays related to TEN-T implementation due to its effectiveness as legal instrument.

It also presents higher positive economic and environmental benefits, as the adoption by Member States is not voluntary. As it implies a simplification and integration of procedures at national level, this means a reduction of the administrative costs for project promoters, which is aligned with the positive reply from this stakeholder type in the consultation activities.

In terms of social impacts, PO2 is relatively neutral with some potential to create small positive impacts. Some benefits related to transport externalities arise but it is neutral in terms of equal treatment of EU citizens.

This option would require a legal mechanism to implement but procedures will still be tackled at national level, not removing any power to Member States to decide on their own territory. The current directives would still be applicable as transposed but procedures would have a maximum duration, which would give more certainty to private investors, as they know that a project wouldn't have any additional delays related to this.

This policy option entails the simplification and integration of procedures within the authorisation framework at national level, and it will establish time limits for some procedures, which were positively assessed by stakeholders during consultation. However, some national authorities already have some integration of procedures and a fast track for some projects that are considered of high relevance for them. While this would make the adoption of the one-stop shop concept easier, as it is already being applied although in an informal way, there is less scope for achieving additional benefits.

The experience of the TEN-E schemes shows that the one-stop shop can deliver greater efficiencies but some additional improvements can also be achieved such as by providing more possibilities for Member States to accompany the set-up where necessary with training. The fact that the TEN-E one-stop shops have been established would assist the national authorities in setting up similar structures for transport projects.

7.4 Policy Option 3

PO3 is the most comprehensive and direct option as it would establish a common European framework that does not require any implementing measures, and which would define a specific regime to be applied across core TEN-T projects. It offers more economic benefits when compared with PO2, as it is able to reduce a greater proportion of delays. Therefore higher economic benefits could be achieved.

It seems however to be more controversial looking at the results of the stakeholders' consultations. This option would have significant legal implications for both the EU and the Member States, as it withdraws certain decision-making power from Member States regarding their own territory and would imply administrative and enforcement costs for Member States and also for the European Commission.

In terms of social aspects, although it would mean that the same rules are being applied in the same way in all Member States, the decision power would be on the EC side and not in their own national territory.

Compared to the current system, this option can potentially be more effective as different rules across Member States stemming from the same EU directives affect the effectiveness of the delivery of projects. However, areas such as **spatial planning and land use** which are the sole competence of the Member States could conflict with decisions being taken at EU level.

Procedures would need to be put in place to ensure **subsidiarity** concerns are met – i.e. that those closest to the substance of the decision have the possibility to contribute through consultation or another process.

In terms of costs, the EC would have higher enforcement costs, and Member States and project promoters would have additional reporting costs to the EC. Additional costs for the EU related to the appeals to European Courts would also increase.

In the consultation activities Member States expressed some reluctance towards the establishment of a new European Directive or Regulation that would impact directly upon the approval procedure of TEN-T projects, arguing that such a measure would conflict with ongoing procedures at national level, and therefore, generate further delays.

As shown in the analysis of direct impacts, the timescale needed to create such an EU legal framework might be too late to capture the short to medium term benefits. In comparison, PO2, which builds upon existing national initiatives and which follows the TEN-E approach offers similar economic and environmental benefits, but in a shorter timescale, and without significant shifts of decision-making power from Member States to the EU, or reducing the rights of citizens to participate in and influence decisions that affect their communities directly.

Annex 1. Results of the online public consultation

Introduction

In recognition of the importance of developing a Europe-wide network of transport infrastructure, the TEN-T regulation has defined timelines for the attainment of full implementation, namely 2030 for the core network and 2050 for the comprehensive network.

However, experience with the implementation of TEN-T projects provides evidence of a negative impact by complex regulatory and administrative arrangements, which can affect projects' costs, and generate delays and uncertainty, thus diminishing the effectiveness of the network's implementation.

In order to identify and better characterise such barriers in the regulatory and administrative procedures, the Directorate-General for Mobility and Transport of the European Commission (DG-MOVE) has recently carried out a study on permitting and facilitating the preparation of TEN-T core network projects. The analysis found that complexity often stems from unclear or contradictory requirements or processes which result in duplication of efforts. Moreover, imprecise legislation or regulatory framework can result in sub-optimal investment decisions. In addition, the consequential legal uncertainty can discourage private investment in the projects.

This report presents the results of the online public consultation, organised as part of the support study for the impact assessment accompanying the proposal for a regulation/directive on streamlining measures for swifter implementation of the projects of common interest on the trans-European transport network. The consultation was launched on the 1st of August 2017 and remained opened for a period of fifteen weeks, until 9 November 2017.

Purpose of the Public Consultation

The consultation aimed gathering the opinions of the general public and stakeholders as regards the main problems and proposed solutions for facilitating the implementation of the TEN-T projects.

This consultation was developed with the objective of gathering opinions from the general public and stakeholders with regard to the main issues and proposed solutions for facilitating the implementation of the TEN-T projects. The questionnaire is presented in Annex 2: OPC Questionnaire. The results of the survey are summarised below.

Respondents

A total of 99 responses were received, representing 23 different EU Member States equivalent to 94% of all contributions received. Only three replies came from countries outside the EU, namely Norway and the Former Yugoslav Republic of Macedonia, whilst three more were provided by representatives of European, multinational or global organisations. Three questionnaires with exceptionally incomplete responses had to be discarded.

Table 28: Breakdown of responses by Member States.

Country	Individuals	Organisations	Number of Respondents	
EU-Member States	Germany	1	10	11
	Hungary	2	7	9
	Belgium	1	8	9
	Austria	2	5	7
	Italy	3	4	7
	Spain	1	5	6
	Sweden	-	5	5
	Finland	-	4	4
	Romania	2	2	4
	France	1	3	4
	Czech Republic	-	4	4
	Denmark	1	3	4
	Netherlands	2	2	4
	Slovak Republic	1	1	2
	Poland	-	2	2
	Bulgaria	1	1	2
	Portugal	-	2	2
	Latvia	-	2	2
	Lithuania	-	1	1
	Malta	-	1	1
Luxembourg	1	-	1	
Cyprus	-	1	1	
Ireland	-	1	1	
Non EU-MS	Norway	-	2	2
	FYR Macedonia	1	-	1
Other	EU, global or multinational	-	3	3
Total	20	79	99	

The largest samples of answers are coming from Germany, Hungary and Belgium.

In the survey, twenty respondents identified themselves as individuals, and 79 as organisations. As can be seen in Table 29, regional, local or municipal authorities (20%), project promoters (19%) and industrial, business or sectorial associations (20%) were the organisation categories with higher representation, closely followed by national governments (16%).

Table 29: Breakdown of responses by type of organisation.

Type of organisations represented		Number of respondents	%
A company (other than project promoter)		10	13%
A national government		13	16%
A project promoter (public or private)		16	20%
A regional/ local/municipal authority		16	20%
An industrial interest group, business association, sectorial association		15	19%
NGO, civil society, environmental group or charity		3	4%
Other:	Institution governed by public law	2	3%
	Cross-border cooperation	2	3%
	Reflection group on freight transport	1	1%
	Public organisation for regional collaboration	1	1%
Total		79	100%

When asked about involvement according to mode of transport, 24 of the respondents were involved in the rail sector, 22 in multimodal transport, and 15 in road transport. A significant number (20) of respondents are not engaged in one particular mode, as they represent individuals.

Table 30: Breakdown of responses by mode of transport.

Mode of transport focus	Total
Rail	24
Multimodal (combined) transport	22
No Answer	20
Road	15
Maritime transport and ports	9
Inland waterways and ports	8
Air transport	1
Total	99

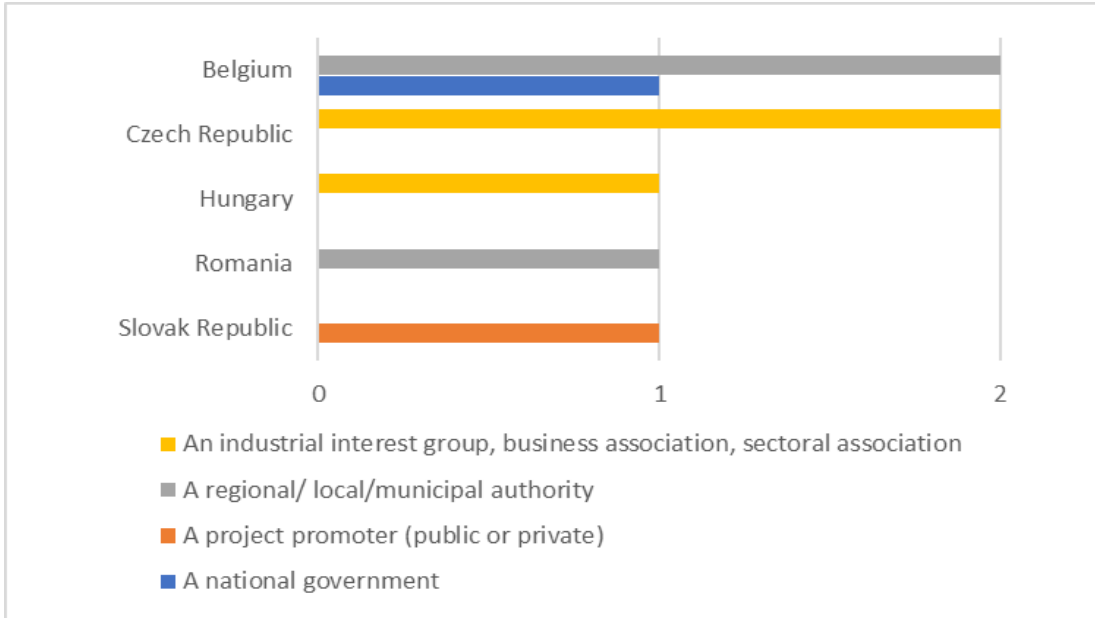
The following graphics show the breakdown of responses per country, type of organisation by mode of transport.

The higher number of responses, as presented in the previous table, correspond to rail and multimodal transport, followed by road, maritime, inland waterways and air transport.

Inland waterways

From the eight responses on the category inland waterways and ports transport (five countries represented), three correspond to industrial interest groups, two from regional/local/municipal authority, a project promoter and the Belgian government.

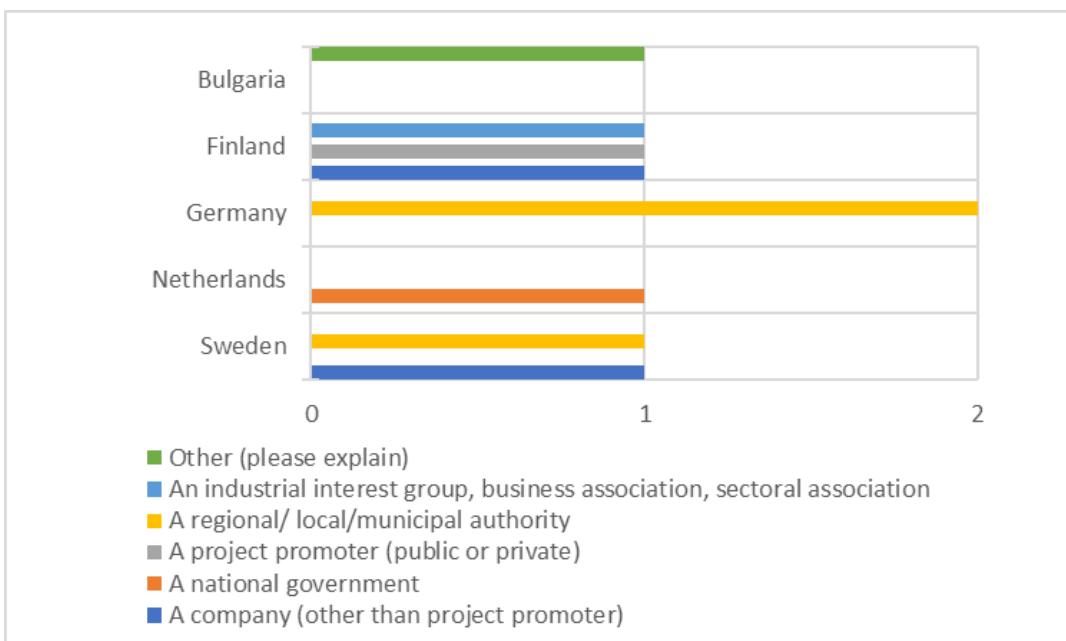
Figure 10: Breakdown of responses per country, type of organisation by inland waterways and ports.



Maritime

From the nine responses on the category maritime and ports transport (five countries represented), three are from regional/local/municipal authorities, two are from companies other than project promoters, the Netherlands national government and one from the other categories, namely a project promoter, an industrial interest group and one 'other'.

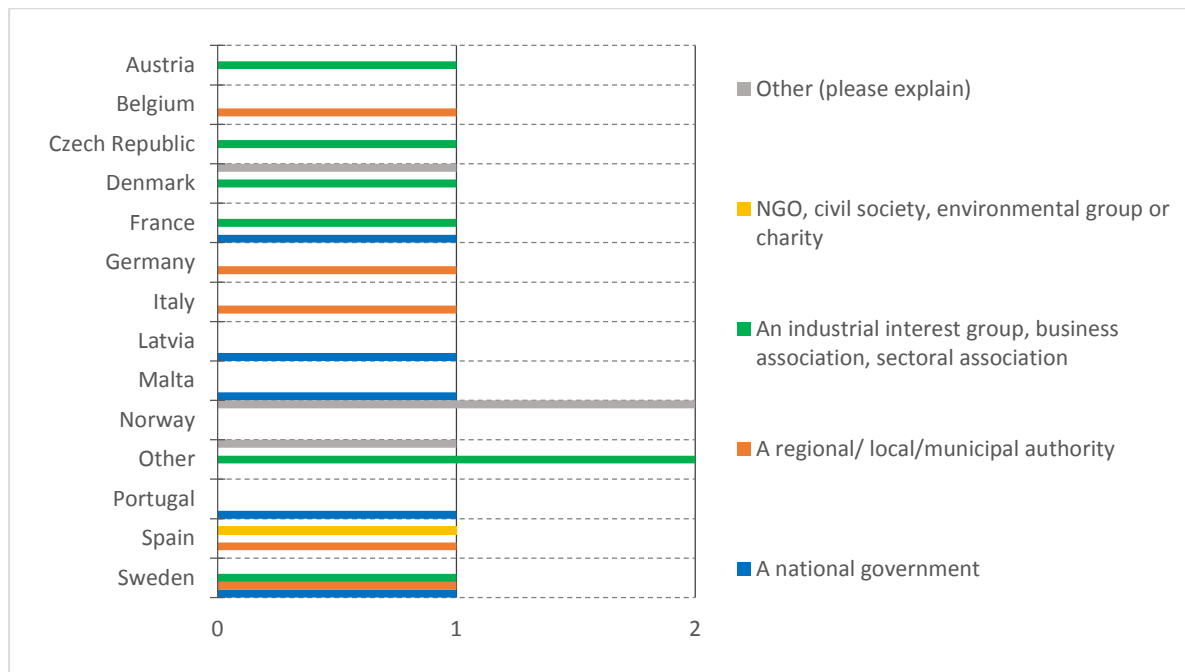
Figure 11: Breakdown of responses per country, type of organisation by maritime transport and ports.



Multimodal transport

From the 22 responses on the category multimodal transport (thirteen different countries represented) there were seven industrial interest groups, five national governments and five local/regional/municipal transport.

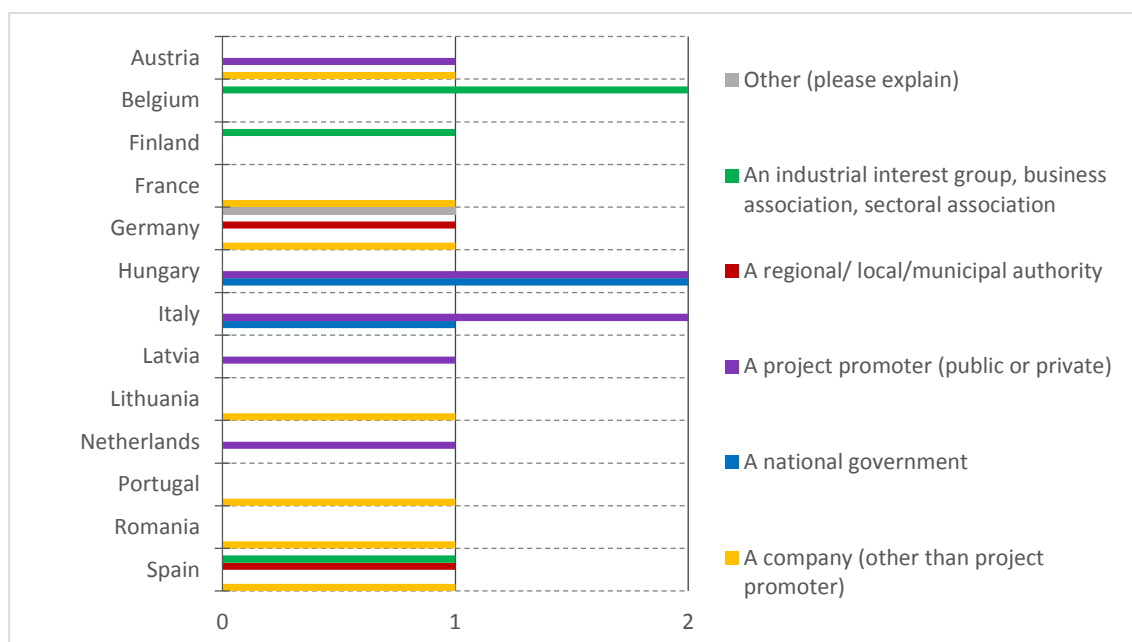
Figure 12: Breakdown of responses per country, type of organisation by multimodal (combined transport).



Rail

From the 24 responses on the category rail transport (13 countries represented), seven came from companies (other than project promoters), seven were project promoters, four were industrial interest groups, two were regional/local/municipal authorities, and the remaining two were the Hungarian and Italian national governments.

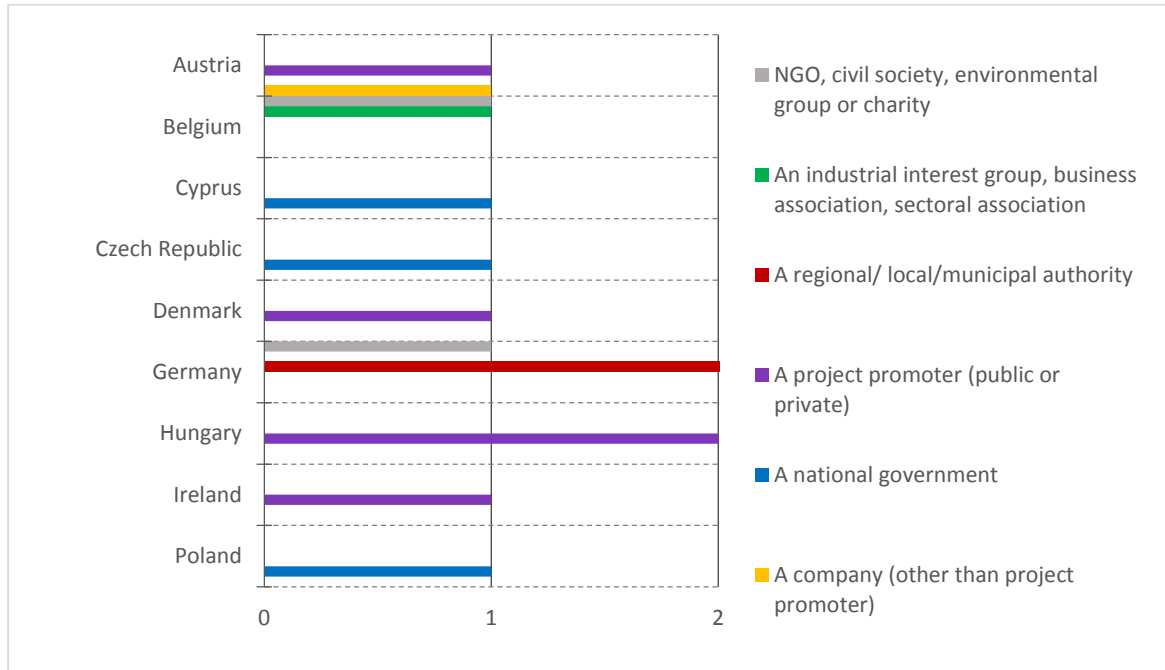
Figure 13: Breakdown of responses per country, type of organisation by rail transport.



Road

From the fifteen responses from stakeholders in the category of road transport (nine different countries represented), five came from project promoters, three from national governments, two from NGO/civil society/environmental groups and one was submitted by a company (other than a project promoter).

Figure 14: Breakdown of responses per country, type of organisation by road transport.



Conclusions from the OPC

The online public consultation was launched on 1 August 2017 and remained opened for a period of fifteen weeks, until 9 November 2017.

The consultation was developed with the objective of gathering opinions from the general public and stakeholders with regards to the main issues and proposed solutions for facilitating the implementation of the TEN-T projects. A total of 99 responses were received, representing 23 different EU Member States. Regional, local or municipal authorities (20%), project promoters (19%) and industrial, business or sectoral associations (20%) were the organisation categories with highest representation, followed by National governments (16%).

The consultation has provided evidence that the main issues identified in the permitting procedures of TEN-T projects, relate to the steps carried out during the strategic level of a project's preparation, including the attainment of spatial planning permits, planning permissions and environmental assessments at project level.

For project promoters in particular, public procurement for works and obtaining final development consent or construction permits, and environmental assessments at project level, constituted the main problem areas.

The majority of stakeholders (89 out of 99) from all categories (9 companies, 12 national governments, 13 project promoters, 16 regional/local/municipal authorities, 13 industry groups, 1 NGO/Environmental group, all 20 individuals, and 5 'others')

fully agree or rather agree that TEN-T projects are subject to lengthy and complicated procedures, recognising the existence of the identified problem.

Five respondents either fully disagreed or rather disagreed with the statement that TEN-T projects are subject to complex and lengthy permitting procedures (2 industry groups, a company, a project promoter and an NGO).

Seventeen respondents (including 5 regional/local/municipal authorities, 5 industrial interest groups and 3 project promoters) felt that cross-border projects are particularly affected by regulatory and administrative obstacles. However, 29 participants across all stakeholder categories stated that all transport infrastructure projects are subject to such problems.

The majority (59 out of 99) respondents from all category types (mainly organisations), either fully disagreed (10) or rather disagreed (49) with the statement that permitting procedures are organised in an optimal way, implying that they felt there was room for improvement. On the other hand, 11 fully agreed and 15 rather agreed that procedures were organised in an optimal way, and 10 offered no opinion.

When asked to identify the biggest challenges for the procurement of cross-border projects, 60 respondents from all categories, selected the application of different national legislations and the difficulties on agreeing on an applicable one, as the foremost obstacles. Industrial and business associations, as well as other companies, highlighted the lack of experience of the contracting authorities and the insufficient promotion of best practices as key challenges as well.

A high number of respondents also found difficulties and felt there was need for improvement in the fields of state aid (45 respondents) and public consultation processes (80 respondents from all stakeholder type), pointing out the lack of general understanding of the common benefits from transport projects for the society and the insufficient involvement of the population, as main issues. Individuals, industrial associations and other companies, also included the ineffective communication of information by project promoters as an important factor.

With regards to the evaluation of possible solutions for these issues, the consultation found that most respondents (75) across all categories answered that the EU should take action to address inefficiencies in the permitting procedure of TEN-T projects.

Support for the integration of procedures under a national single entity, a “one-stop shop” (OSS) was expressed in particular, by project promoters, individuals and industrial interest groups. More reserved opinions were expressed by national and regional governments. A significant portion of the authorities are reluctant towards this solution, and the individual qualitative analysis of their comments shows that this disagreement stems, in some cases, from the fact that some countries have already implemented a similar measure and are concerned about possible conflicts between EU policies and their own processes.

According to project promoters and individuals the OSS should have extended decision-making capacity that would manage all environmental assessments at project level, spatial planning permissions and construction permits. On the other hand, the opinions of national and regional governments varied as to the extent of the integration of procedures and level of authority. A significant number of national representatives stated that such entities should have coordinating powers only.

Respondents – primarily project promoters, individuals and industrial interest groups - agreed that the permitting process should not last longer than two years, and that the establishment of such time limit could help accelerate proceedings. Local and regional

authorities as well as some national government were more reserved. They provided more critical views on time limits for the total duration of approval procedures for TEN-T projects, stating that since procedures for large-scale and complex projects are usually very time-consuming, such limits would have the risk of creating relative delays for small uncomplicated projects.

Greater involvement of the general public throughout the whole project duration and effective communication of the social benefits arising, were the preferred measures to overcome issues related to low public acceptance.

All categories of respondents, although organisations more so than individuals, identified a need for technical assistance primarily in the fields of environmental assessments, financing structure development, including the designing of Public-Private Partnerships, and public procurement procedures. A common set of rules at EU level applied to cross-border projects was identified, in particular by project promoters and industrial groups, as the most effective solution to improve public procurement issues. National authorities stated that such rules would be more effective when applied to cross-border projects benefiting from EU funding.

At EU level, respondents agreed that environmental assessments (24 respondents, from which 5 project promoters, 5 industry groups, 4 national governments, 4 individuals and others), funding decisions (21 respondents,) and state aid clearance (20 respondents, from which 4 national governments, 2 project promoters, 2 companies, 3 regional governments and 4 industrial groups, 3 individuals) should be handled under a single procedure. They also affirm that such a simplified framework would have the highest positive impact for projects from the TEN-T core network.

However, there is some reluctance amongst some national governments, regional and local authorities, who are not in favour of the integration of procedures at European level. They argued that it would not speed up the permitting process and could result in the duplication of efforts, since only national authorities could verify the individual approval requirements of each country, and therefore, some procedures would be duplicated.

Finally, amongst the available instruments to facilitate the permitting and preparation of TEN-T projects, the consultation showed a preference from respondents in general for the implementation of an EU regulation on the permitting procedures and other elements of preparation of priority status TEN-T projects, which would be directly applicable in Member States. Nevertheless, some national governments have provided different opinions in relation to the considered instruments. They showed hesitation towards the implementation of an EU directive or regulation, and recommended caution, mentioning that these actions could endanger the stability of European legislation in the respective areas.

It is important to note that, although the development of non-binding EU guidelines for permitting procedures was evaluated as less effective than European regulations or directives, the commentaries received from a variety of stakeholders, and in particular from national and local authorities, support the value and significance of knowledge transfer, the guidance that such instructions can provide, and the importance of promotion and dissemination of best practices.

Additional results from interviews with Member States

As mentioned above, Member States see limited value of additional regulation at EU level.

Soft law (relates to Policy option 1)

Opinions vary regarding soft laws, some agree that soft law instruments will leave the necessary room for Member States to implement the measures in the most effective way, according to specific national needs, while others doubt their effectiveness.

In any case, they all support the development for best practice dissemination and knowledge exchange amongst Member States, which can improve their national frameworks by learning from successful cases. They supported the value of developing guidelines and establishing standard procurement procedures.

Integration of procedures (relates to Policy option 2)

Member States believe that the integration of various administrative procedures at national level and introduction of time limits for the permitting procedures are the most effective measures to reduce delays, speed up the process and improve legal certainty, and thereby, attract private sectors interest in the long-term. A couple of Member States showed a hesitancy towards the establishment of time limits for permitting procedures, since they found that delays are often caused by the investors.

With regards to the proposal to set up a one-stop shop and to integrate authorisation procedures, some Member States already have this integration and apply a fast-track for some projects. The existence of a single entity that manages the permitting process of such projects can be seen as a best practice example of one-stop shop implementation.

Some expressed doubts in regards to the set-up of national one-stop shops. They reflected that, although this entity would be beneficial if implemented in an ideal manner and would effectively speed up the process, it might also result in the creation of additional bureaucracy and lead to organisational problems. The authority that would be appointed to act as OSS might not have all the competences and it might take several years before it became effective. They pointed out the importance of defining a clear and specific role for such an entity.

European Directive/Regulation with EU rules (relates to Policy option 3)

Member States expressed reluctance towards the establishment of new European directives or regulations that would impact directly upon the approval procedure of TEN-T projects, arguing that such measure would conflict with ongoing procedures at national level, and therefore, generate further delays.

A shared pre-occupation concerning actions at the EU level to modify the permitting process for TEN-T projects, is that any new process would be established in addition to the existing processes.

In general, Member States agree with measures to improve, clarify and simplify procedures as they believe it is above all essential to stabilise the legal framework.

Annex 2: OPC Questionnaire

This annex contains a transcript of the OPC questionnaire.

See: <https://ec.europa.eu/transport/sites/transport/files/2017-ten-t-implementation-questionnaire.pdf>

Streamlining the implementation of TEN-T

Background

The common transport policy was created already by the Treaty of Rome of 1957 with the goal of creating a common market and the reinforcement of economic links between the Member States. It has been gradually developed to include an infrastructural component aiming at connecting the Member States, their citizens and economies via modern and interoperable connections. Nowadays, the single EU market with four freedoms of movement for goods, persons and services can only prosper if it is linked by up-to-date and efficient infrastructure. Consequently the trans-European networks (TEN) policy comprises three main elements – transport links (TEN-T), energy connections (TEN-E) and networks for telecommunications.

The TEN-T policy recognises the importance of a strategic approach to developing a Europe-wide network of transport infrastructure. The TEN-T has a dual layer structure. While the comprehensive network shall ensure connectivity of all regions of the EU the core network consists only of those parts of the network which are of the highest strategic importance. The TEN-T Regulation defines binding timelines for implementation, 2030 for the core network and 2050 for the comprehensive network. The core network corridors are operational tools to facilitate the coordinated and timely implementation of the core network.

Experience with the implementation of the TEN-T projects shows that their effective implementation might be impacted by complex regulatory and administrative arrangements, which in certain cases might contribute to increased costs, delays and uncertainty. The Directorate-General for Mobility and Transport of the European Commission has recently carried out a study to identify barriers in the regulatory and administrative procedures to effective and efficient planning and implementation of TEN-T core network projects. The study recommended addressing these barriers, including by improving the permitting environment for TEN-T projects.

The complexity of procedures sometimes stems from unclear or contradictory requirements or processes which result in duplication of efforts. In addition, imprecise legislation or regulatory framework can lead to sub-optimal investment decisions (e.g. in-house investments versus public private partnership), while legal uncertainty can deter private investment in projects.

This consultation aims at gathering the input of the general public and stakeholders as regards the main problems and proposed solutions for facilitating the implementation of the TEN-T projects.

Agreement on personal data

1. Please indicate your preference for the publication of your response on the Commission's website.

- My contribution can be published, with my personal information or name of my organisation included
- My contribution can be published anonymously, without my name or that of my organisation included

2. May the Commission contact you, in case further details on the submitted information in this questionnaire are required?

- Yes
- No

Questions about the respondent

3. Are you replying as:

- An individual
- An organisation

4. Please state your name.

5. Please provide your email address.

6. What type of organisation do you represent?

7. Please state the name of your organisation.

8. On which mode of transport do your activities focus?

9. What is your main country of residence or activities?

Main issues and problems identified

The purpose of this section is to verify the main issues and problems identified by the European Commission in the context of the recent study on permitting and facilitating the preparation of TEN-T core network projects. The relative importance of these issues needs to be assessed, notably to identify any possible additional problems that have not been considered yet.

The purpose of the study was to identify barriers in the regulatory and administrative processes that impact the effective and efficient planning and implementation of TEN-T core network projects, and deliver recommendations on how to address these barriers. The study evaluated existing procedures, and identified the barriers faced by transport projects during their planning and implementation, as well as looked for good practices and opportunities to encourage the adoption of these good practices.

Due to their particular complexities, in-depth studies into the frameworks for waterborne and cross-border projects were also conducted. The study identified and analysed options that could address the barriers encountered, and delivered recommendations for the improvement of regulatory and administrative frameworks.

The study has shown in particular that for TEN-T projects factors of delays, costs and uncertainty in permitting procedures are often rooted in procedural aspects leading to duplication of permits and applications to be submitted by project promoters, duplication of or overlaps in assessment procedures, and significant administrative burden and costs for both the project promoters and permitting authorities.

Moreover, some additional steps in the course of the preparation of the projects also impact their timely and effective delivery, in particular regarding public procurement and/or other regulatory procedures such as State aid clearance.

Preparation stages in the life-cycle of a project

10. In your opinion, which of the steps below have the highest impact for the delivery of a project on the TEN-T?

	Very high impact	High impact	Medium impact	Low impact	Very low impact	Don't know / No view
Strategic level (incl. development of transport plans and programmes as well as making them subject to Strategic Environmental Assessment) with relevant strategic spatial planning approvals						
Spatial planning (planning permissions)						
Environmental Assessments at project level						
Building Consent/construction permits						
Procedures related to compulsory purchase of land						
Public procurement for works						
Procedures related to conclusion of a Public Private Partnership or awarding a concession						
State aid clearance						

Other, please specify:

11. Which of the following steps do you consider affect the length and create administrative burden for you, as project promoter?

(Only open to respondents who answered accordingly to question 6)

- Strategic level (incl. development of transport plans and programmes as well as making them subject to Strategic Environmental Assessment) with relevant strategic spatial planning approvals
- Spatial planning (planning permissions)
- Environmental Assessments at project level
- Building Consent/construction permits
- Procedures related to compulsory purchase of land
- Public procurement for works
- Procurement related to conclusion of a Public Private Partnership or awarding a concession
- State aid clearance
- Other (please specify)

Permitting procedures

Permitting procedures generally cover the activities required to prepare an application for development consent. They closely follow on from the project planning phase at strategic level. The "permitting phase" includes the environmental impact assessment procedure (along with other environmental assessments if applicable), the spatial planning decision(s), and all the other permits to be granted. It concludes with the acquisition and/or compulsory purchase of the necessary land. The organisation of the permitting procedures is considered as a critical source of delays in some Member States. TEN-T infrastructure related projects require conducting multiple assessments, making it necessary to obtain a high number of permits. Given the size of projects, these procedures can fall under several jurisdictions if different elements are handled at national, regional or local levels. It entails duplication of efforts and lengthens the duration of the overall authorisation procedure. It concerns several areas, notably the environmental assessments (in extreme cases multiple procedures involving different authorities).

12. To what extent do you agree that TEN-T project are subject to complex and lengthy permitting procedures and other processes?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

13. Which TEN-T projects would you consider as most influenced by regulatory and administrative obstacles related to permitting?

- All transport infrastructure projects are equally impacted
- TEN-T infrastructure projects
- Public-Private Partnership projects
- Cross-border projects
- No opinion

14. To what extent do you agree that permitting procedures are organised in a optimal way, involving all the necessary actors, to allow the project promoter to proceed quickly and efficiently when preparing a project?

(for organisations only)

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

15. To what extent do you agree that cross-border infrastructure projects face particular challenges in terms of permitting procedures?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

Please add your suggestions on how to improve the permitting procedures:

Public procurement

Public procurement is a very important step for project implementation aimed to obtain the highest value at the best cost. It can nevertheless bring major challenges to TEN-T projects. Many factors can contribute to delays in the completion of the

procurement, such as complex legal frameworks, the absence of deadlines for the completion of the award procedure and, in particular, the long review procedures to challenge the award decision. Increased costs are directly related to delays but also to the selection of poor quality projects, which may be driven by the lack of capacity of contracting authorities to conduct procurement procedures. Challenges related to legal complexity and administrative capacity also extend to public private partnerships (PPPs), resulting in a reluctance among authorities, promoters and investors to use this mechanism – potentially a lost opportunity to attract additional investment capital to the transport sector.

Differences in public procurement practices across sectors and Member States can create particular problems in handling the procedures for complex cross-border projects. Although the main rules in public procurement are the same in all Member States, differences in carrying out public procurement exist between them.

16. Some projects are implemented across two or more EU Member States. What would you consider to be the biggest challenge in procuring for cross-border projects?

- Application of different national legislations
- Difficulties in agreeing on the applicable national legislation
- Language rules
- Remedies procedures
- Lack of experience of contracting authorities
- Insufficient promotion of best practices
- Insufficient guidance by the Commission or public authorities
- No opinion
- Other applicable legislation, please specify

17. Please add your suggestions on how to improve the public procurement procedures for works:

State aid

Given their links to the financial structure of an investment, State aid procedures are a potential source of risk and uncertainty for TEN-T projects. Important progress was recently made to clarify the rules with the modernisation of the EU State aid policy, however, given the specific and not repetitive nature of certain significant transport infrastructure projects (e.g. beyond the thresholds of the General Block Exemptions Regulation), there may still be some difficulty for public authorities and project promoters to address State aid issues.

18. To what extent do you agree that State aid rules may raise difficulties for the implementation of TEN-T projects?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

19. In your opinion, what are the main issues:

20. Taking into consideration the recent modernisation of the State aid policy, do you consider that there is room for improvement in rules applicable to the TEN-T projects?

- Yes
- No
- No opinion

21. Please add your suggestions on how to improve the State aid regime applicable to infrastructure projects:

Public participation in the preparation of infrastructure projects

Public acceptance is critical for the implementation of infrastructure projects. Ineffective and poorly-timed public consultations and the absence of sufficient involvement of stakeholders in the decision-making process may lead to additional delays in the permitting phase.

22. To what extent do you agree that certain TEN-T projects may raise controversies leading to their limited public acceptance?

- Fully agree
- Rather agree
- Rather disagree

- Fully disagree
- No opinion

23. According to your knowledge and experience, what may be the reason for a lack of public acceptance of certain transport infrastructure projects?

- Poor strategic planning
- Insufficient involvement of the general public in the whole project planning
- Poorly timed public consultations
- Ineffective ways of communicating information on the project from the project promoters
- Lack of useful information provided by project promoters during the public consultations
- Lack of understanding of common benefits from transport project for the society
- Other, please specify

24. From your experience, what are the best practices that should be generalised or promoted to improve public acceptance of transport infrastructure projects?

- Involvement of the general public at different stages of project preparation
- More extensive use of new ICT technologies for communication on projects (e.g. specific websites, social media, etc.)
- Focus on local benefits
- Promotion of local employment and SMEs
- Common designing by different involved actors of compensatory measures
- Strategic approach in the public procurement to involve local companies and create locally based jobs
- No opinion
- Other suggestions, please specify

25. Please add your suggestions on how to improve the public consultation in the preparation of infrastructure projects:

Possible solutions

The purpose of this section of the questionnaire is to gather views and concrete feedback on the following solutions which were preliminarily identified by the European Commission as well as proposed in the study.

26. Should the EU take action to address inefficiencies in the permitting procedures in case of TEN-T projects?

- Yes
- No
- No opinion

27. In your opinion, what would be the main benefits of an action by the EU:

Permitting: Integration of procedures

Delays in permitting often occur due to complex procedures, involving multiple steps and multiple authorities. One of the ways forward may be the establishment of a single permitting authority for TEN-T projects (including for all environmental assessments), the so-called 'one-stop shop'. This authority would centralise all the information and procedures related to the permitting phase of a given project.

28. Should a single permitting authority (a 'one-stop shop') be entrusted to apply standardised procedures to TEN-T projects?

- Yes
- No
- No opinion

29. In your opinion, what would be the main benefits of the EU taking action:

30. If the permitting procedures are to be integrated, which ones of the listed below should be handled in a single procedure? (for organisations only)

- Spatial planning (planning permissions)
- All environmental assessments at project level
- Final Development consent/construction permits
- Procedures related to compulsory purchase of land
- Assistance and counselling at national level on State aid control for instance by national competition authorities)
- Other, please specify

31. To what extent do you agree that a one-stop shop would facilitate and accelerate the permitting of TEN-T projects? (for organisations only)

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

32. In your opinion, what would be the main benefits:

33. What level of authority should a one-stop shop have in the permitting of TEN-T projects? (for organisations only)

- Extended decision making power, e.g. the possibility to take a single administrative decision (a one single permit) where appropriate
- Coordination powers only
- No opinion
- Other

Time limits for the completion of the permitting phase

Time limits for obtaining the necessary permits for projects often exist at national level, but they generally apply to specific parts of the procedure rather than to the completion of the whole permitting procedure. An overall time limit for the permitting

procedure (from the application to the first permit to the final decision authorising construction) could accelerate the permitting procedure by setting a time-limit and requiring that efforts are made in order to comply with it.

34. To what extent do you agree that an overall time-limit for the permitting of TEN-T projects would be useful in accelerating the permitting process?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

35. In your opinion, what would be the main benefits:

36. What would you consider an appropriate overall time-limit for the permitting of TEN-T projects?

- Beyond three years
- Between two and three years
- Shorter than 2 years
- Other, please specify

Technical assistance

Project promoters, but also sometimes public authorities, are often exposed to the complexities of not-standard large infrastructure projects. In such cases, dedicated experts who regularly work with such projects that must comply with multiple procedures, can be helpful in ensuring that procedures and associated documentation are compliant with all requirements.

Some TEN-T projects already receive such support from the JASPERS (Joint Assistance to Support Projects in European Regions) programme. Others may benefit from the support of the European Investment Advisory Hub. However, this assistance is not designed for the implementation of TEN-T projects but linked to funding and financing instruments and focus on the effective spending of available funding and financing.

37. To what extent do you agree that there is need for more targeted technical assistance measures for project promoters in the field of permitting?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

38. If yes, in which particular areas:

- Technical design
- Environmental assessments
- Public procurement
- Financing structure (incl. designing of PPPs)
- State aid
- Implementation phase of complex projects (technical supervision)
- Other, please specify

Other measures for the streamlining of permitting procedures

39. Are there any additional measures that would facilitate and accelerate permitting procedures of TEN-T projects?

- Yes
- No

Please add any comments regarding the risks and benefits related to the implementation of these measures in your Member State:

Public procurement

40. How would you assess the effectiveness of possible streamlined rules for TEN-T cross-border projects in the field of public procurement?

	Very high impact	High impact	Medium impact	Low impact	Very low impact	Don't know / No view
Common set of rules at EU level to be applied to cross-border projects						
Common set of rules at EU level to be applied to cross-border projects benefitting from EU financial support						
Mandatory application of the national provisions of the Member State where the joint entity is carrying out its activity for clearly identified TEN-T cross-border projects.						
Requirement to opt for the national provisions of the Member State where the joint entity is carrying out its activity in order to benefit from EU funding for the respective cross-border projects.						
Support from the voluntary ex-ante assessment mechanism on the possibilities to apply specific public procurement rules in accordance with the EU Directives for clearly identified TEN-T cross-border projects.						
Other						

Please explain your answer:

Inclusive process for project consultation

41. To what extent do you agree that certain general principles can be established at EU level to ensure effective and well-designed public consultation processes for certain projects?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

Please explain your answer:

Procedures at EU level

Some procedures are either handled at EU level entirely (such as State aid control) or require the involvement of the EU institutions to allow the project to go ahead. In other cases, EU action is required only in certain and well-defined situation (e.g. in case actions of overriding public interest having negative impact on Natura 2000 sites). If EU funds are involved in the delivery of projects, some financial instruments also require an approval from the Commission (CEF or ESIF for major projects under cohesion policy).

42. To what extent do you agree that procedures that are handled at EU level create problems in the preparation and implementation of projects?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

43. Which of the listed items below should be handled in a single procedure?

- Statistical treatment for PPP
- Environment Assessments (if applicable)
- State aid clearance
- Funding decisions
- Other, please specify

44. To what extent do you agree that these procedures can be better coordinated or further integrated at EU level?

- Fully agree
- Rather agree
- Rather disagree
- Fully disagree
- No opinion

Scope of measures

To facilitate the permitting and preparation of TEN-T projects, a new framework could be introduced for certain projects of particular interest for the development of the TEN-T network.

The TEN-T Regulation (Regulation (EU) 1315/2013) currently defines a Project of Common Interest (PCI) as a project contributing to at least two of the four overall TEN-T objectives (cohesion, efficiency, sustainability, and benefits for users), which can be considered economically viable on the basis of a socio-economic CBA, and which demonstrate European Added Value. PCIs are eligible to Connecting Europe Facility (CEF) funding.

This raises the question of the scope of such a streamlined framework or facilitated procedures and to which projects it would apply.

45. Should a simplified framework or facilitated procedures apply to specific categories of TEN-T projects, e.g. of particular EU relevance?

- Yes
- No
- No opinion

Please explain your answer:

Available instruments for facilitating the permitting of TEN-T projects

46. The more favourable simplified framework may be applied for certain categories of projects only. For which of the following categories of project would such a simplified framework have the highest positive impact?

	Very high impact	High impact	Medium impact	Low impact	Very low impact	Don't know / No view
All projects on the TEN-T network						
All projects on the TEN-T core network						
All projects on the TEN-T core network over a set financial threshold (e.g. over 500m EUR)						
Projects receiving EU financial assistance over a certain threshold (EU contribution to eligible cost, e.g. over 250m EUR)						
Projects pre-identified in an implementing act adopted accordingly to the TEN-T Regulation (art. 47(2))						
Projects pre-identified in the core network corridors work plans presented by the European Coordinators						
Other (please state)						

Please explain your answer:

47. There are a number of options and instruments available for adopting measures to facilitate the permitting and preparation of TEN-T projects. How would you assess the effectiveness of the following instruments to facilitate the permitting and preparation of TEN-T projects?

	Very effective	Effective	Medium effect	Limited effectiveness	Very limited effectiveness	Don't know / No view
An EU Directive establishing the framework conditions for the permitting procedures and other elements of preparation of priority status TEN-T projects, which would need to be transposed in national law for its implementation.						
An EU Regulation on the permitting procedures and other elements of preparation of priority status TEN-T projects, which would be directly applicable in Member States.						
EU guidelines on the permitting and preparation of priority status TEN-T projects, which would not be legally binding on Member States.						
Conditionality to use certain rules when using of EU funds.						
None of the above, explain below						

Please add any comments on your answer:

48. Please indicate/upload any reports or other sources of information that provide evidence to support your responses. Please provide the title, author and, if available, a hyperlink to the study/report.

Annex 3: List of Respondents

This list includes all respondents who granted permission for their identity to be disclosed.

List of Respondents
Stefan Lucau
Jukka Puoskari (Kalajoen kaupunki, Kalajoen Satama Oy)
Industrie- und Handelskammer Cottbus
Lukáš Hradský (Evropská Vodní Doprava-Sped)
Dan Wolff (Eurotran Conseil)
Andreas Netzer (ÖBB-Infrastruktur AG)
Vicente Palomo Torralva (Generalitat Valenciana)
Frederic van Hoorebeke (Vlaams Nederlandse Schelde Commissie)
Josep-Vicent Boira-Maiques (Generalitat Valenciana)
Capt. Béla Szalma (Hungarian Federation of Danube Ports)
Anna Natova (Bulgarian Ports Infrastructure Company)
BBT SE Galleria di Base del Brennero Brenner Base Tunnel
Iolanda De Luca (Ministero delle Infrastrutture e dei Trasporti)
Annaleena Mäkilä (Finnish Port Association)
Filip Boelaert (Department Mobiliteit en Openbare Werken)
Aleksander Buczynski (European Cyclists' Federation)
Erste Beigeordnete Birgit Simon (Regionalverband FrankfurtRheinMain)
Juhani Tervala (Infra ry)
Alf S. Johansen (Värmland-Østfold Border Council)
Gert Nørgaard
Susanna Caliendo (Europabüro der Metropolregion FrankfurtRheinMain)
Bernhard Jelinek (ASFINAG)
Tommy Tvedergaard Madsen (Region Nordjylland)
Claudia May (ADAC - Allgemeiner Deutscher Automobil-Club e.V.)
Tommaso Spanevello (European Rail Infrastructure Managers)
Chris Danckaerts (Waterwegen en Zeekanaal NV)

List of Respondents

Pilar Villarino (CERMI)

Chris Danckaerts

National Company Maritime Danube Port Administration JSCo

Elise Carabedian (European Concrete Paving Association-EUPAVE)

Region Skåne (Skane Lans Landsting)

Christine Le Forestier (FIEC - European Construction Industry Federation)

Yves Laufer (GETC - Groupement Europeen du Transport Combine)

Port Lotniczy Łódź im. Władysława Reymonta Sp. z o.o.

Fiona O'Connor (Gas Networks Ireland)

Christoffer Greenfort (Dansk Erhverv)

Eva Næss Karlsen (The Oslo Region Alliance and The Eastern Norway County Network)

Transportföretagen (Confederation of Swedish Transport Enterprises)

Nicolas Gaubert (FNTP - Fédération Nationale des Travaux Publics)

Johan Lindblad (Nordiska rådet)

Infraestruturas de Portugal SA

Ulla-Stina Ingemarsson (Trafikverket, Swedish Transport Administration)

Pieter Mulder

ADIF (Administrador de Infraestructuras Ferroviarias)

Juan Diego Pedrero (Asociación de Empresas Ferroviarias Privadas)

Manfred Mohr (IATA)

Emmanuel Delfosse

Iven Krämer (Free Hanseatic City of Bremen)

Annex 4: Analytical models used in preparing the impact assessment

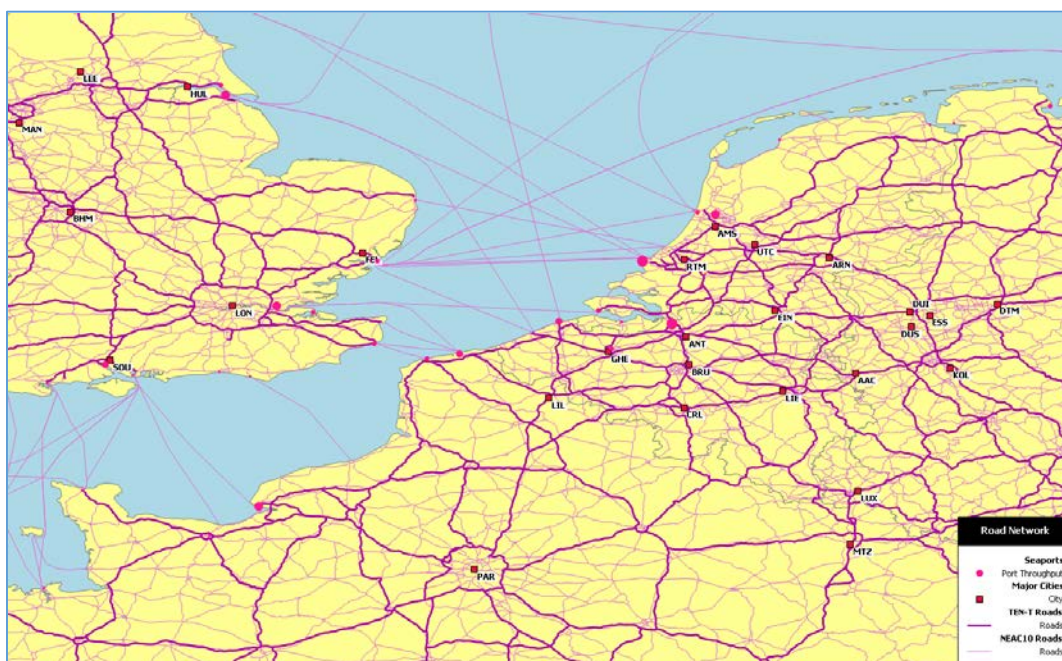
NEAC Model

NEAC-10 is a network-based transport model, meaning that the supply side of the transport industry is represented as a set of network structures connecting the trading regions in the model. Changes in networks influence accessibility and cost, traffic routing patterns, and ultimately external costs.

NEAC-10 utilises the 2010 European networks published by the ETISplus project³⁴. These have evolved via projects such as ETIS-Base, Transtools and Worldnet, and are designed to be suitable for analysis of transport at a range of scales from European level (TEN-T) down to NUTS3 level.

An example is shown below, comparing the NEAC10 network (thinner lines) to the European TEN-T network³⁵ (darker lines). Whereas the TEN-T network focuses on the main inter-urban links, the NEAC network include the main intra-urban links, as well as more of the supporting rural infrastructure.

Figure 15: Road Network in NEAC-10



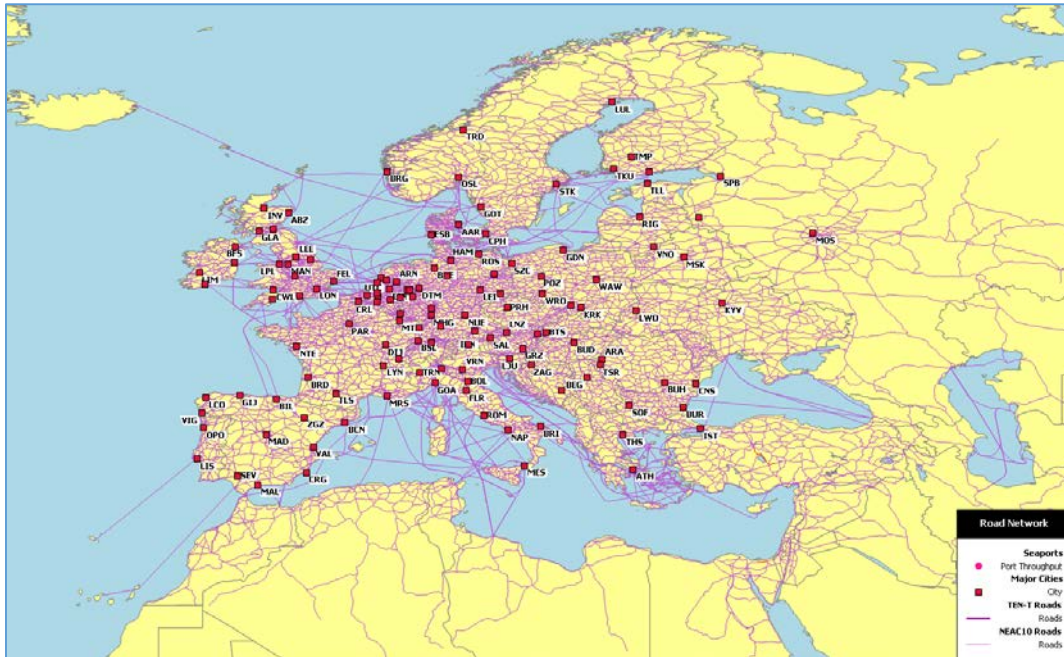
A network structure with this level of detail is suitable for analysing transport flows of about 50km and upwards, which means that it is suitable for regional, national, corridor and pan-European models, but less suitable for urban or project level analysis.

At pan-European level, the network covers all countries including non-EU countries, and it has a full set of links to the neighbouring countries and beyond.

³⁴ ETISplus, WP7, Karlsruhe Institute of Technology (KIT).

³⁵ TENtec, European Commission, DG-MOVE.

Figure 16: Full Extent of Road Network



Road and waterway networks are less dense in coverage, but they cover an equivalent area incorporating all European countries.

Figure 17: Extent of Rail and Waterway Networks in NEAC-10



NEAC Trade Model

The purpose of the trade model inside NEAC is to relate changes in economic activity and changes in the transport system to transport volume.

A gravity model formulation has been used in which the trade between countries/regions is explained by the supply factors of the exporting country/region and the demand factors of the importing country/region.

Mathematically, the trade model formulation is:

Equation 1 *The functional form of the trade model for international trade flows*

$$T_{ijg} = \alpha 1 * P_{ig}^{\alpha 2} * A_{jg}^{\alpha 3} * D_{ij}^{\alpha 4} * e^{\alpha 5 * DUMMY}$$

wherein,

T_{ijg}	:	the trade of a commodity between region i and j in tonnes;
P_{ig}	:	the added value (GVA) of the sector that supplies (produces) the commodity in country/region i;
A_{jg}	:	the added value (GVA) of the sector that consumes (attracts) the commodity in country/region j;
D_{ij}	:	the economic distance (cost of transport) between region i and j;
DUMMY	:	a dummy variable that captures economic co-operation between countries/regions or a specific position of (a group of) countries/regions;
$\alpha 1, \alpha 2, \alpha 3,$ $\alpha 4, \alpha 5$:	the model parameters.

The model, expressed in log-linear form was estimated for the trade of each commodity group:

Equation 1 can be rewritten in log-linear form as equation 2:

Equation 2 *The log-linear regression equation of the trade model*

$$\log T_{ijg} = \beta 1 + \alpha 2 * \log P_{ig} + \alpha 3 * \log A_{jg} + \alpha 4 * \log D_{ij} + \alpha 5 * DUMMY$$

in which:

$$\beta 1 = \log \alpha 1$$

Equation 2 was estimated with Ordinary Least Squares (OLS) on the basis of cross section data. The expected co-efficient ranges were:

$$\alpha 2 > 0, \alpha 3 > 0, \alpha 4 < 0, \text{ and } \alpha 5 > 0 \text{ (or in some cases } \alpha 5 < 0),$$

which can be translated into the following statements:

- 1) a larger value added of the producing sector in the exporting country should have a positive effect on trade ($\alpha 2 > 0$),
- 2) a larger value added of the attracting sector in the importing country should have a positive effect on trade ($\alpha 3 > 0$),
- 3) a larger distance between the exporting and the importing country should have a negative effect on trade ($\alpha 4 < 0$),

- 4) Depending of the dummy variable in consideration the value can either be positive or negative.

In use, NEAC-10 applies this trade model structure to each transport chain:

- Origin and destination regions define which economic growth rates are chosen.
- The routing determines the total transport cost from origin to destination, and thus the value of 'D' which represents the economic distance between the regions.
- The product category determines which economic sectors are selected as the relevant production (P) and attraction (A) sectors in the given region. For example, trade in agricultural produce responds to growth of the agricultural sector in the origin region, and food consumption in the destination region.
- The combination of origin and destination regions determines which model is used. There are different elasticities estimated for domestic, intra-EU and extra-EU flows.

To make a forecast scenario, a set of economic growth rates, per NUTS3 region and per economic sector need to be provided as assumptions. In practice these will be estimated using reference forecasts of economic growth.

Equation 3 The form for estimating future traffic flows.

$$T_{ijg}^f = T_{ijg}^b * \left(\frac{P_{ig}^f}{P_{ig}^b}\right)^{\alpha 2} * \left(\frac{A_{jg}^f}{A_{jg}^b}\right)^{\alpha 3} * \left(\frac{D_{jg}^f}{D_{jg}^b}\right)^{\alpha 4} * e^{\alpha 5(DUMMY(f)-DUMMY(b))}$$

In the model, changes in production and attraction rates between the base year (b) and the forecast year (f), as well as changes in the economic distance. These ratios are then applied to the base year traffic volumes to estimate the future volumes.

NEAC Mode Split Model

NEAC10 uses the mode split methodology devised for the TRANSTOOLS model. A multinomial logit model has still been used:

Equation 4 Multinomial Logit Model

$$P_{m|cij} = \frac{e^{V_{m|cij}}}{\sum_{l \in M} e^{V_{l|cij}}}$$

with: $V_{m|cij} = \beta_{m0} + \sum_k \beta_{mk} x_{cijmk}$

Where:

- M: Set of available modes.
 $P_{m|cij}$: Choice probability of mode m given commodity group c and OD relation ij .
 $V_{m|cij}$: Systematic utility of mode m given commodity group c and OD relation ij .
 x_{cijmk} : Level of service k for mode m given commodity group c and OD relation ij .
 β_{mk} : Logit parameter for mode m and level of service k .

This formula calculates the probability that a given mode is chosen by comparing estimated utilities for all available modes, for a specific origin-destination and for a specific commodity.

NEAC10 is a chain-based model, meaning that traffic flows are stored as sequences of modes (mode chains). As described above, the trade model, which predicts overall volumes works by analysing changes in the economic profiles of the trading regions (production and consumption). However, this mode split model is applied to the individual links within the chain and not to the chain itself which is likely to contain more than one mode. Furthermore, sea transport, and therefore port choice is not considered within this mode split process³⁶. It therefore only applies to:

- Road
- Rail
- Waterway transport.

Mode choice within this formula reacts to changes in the utilities associated with each available mode. Increasing the utility (lowering the cost) for one mode will make it more attractive than the available alternatives, so the function will shift traffic towards this mode.

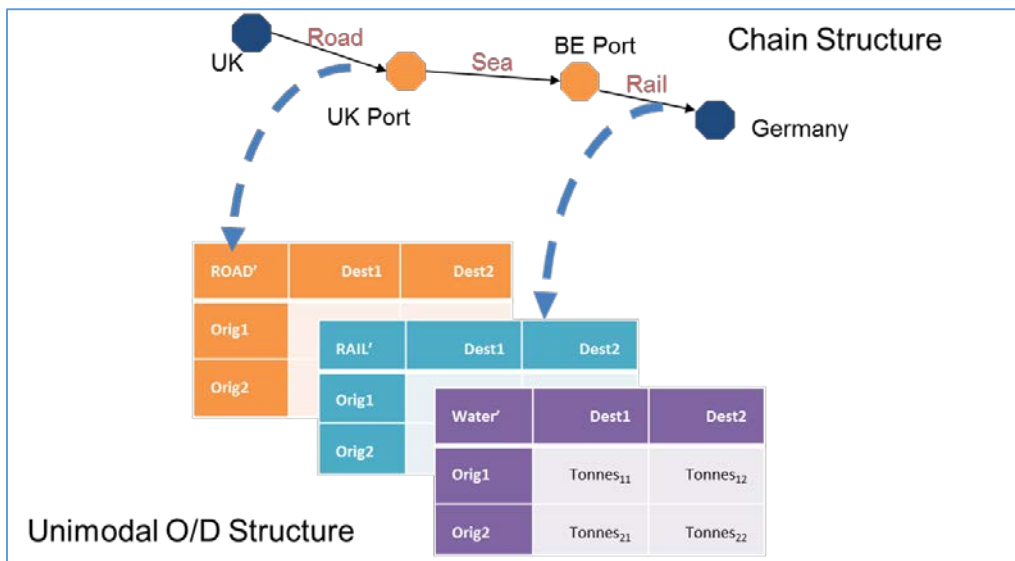
To be effective within the overall modelling structure, a scenario needs to be defined in which there are changes in the cost structures or in the new networks. For each combination of origin, destination, and commodity, a set of probabilities needs to be estimated for the base case (default or unchanged utilities) and for the scenario. By comparing the two sets of probabilities, a shift per mode can be estimated. Therefore this mode split model calculates changes³⁷ in mode between time periods rather than the absolute mode shares.

Thus, each mode chain is split into links, and each link is aggregated into a unimodal O/D table per commodity. The mapping of data from the chains to unimodal O/Ds is illustrated below in Figure 18.

³⁶ In order to model shifts within the whole chain, the Mode Chain Builder (MCB) process can be used instead.

³⁷ Whereas the Mode Chain Builder (MCB) calculates absolute mode shares by multimodal assignment to a hyper-network.

Figure 18: Mapping of Chain Structure into Unimodal O/D



When all of the chains have been unpacked in this manner, it is possible to quantify the modal shares per O/D and per commodity.

When the mode split model is applied, traffic can be shifted from one of the three unimodal O/D layer to the others depending upon changes in their relative utilities.

Details of the utility function specification and its parameters are shown in the annex.

NEAC Traffic Assignment Model

The final step of the model is to assign the unimodal O/D flows produced by the mode split model to the respective networks, thus completing the process by relating the estimated transport demand back to the supply side. Networks and cost functions used for assignment are the same of used for other steps in the model, so there is consistency with the assumptions used by the trade model and mode split model.

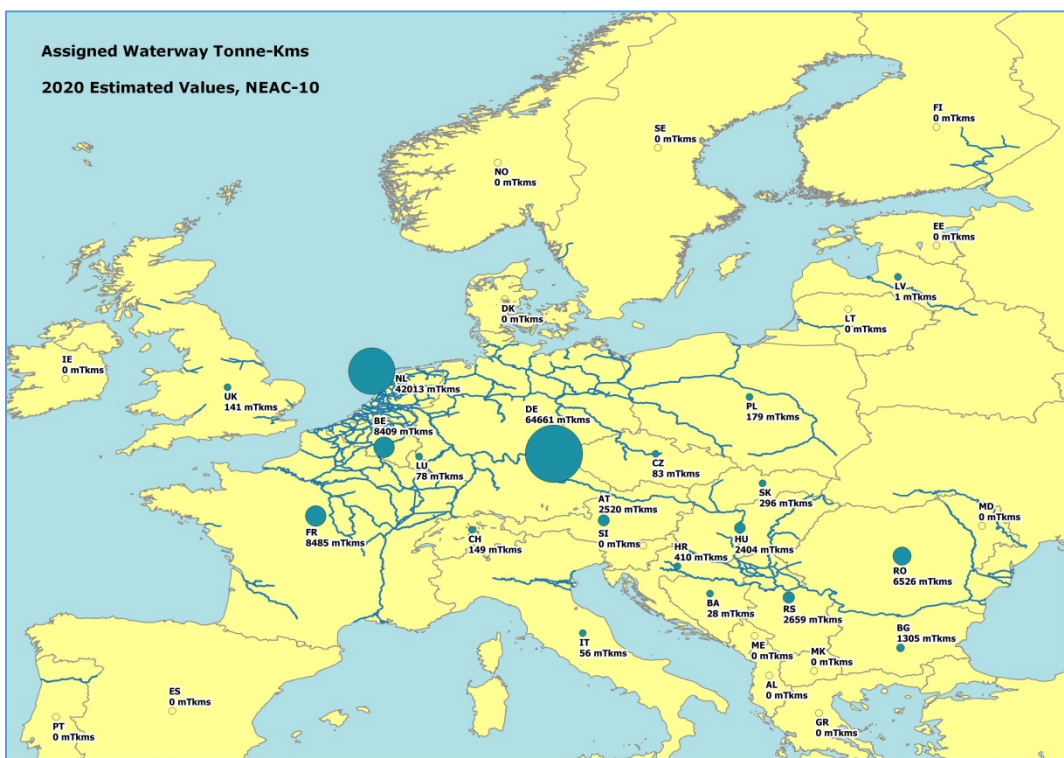
Traffic assignment maps the tonnages stored as O/D flows into link flows, but searching for efficient paths in the transport network connecting the origin to the destination. In the simplest case, all the traffic per O/D, within a given mode, will be assigned to a single efficient path, the so-called "all-or-nothing" approach. The path is chosen as the one which minimises total cost. There is an option to use "incremental" assignment, in which a congestion function is used to modify link speeds as traffic builds up, thus simulating the effect of traffic detouring onto longer but less congested routes.

Figure 19: Traffic Assignment, 2010, Inland Waterways



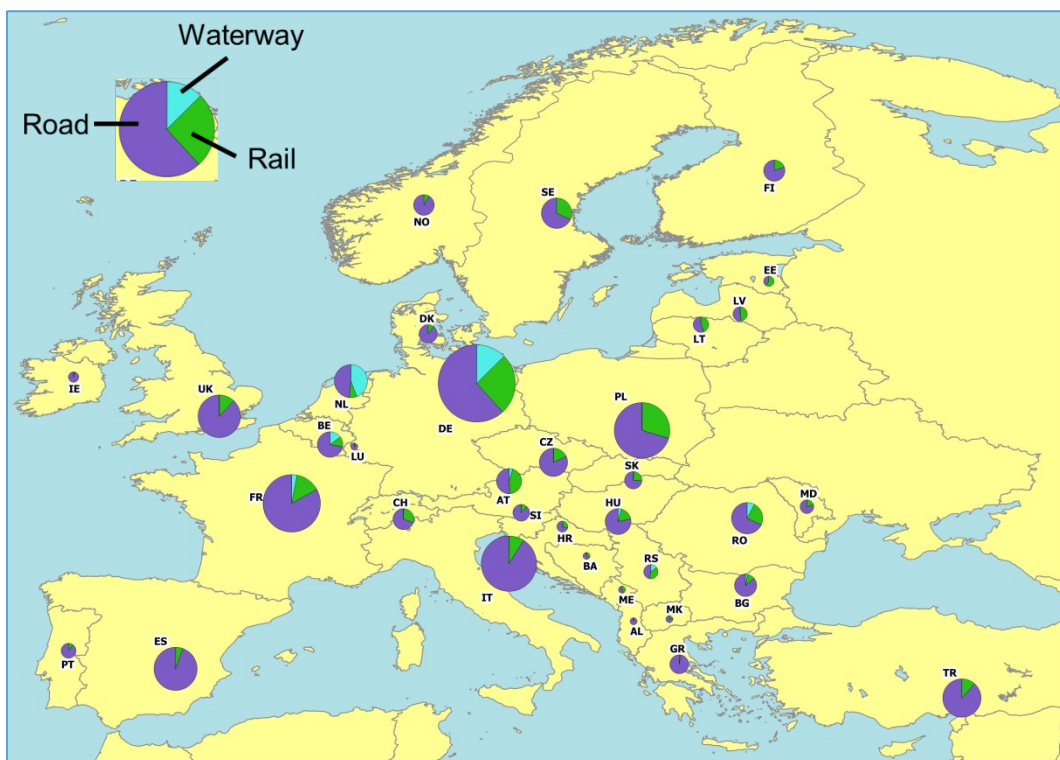
The same results can be visualised as national tonne-kms, as shown below.

Figure 20: Traffic Assignment, 2010, Inland Waterway Traffic, National Tonne-Kms



Combining the assignment results for all modes, it is possible to estimate modal shares by territorial area. In the following map this is shown as pie-charts per country.

Figure 21: Estimated Modal Shares - NEAC-10 Traffic Assignment



Naturally, these assignment results can be refined to highlight particular corridors, certain commodities, modes of appearance (e.g. containers), port/hinterland traffic and so on. Assignment results can be combined with external costs to derive transport impacts.

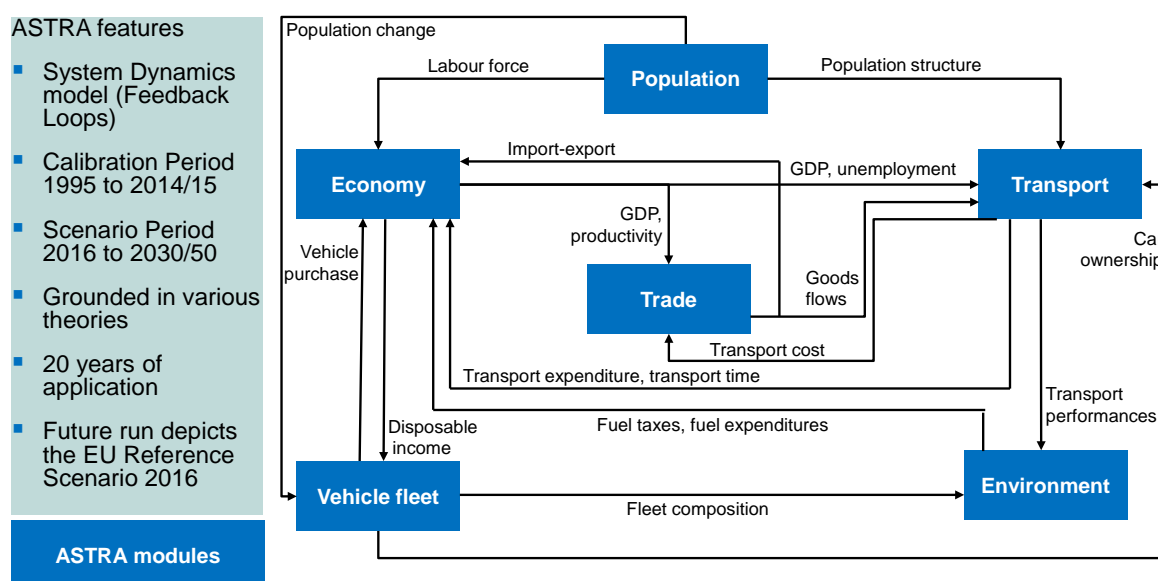
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ASTRA Model

The System Dynamics model ASTRA is an integrated assessment model (IAM) allowing the analysis of impacts of various transport policies and strategies. Though ASTRA stands for *Assessment of Transport Strategies* over the past 20 years of development the model has been applied also for analyses of energy policies, climate policies and innovation policies. It has been applied both in research contexts as well as in consulting activities. Like for all IAMs it links different systems such that changes in one system can induce changes in another system and vice versa. ASTRA simulates the systems of demography, transport, vehicle fleets, environment and economy including foreign trade (see the ASTRA modules in Figure 22). In doing so, it enables the analysis of direct, indirect and induced effects of transport policies on all systems covered.

Figure 22: Overview of the six modules of the ASTRA model



Source: M-Five

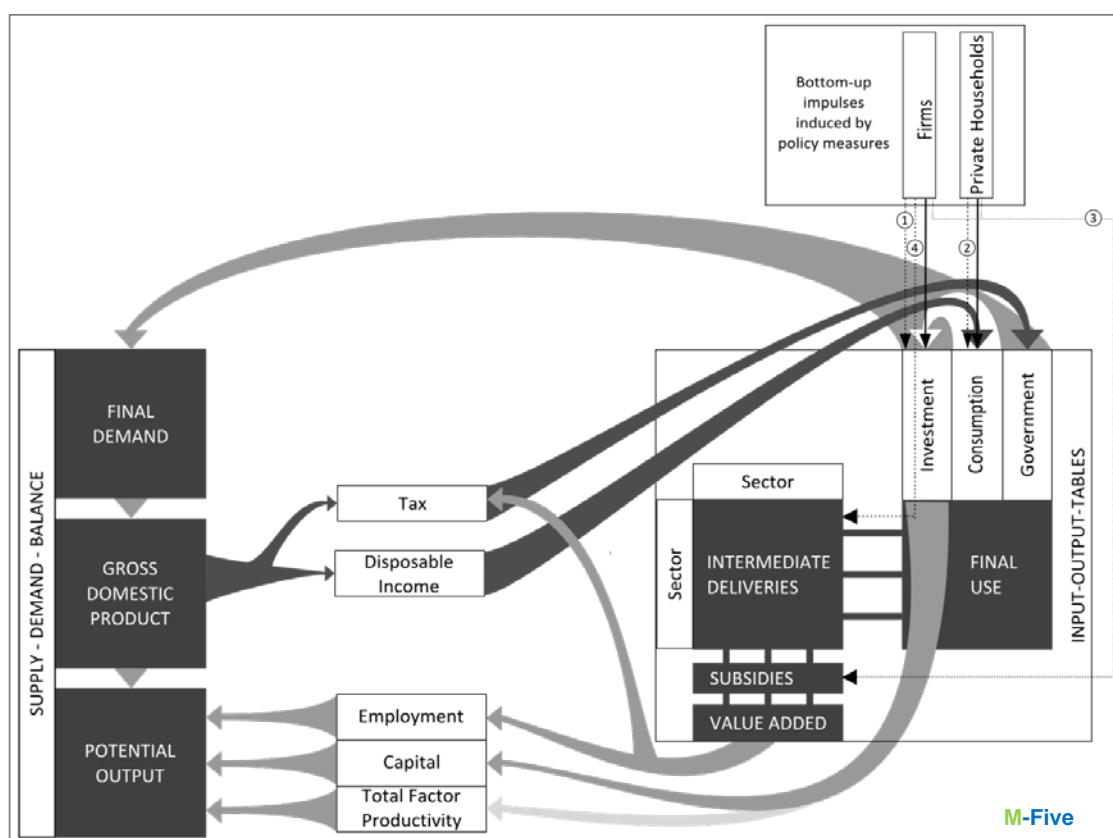
ASTRA is based on System Dynamics methodology (Sterman, 2000) and emphasizes dynamic interactions, the integration of differences in short- and long-run effects and an explicit modelling of supply-side restrictions. The model contains the 25 economic sectors of the Eurostat Input-Output tables and, as opposed to many Computable General Equilibrium models (CGE), does not use a single base year for its calibration, but rather the time span from 1995 to 2014, thus offering a good alternative as proposed by Scricciu (2007). The model equations are empirically evaluated and as a result of econometrically estimated equations the agents in the model are myopic and thus the model philosophy employs the concept of bounded rationality. ASTRA also incorporates endogenous growth theoretical features (see Schade 2005) which is often neglected in CGE studies (Broberg et al., 2015) and in its partial reliance on a Post Keynesian economic view of long-run economic growth is similar to the E3ME-model suit of Cambridge Econometrics (Barker et al., 2009).

ASTRA Economic Module

Figure 23 provides a schematic illustration of the modelling logic in the economic model of ASTRA and shows how the main policy impacts derived from the transport models flow within the macroeconomic modelling. The policy measures considered in the transport demand models lead to changes in investments (e.g. investments of vehicles) and consumption (e.g. reduced transport expenditures). These bottom-up

impulses are integrated in ASTRA by changing consumption shares on different spending sectors, investments and the input-output coefficients. Consumption and investments (together with government expenditures and exports) form the second quadrant of the Input-Output tables, which is equivalent to final demand, when imports are subtracted. This demand side of the economy is complemented by the supply side, which is fed by capital, labour and technological progress, representing the production potential. Gross Domestic Product (GDP) is derived by balancing both sides of the economy, supply and demand. GDP growth enforces a further growth in consumption, triggering investments to meet this new consumption demand. These feedback effects between GDP, income, consumption, investments and again GDP are a key feature of the economic model of ASTRA and allow for modelling indirect effects (or second round effects) arising from the implementation of transport policy measures. Taking into account the second-round effects is particularly important when modelling the long-term macroeconomic impacts on growth and jobs of transport policy. A further description of ASTRA can be found in Hartwig and Schade (2014) and Fermi et al. (2012). Many of the model elements have been described by Schade (2005).

Figure 23: Overview of the economic interactions in the macro-economic module



The economic module provides the national economic framework, which imbeds the other modules. The economic logic cannot be assigned explicitly into one economic category of models, for instance, a neo-classical model. Instead, it incorporates neo-classical elements like production functions. Keynesian elements are considered like the dependency of investments on consumption, which are extended by some further influences on investments, like exports or government debt. Further elements of endogenous growth theory are incorporated like the implementation of endogenous technical progress (e.g. depending on sectoral investment) and driving the Total Factor Productivity (TFP) as one important driver for overall economic development.

Five major elements constitute the functionality of the economics module plus the inputs provided by the bottom-up transport models. The first is the sectoral interchange model that reflects the economic interactions between 25 economic sectors of the national economies. Demand-supply interactions are considered by the second and third elements. The second element, the demand-side model, depicts the four major components of final demand: consumption, investments, exports-imports and government consumption. The supply-side model reflects influences of three production factors: capital stock, labour and natural resources as well as the influence of technological progress that is modelled as total factor productivity. Endogenised total factor productivity depends on investments, freight transport times and labour productivity changes. The fourth element of the economic module is the employment model that builds on value-added as output from input-output table calculations and on sectoral labour productivity. Employment is differentiated into full-time equivalent employment and total employment, to be able to reflect the growing importance of part-time employment. Unemployment is estimated by considering both the total population and the activity rate. The fifth element of MAC describes government behaviour. Government revenues and expenditures are differentiated into categories that can be modelled endogenously by ASTRA, and one category covering other revenues or other expenditures. Categories that are endogenised comprise VAT and fuel tax revenues, direct taxes, import taxes, social contributions and revenues of transport charges on the revenue side, as well as unemployment payments, transfers to retired persons and children, transport investments, interest payments for government debt and government consumption on the expenditure side.

The *trade module* is divided into two parts: trade between the EU28+2 European countries (INTRA-EU model) and trade between the EU28+2 European countries and the rest of the world (RoW) that is divided into nine regions (EU-RoW model with Oceania, China, East Asia, India, Japan, Latin America, North America, Turkey, Rest of the World). Both models are differentiated into bilateral relationships by country pair by sector. The INTRA-EU trade model depends on three endogenous and one exogenous factor. World GDP growth exerts an exogenous influence on trade. Endogenous influences are provided by GDP growth of the importing country of each country pair relation, by relative change of sectoral labour productivity between the countries and by averaged generalised cost of passenger and freight transport between the countries. The latter is chosen to represent an accessibility indicator for transport between the countries. The EU-RoW trade model is mainly driven by relative productivity between the European countries and the rest-of-the-world regions. Productivity changes together with GDP growth of the importing RoW country and world GDP growth drive the export-import relationships between the countries. Since transport cost and time are not modelled for transport relations outside EU28+2, transport is not considered in the EU-RoW model. The resulting sectoral export-import flows of the two trade models are fed back into the economics module as part of final demand and national final use, respectively. Secondly, the INTRA-EU model provides the input for international freight generation and distribution within the transport model.

Transport related modules in ASTRA

Starting point of transport modeling are the calculation of generation and spatial distribution of freight transport volume and passenger trips. The number of passenger trips is driven by the employment situation, income groups, car-ownership development and number of people in different age classes. Trip generation is performed individually for each of the NUTS-II zones of the ASTRA model. Distribution splits trips of each zone into three distance categories of trips within the zone and one distance category crossing the zonal borders and generating OD-trip matrices for three trip purposes. Freight transport is driven by two mechanisms: firstly, national transport depends on sectoral production value of the 15 goods-producing sectors

where the monetary output of the input-output table calculations are transferred into volume of tons by means of value-to-volume ratios. For freight distribution and the further calculations in the transport module the 15 goods sectors are aggregated into three goods categories. Secondly, international freight transport i.e. freight transport flows that cross national borders are generated from monetary Intra-European trade flows of the 15 goods-producing sectors. Again, transfer into volume of tons is performed by applying value-to-volume ratios that are different from the ones applied for national transport. In that sense the export model provides generation and distribution of international transport flows within one step on the basis of monetary flows.

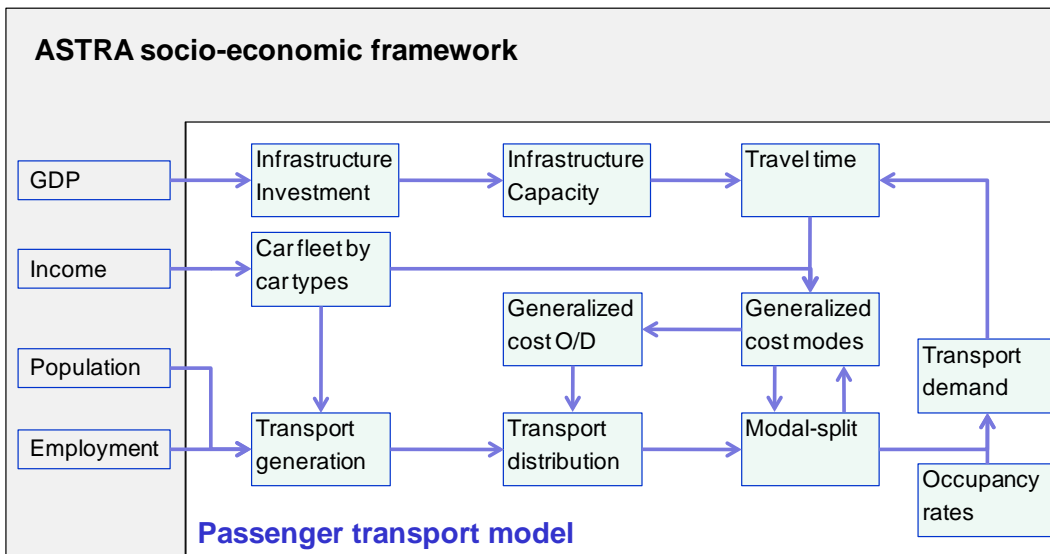
The network capacity for the different transport modes is considered as an aggregate capacity variable. Infrastructure investments derived both from the economic development and from infrastructure investment policies alter the infrastructure capacity. Using speed flow curves for the different infrastructure types and aggregate transport demand, the changes of average travel speeds over time are estimated and transferred to the transport model where they affect the modal choice.

Figure 24 presents the major interdependencies of the passenger transport model. The main output of the model is the passenger transport performance by mode as well as the vehicle-kilometres-travelled (VKT) by mode. The core of the model is a classical four-stage transport model with a rather limited assignment component (4th stage). However, the first three stages act in an integrated and dynamic way, i.e. at none of these stages (generation, distribution, mode choice) are any assumptions made about structural stability. In the generation stage, e.g. changes in population, degree of (un-)employment or the car fleet may alter the number of generated trips. In the distribution stage, of course, changes may stem from generation, but more important is the aggregated generalised transport cost between any origin (O) and destination (D) in Europe. These aggregated costs consist of monetary costs and time costs and thus represent an accessibility measure for each European OD-relation described by the ASTRA zoning system.

Accessibility is influenced by the travel time (depending on infrastructure and network load) and the travel cost (depending, e.g. on tariffs, car prices, fuel prices, car taxes etc.) by mode. The same influences also affect the mode choice for each OD relation and each distance band (0-2 km, 2-10km, 10-50km, >50km distance). As a starting point for travel distances and travel times for each OD relation, the input from European network models (e.g. over the years from SCENES to TRANS-TOOLS to TRUST model) is integrated into ASTRA. Distances and travel times change due to exogenous (e.g. growth of average distances within distance bands) and endogenous influences (e.g. investment in infrastructure, destination choice shifts to further away destination zones).

In the final step, passenger transport performances by mode are converted into vehicle kilometres using distance- and mode-specific occupancy rates. The occupancy rates are taken from national travel surveys (e.g. UK national travel survey) and decrease over time. The major outputs of the passenger transport model comprise the transport demand, transport expenditures, transport tax and toll revenues.

Figure 24: ASTRA passenger transport model

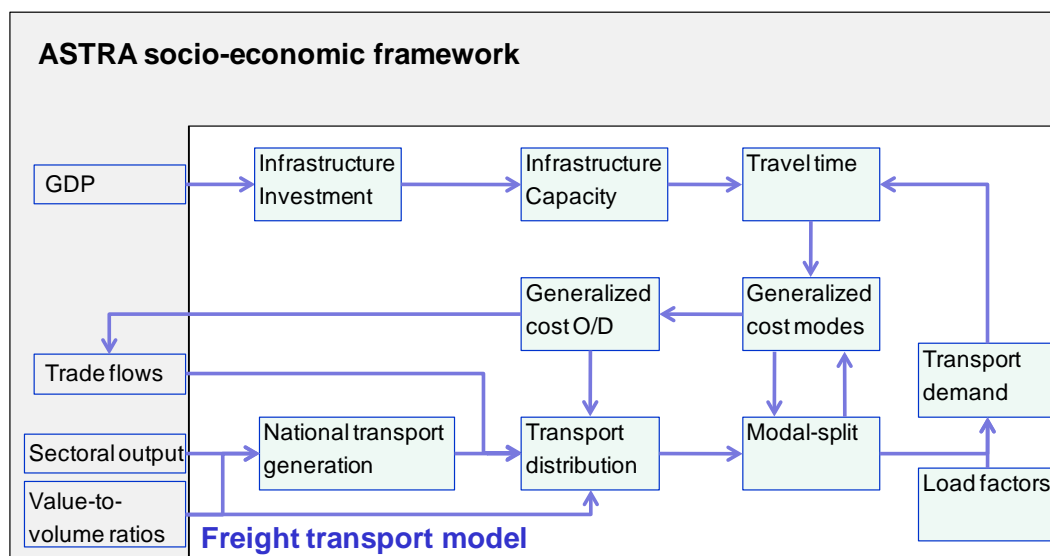


Source: M-Five

Figure 24 shows the major interdependencies of the freight transport model. The main outputs of the model are the freight transport performances by mode as well as the vehicle-kilometres-travelled (VKT) by mode. The basic structure of the freight transport model is similar to that of passenger transport; it is a classical four-stage transport model including only a limited 4th stage for assignment. A major difference concerns the distribution model of international freight transport, which derives the freight flows for the OD relations based on foreign trade flows. National transport flows are derived from the sectoral output of each goods-producing sector (15 sectors) in the 30 European countries.

In the final step, freight transport performances by mode are converted into vehicle kilometres using distance- and mode-specific load factors. The load factors are taken from European statistics and increase exogenously over time due to the assumption of improved logistics. Further, the load factors are endogenously altered by transport cost, e.g. to reflect organisational improvements in response to higher fuel prices or fuel taxes. Derived from such major outputs of the freight transport model are indicators like transport demand, emissions, investments in freight vehicle fleets, transport tax revenues and toll revenues.

Figure 25: ASTRA freight transport model



Source: M-Five

Major outputs of the transport models to the environment module are the vehicle-km travelled (VKT) per mode and per distance band and traffic situation, respectively. Based on these traffic flows and the information from the vehicle fleet model on the national composition of the vehicle fleets and hence on the energy consumption factors and the emission factors, the environmental module calculates energy demand and emissions from transport. Besides emissions, fuel consumption and, based on this, fuel tax revenues from transport are estimated. Traffic flows and accident rates for each mode form the input to calculate the number of accidents in the European countries. Expenditures for fuel, revenues from fuel taxes and value-added tax (VAT) on fuel consumption are transferred to the macroeconomics module and provide input to the economic sectors producing fuel products and to the government model.

Another ASTRA module relevant for transport assessments is the car fleet model, consisting of a stock model (vintage model), a purchase model and a choice model for the selection of type and technology of newly purchased cars. The car fleet model constitutes one of the most policy-sensitive model elements in ASTRA as it reacts to policies that support new technologies (e.g. subsidies or 'feebates'), to taxation policies (i.e. car and fuels) and to fuel price changes including changes of CO₂ taxes/certificates and energy tax changes. Other socio-economic drivers also affect the development of the car fleet, especially income, population and the existing level of car ownership.

The car fleet model starts with the purchase model, which determines changes in the absolute level of the car fleet. Depending on changes in income, population and fuel prices, the level of the car fleet is estimated for the next time period. Together with information on the scrappage of cars which mainly depends on the age structure of the fleet, the number of newly purchased cars is then calculated. Purchase of cars via the second-hand market in other countries is not considered, yet.

In the second step, the newly purchased cars are transmitted to the choice model, which determines the types of cars that are purchased. Car types include:

- gasoline cars: three types differentiated by cubic capacity,
- diesel cars: two types differentiated by cubic capacity,
- compressed natural gas (CNG) cars,

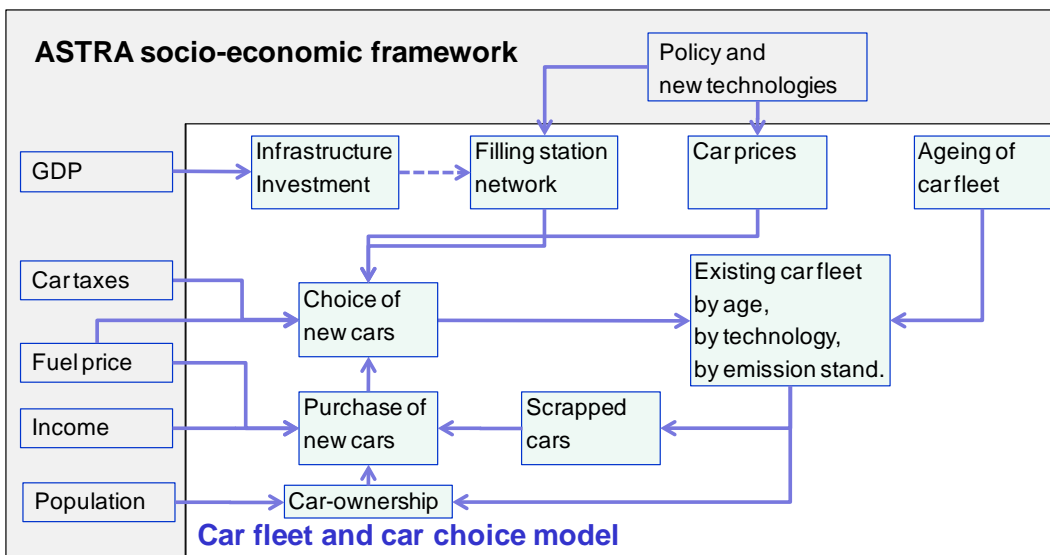
- liquefied petroleum gas (LPG) cars,
- bioethanol cars, i.e. cars that can run on 85 % bioethanol (E85) and more (incl. flex fuel),
- hybrid cars, meaning advanced hybrid cars depending on timing, i.e. plug-in hybrids with the ability to run for a significant distance on electricity,
- battery electric cars, i.e. smaller cars running in battery-only mode and
- hydrogen fuel cell vehicles (hydrogen internal combustion engine is not considered a reasonable option).

The choice of a new car depends on fuel prices (incl. taxes), car prices, taxation of car technologies, efficiency of cars, filling station network and, in the case of new technologies, on subsidies or feebates (combined fee and rebate system). In the case of electric vehicles, preferences are also altered by adapting the choice parameters in the model equations.

Emission standards are also considered in the car fleet model. The point of time when a new car is purchased determines to which emission standard it belongs and which emission factors have to be applied to model its emissions. ASTRA distinguishes nine emission standards (2 pre-euro standards, Euro 1 to Euro 7 standard). For example, if a car is purchased in 2005, it is assumed that it complies with the Euro 4 standard. Euro 7 reflects potential future technological improvements.

The third element is the stock model of the existing fleet. This model provides the number of cars and the age distribution in the fleet. Using age-specific scrappage functions and a cohort approach, the model simulates ageing of the individual age cohorts of the fleet. Thus it is feasible to analyse the number of cars equipped with a certain engine technology and belonging to a certain emission standard at any point of time.

Figure 26: ASTRA car fleet and car choice model



Source: M-Five

Feedback from transport to the economy

The previous sections described the working of the economic model and the way the economy and policies are driving the transport system. This section explains the feedback in the opposite direction: the stimulus (inputs) that the economic model receives from transport. These inputs are fed into the economic module via so-called

micro-macro bridges indicating that the inputs are estimated by models grounded in micro-economic theory, largely discrete choice applied in transport modeling, which are feeding a macro-economic approach building on various theories of the political economy. So, the micro-macro-bridges link micro- and meso-level models, for instance, the passenger transport demand model or the vehicle purchase model to components of the economics module. For example that means that expenditures for bus transport or rail transport of one origin-destination pair (OD) become part of final demand of the economic sector for inland transport within the sectoral interchange model.

In summary, the impulses derived from the bottom-up transport demand models are implemented in ASTRA in the following manner:

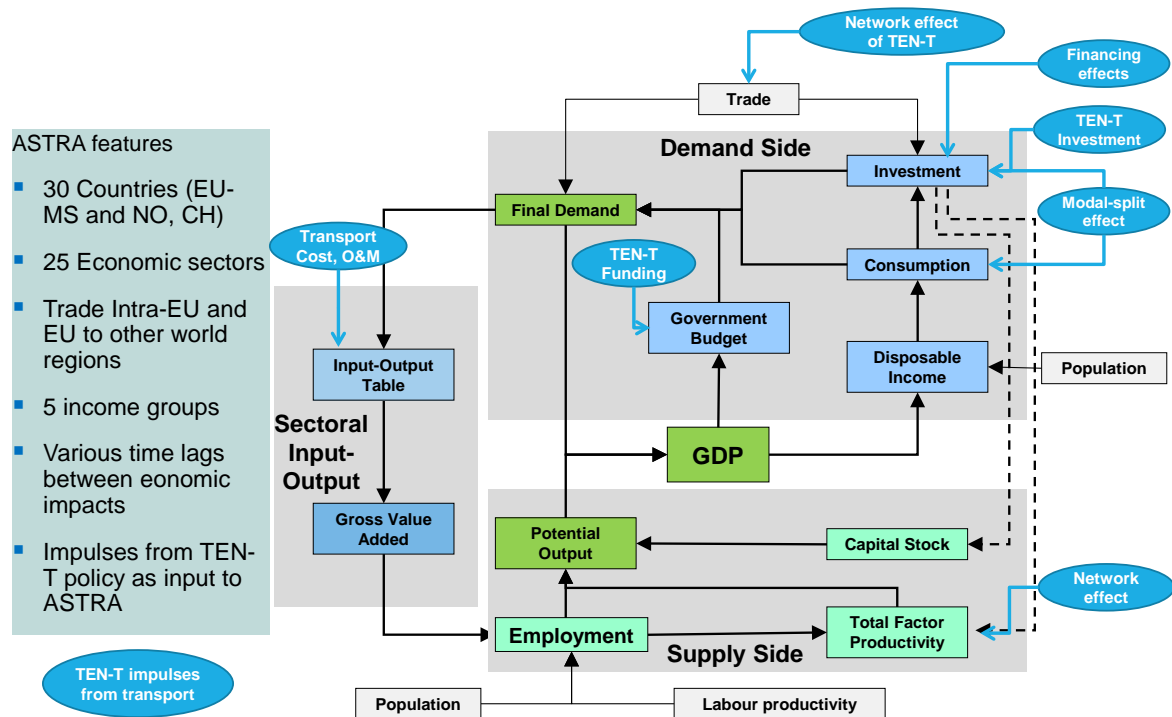
- Investments are added to the investment vector in the final demand matrix (Final Use) of the Input-Output table.
- Consumption changes are implemented as relative changes to the baseline scenario in the consumption vector without changing overall consumption (as this depends on total income and savings).
- Subsidies are added to the government sector and change the government expenditures and budget and furthermore decrease sectoral value added.
- Changes in transport demand are considered differently for private households and firms.
 - In private households, transport is regarded as an ordinary consumption good and changes are applied in the consumption vector.
 - For firms transport demand changes have an impact on the intermediate deliveries of the Input-Output table. Here, transport demand changes differ according to the size of the technical coefficient of transport in the respective sector.

The direct change of the investment vector by the transport policy is not the only effect of the investments made in transport technologies or infrastructure.

- Additional investments effect transport prices and thus the prices of goods. These price changes are handed over to the consumers. Subsequently, the consumption vector is altered.
- In ASTRA investments enhance total factor productivity, which changes the overall growth potential of the economy. However, these productivity gains differ depending on the sector where they are introduced.
- The investments are either paid by financial reserves (retained earnings) of the firms or by borrowing. These credit repayments reduce the earnings of the company and lower gross value added of the respective sector. In case of government funding the investments affect the government budget balance.
- Generally, all investments feed into the capital stock of the economy, and so are additional investments in the EES. Capital is one production factor in the equation for the supply side and thus changes the production potential of the economy.

Figure 27 summarizes the impulses that enter the economic model as inputs from the transport models (blue ovals). Some inputs specifically address one economic sector (e.g. expenditures on public transport change final demand of sector land transport), while others act on all goods sectors (e.g. changes of freight transport cost affect the trade flows of all sectors between all EU Member States).

Figure 27: Overview of linkages between transport and economic modules in ASTRA



Source: M-Five

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Annex 6: Sensitivity Analyses

Sensitivity Analysis – transport impacts

Two sensitivity tests were carried out for the transport impacts (direct and indirect net benefits) using different assumptions concerning:

- The assumed pattern of delays in the baseline, and
- The assumptions regarding the potential effectiveness rates of the three policy options in reducing delays.

Sensitivity test 1: Alternative baseline scenario.

In the first sensitivity test, the assumption regarding the proportion of investments which are delayed is changed from the baseline assumption to a more conservative assumption. This implies that within this scenario, a greater number of projects are started on time, and therefore that the total level of benefit that can be realised from reducing any delays is lower.

As set out in the Definition of the Baseline (see page 45) the model applies the assumption that:

- 50% of the investments occur on schedule,
- 25% of the investments are delayed by one year,
- 15% are delayed by two years, and
- 10% are delayed by three years.

Under these assumptions, the policy options can have no impact on the 50% of investments that occur on time.

In the alternative baseline scenario the assumptions are set to:

- 60% of the investments occur on schedule (+10%)
- 20% of the investments are delayed by one year (-5%)
- 10% are delayed by two years (-5%)
- 10% are delayed by three years. (no change)

With these assumptions, the potential benefits of the options will be lower because 60% of investments are now assumed to take place on time.

Table 31: Results of sensitivity test 1 - Alternative baseline scenario), €m present value

Net benefits (in million €, constant prices 2015)	PO1	PO2	PO3
Core TEN-T network projects			
Benefits			
User costs savings	1,534	4,238	5,558
External costs savings	228	606	793
Air pollution	2	5	6
Noise	8	22	29
Congestion	72	170	222
Accidents	88	248	324
Climate change	57	161	211
Total benefits	1,761	4,843	6,350
Reduction in administrative costs	12	113	72
Net benefits (present value)	1,773	4,956	6,423
Core network corridors projects			
Benefits			
User costs savings	1,150	3,178	4,168
External costs savings	171	454	594
Air pollution	2	3	5
Noise	6	17	22
Congestion	54	128	166
Accidents	66	186	243
Climate change	43	120	158
Total benefits	1,321	3,632	4,763
Reduction in administrative costs	9	85	54
Net benefits (present value)	1,330	3,717	4,817
CEF projects			
Benefits			
User costs savings	851	2,352	3,084
External costs savings	126	336	440
Air pollution	1	3	4
Noise	5	12	16
Congestion	40	94	123
Accidents	49	138	180
Climate change	32	89	117
Total benefits	977	2,688	3,524
Reduction in administrative costs	7	63	41
Net benefits (present value)	984	2,751	3,565

Note that the estimates for the net reduction in administrative costs have been added to these tables. These calculations are explained in the next section (Sensitivity Analysis- administrative costs), where the same assumptions are applied. The alternative baseline scenario uses the “Central-ii” results of the administrative burden sensitivity analysis, in which the same assumption of fewer delayed projects.

Sensitivity test 2: Alternative effectiveness rates.

A similar exercise was carried out to test the sensitivity of the results to the assumptions about the effectiveness of the three policy options. These assumptions set the limit for the proportion of delayed investments which can be started on time following the introduction of new measures. In the central case used in the study the assumptions are based on the strength of the legal instrument being applied, the extent to which the options include binding measures and elements such as time limits which would have to be applied to all TEN-T projects. It was assumed that the PO1 package would be the least effective in reducing delays because it contains voluntary measures. PO2 was assumed to be less effective than PO3 (from this particular standpoint) because although it contained mandatory measures, certain MS are already applying the one-stop shop structure contained in the package, and across the EU, MS would have discretion on the way that the legislation is implemented nationally.

The central assumptions used in the study regarding the three policy options are summarised below in Table 32

Table 32: Central assumptions regarding effectiveness, year of launch and build-up.

Assumption	PO1	PO2	PO3
Year of launch	2020	2022	2023
Effectiveness	15%	60%	80%
Build Up period	5	3	0

The alternative assumptions are shown in Table 33. Note that the other parameters (year of launch and build up period do not change).

Table 33: Assumptions for alternative effectiveness scenario.

Assumption	PO1	PO2	PO3
Year of launch	2020 (no change)	2022 (no change)	2023 (no change)
Effectiveness	10% (-5%)	50% (-10%)	70% (-10%)
Build Up period	5 (no change)	3 (no change)	0 (no change)

Thus it is assumed here that all three policy options are less effective in reducing delays than originally calculated, thus lowering the potential benefits they can offer. The results are summarised below in Table 34.

Table 34: Results of sensitivity test 1 - Alternative baseline scenario), €m present value

Net benefits (in million €, constant prices 2015)	PO1	PO2	PO3
Core TEN-T network projects			
Benefits			
User costs savings	1,225	4,224	5,817
External costs savings	182	603	829
Air pollution	2	5	7
Noise	7	22	31
Congestion	57	168	230
Accidents	70	248	340
Climate change	46	160	221
Total benefits	1,407	4,827	6,646
Reduction in administrative costs	9	137	85
Net benefits (present value)	1,416	4,964	6,731
Core network corridors projects			
Benefits			
User costs savings	919	3,168	4,363
External costs savings	136	452	622
Air pollution	1	3	5
Noise	5	17	23
Congestion	43	126	172
Accidents	53	186	255
Climate change	34	120	166
Total benefits	1,055	3,620	4,984
Reduction in administrative costs	7	103	64
Net benefits (present value)	1,062	3,723	5,048
CEF projects			
Benefits			
User costs savings	680	2,344	3,228
External costs savings	101	335	460
Air pollution	1	3	4
Noise	4	12	17
Congestion	32	93	128
Accidents	39	137	189
Climate change	25	89	123
Total benefits	781	2,679	3,688
Reduction in administrative costs	5	77	48
Net benefits (present value)	786	2,756	3,736

This table includes the administrative cost estimates from the “Pessimistic-i” scenario calculated in the next section, in which the same assumption of lower effectiveness is applied.

Sensitivity Analysis – administrative costs

In order to see how the results calculated for administrative costs vary if the assumptions are changed, six additional sets of calculations for the administrative burden have been made. Two additional variables have been introduced, concerning the effectiveness of the policy options and the length of planning delays. The six sets of assumptions, based on these two variables are set out below.

Table 35: Assumptions for sensitivity analysis

	Pessimistic effectiveness	Central case	Optimistic Effectiveness
Normal planning delay expectation: 50% on time	Pessimistic-i	Central -i	Optimistic-i
Lower planning delay expectation: 60% on time	Pessimistic -ii	Central -ii	Optimistic-ii

Effectiveness is defined to be the number of projects affected by the policy – a higher proportion implies that the policy is more effective. An optimistic and a pessimistic case have been set out, next to the central case.

In the central case, the rates of effectiveness assumed per policy option were:

- 15% in PO1,
- 60% in PO2,
- 80% in PO3

The values used for the pessimistic and optimistic cases are:

Pessimistic case:

- 10% in PO1,
- 50% in PO2,
- 70% in PO3

Optimistic Case:

- 20% in PO1,
- 70% in PO2,
- 90% in PO3

Length of planning delays are defined to be the length of delays in planning projects over and above the time originally scheduled. This includes an assumption for the proportion of projects which are realised according to the original schedule.

The original assumption (assumption “i”) used was that 50% of investments are on schedule, 25% are delayed by one year, 15% by two years and 10% by three years. See section 5.2.1, “Analysis of project delay risks”.

A second modelling assumption has been applied here in which a greater number of projects are expected to be on time, therefore representing a situation where the potential gains to be realised from reducing delays are lower. In this assumption

(assumption "ii"), 60% of investments are on schedule, 20% delayed by one year, 10% by two years and 10% by three years.

These assumptions related to the length of planning delays, were fed into the administrative costs calculation as:

- Lower shifts in cost savings for project promoters.
- Lower shifts in cost increases for planning authorities.

In other words both positive and negative shifts are lowered in absolute terms.

The results for all six combinations of the three sets of effectiveness assumptions and the two sets of delay assumptions are set out below:

Table 36: Pessimistic-i

	Baseline (€ million)	Policy options	Difference in costs relative to the baseline (€ million)	% change in costs relative to the baseline
Promoter	1,436	PO1	-18	-1%
		PO2	-150	-10%
		PO3	-105	-7%
Authority	283	PO1	9	3%
		PO2	13	4%
		PO3	20	7%
Total	1,718	PO1	-9	-1%
		PO2	-137	-8%
		PO3	-85	-5%

Table 37: Central-i

	Baseline (€ million)	Policy options	Difference in costs relative to the baseline (€ million)	% change in costs relative to the baseline
Promoter	1,436	PO1	-27	-2%
		PO2	-166	-12%
		PO3	-120	-8%
Authority	283	PO1	9	3%
		PO2	13	4%
		PO3	20	7%
Total	1,718	PO1	-18	-1%
		PO2	-153	-9%
		PO3	-100	-6%

Table 38: Optimistic-i

	Baseline (€ million)	Policy options	Difference in costs relative to the baseline (€ million)	% change in costs relative to the baseline
Promoter	1,436	PO1	-36	-2%
		PO2	-191	-13%
		PO3	-135	-9%
Authority	283	PO1	9	3%
		PO2	13	4%
		PO3	20	7%

Total	1,718	PO1	-27	-2%
		PO2	-178	-10%
		PO3	-115	-7%

Table 39: Pessimistic -ii

	Baseline (€ million)	Policy options	Difference in costs relative to the baseline (€ million)	% change in costs relative to the baseline
Promoter	1,436	PO1	-13	-1%
		PO2	-112	-8%
		PO3	-79	-6%
Authority	283	PO1	8	3%
		PO2	12	4%
		PO3	18	6%
Total	1,718	PO1	-5	0%
		PO2	-101	-6%
		PO3	-61	-4%

Table 40: Central-ii

	Baseline (€ million)	Policy options	Difference in costs relative to the baseline (€ million)	% change in costs relative to the baseline
Promoter	1,436	PO1	-20	-1%
		PO2	-125	-9%
		PO3	-91	-6%
Authority	283	PO1	8	3%
		PO2	12	4%
		PO3	18	6%
Total	1,718	PO1	-12	-1%
		PO2	-113	-7%
		PO3	-72	-4%

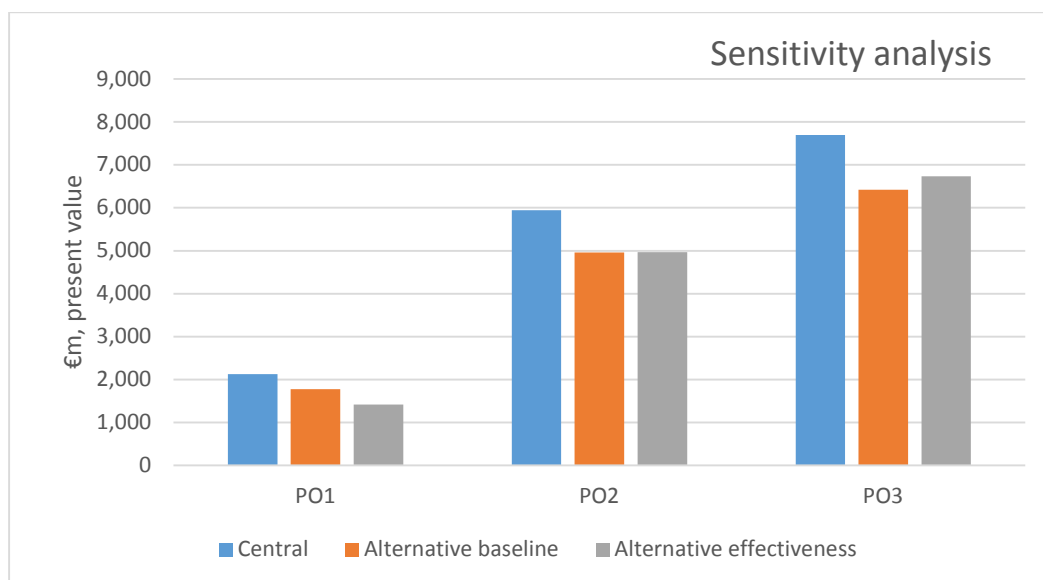
Table 41: Optimistic-ii

	Baseline (€ million)	Policy options	Difference in costs relative to the baseline (€ million)	% change in costs relative to the baseline
Promoter	1,436	PO1	-27	-2%
		PO2	-143	-10%
		PO3	-102	-7%
Authority	283	PO1	8	3%
		PO2	12	4%
		PO3	18	6%
Total	1,718	PO1	-19	-1%
		PO2	-131	-8%
		PO3	-84	-5%

Summary of Sensitivity Analyses

These sensitivity tests show decreases in the overall net benefits arising from the options. However the ordering of the three policy options remains the same, with PO3 always higher than PO2, and PO2 always higher than PO1.

Figure 28: Sensitivity analysis, Core Network, net benefits per policy option, €m present value



The same results are shown in more detail below, also comparing the impacts between the three different scopes: core network, the corridors, and the CEF projects.

Table 42: Central estimate (Central-i), €m present value

Net benefits (in million €, constant prices 2015)	PO1	PO2	PO3
Core TEN-T network projects			
Net benefits (present value)	2,129	5,946	7,695
Core network corridors projects			
Net benefits (present value)	1,597	4,460	5,771
CEF projects			
Net benefits (present value)	1,182	3,301	4,271

Table 43: Alternative baseline scenario (Central-ii), €m present value

Net benefits (in million €, constant prices 2015)	PO1	PO2	PO3
Core TEN-T network projects			
Net benefits (present value)	1,773	4,956	6,423
Core network corridors projects			
Net benefits (present value)	1,330	3,717	4,817
CEF projects			
Net benefits (present value)	984	2,751	3,565

Table 44: Alternative effectiveness scenario (Pessimistic-i), €m present value

Net benefits (in million €, constant prices 2015)	PO1	PO2	PO3
Core TEN-T network projects			
Net benefits (present value)	1,416	4,964	6,731

<i>Core network corridors projects</i>			
Net benefits (present value)	1,062	3,723	5,048
<i>CEF projects</i>			
Net benefits (present value)	786	2,756	3,736

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