EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR MOBILITY AND TRANSPORT

Directorate B - European mobility network
B.1 - Trans European networks

The cost of non-implementing the TEN-T

In the framework of the work on the implementation of the trans-European network for transport, a study has been undertaken on the impact on growth and jobs that could be realised through the realisation of the TEN-T Core Network. . The study has been based in particular upon a detailed analysis of the nine Core Network Corridors which led to the identification of projects along these corridor and which back the first work plans of the European Coordinators for the TEN-T, finalized in June 2015. The economical appraisal model applied translates into a result of 10 M man years of work and 1.8 % of GDP growth.
The present notes describes the framework within which this study has been realised and the results that have been obtained.

The TEN-T Framework

For one and a half year now, the European Union disposes of a genuinely new transport infrastructure policy (TEN-T policy). Whereas, previously, this policy had mainly dealt with stimulating the implementation of individual projects spread all across the European Union, its key new feature is the strong Europe-wide network approach. The Union has given itself the blueprint for a new transport infrastructure network which incorporates all transport modes – railway lines, inland waterways, ports, airports and other transport terminals as well as equipment for innovative and intelligent transport solutions. It places strong emphasis on Europe's major global gateways for maritime and air transport – to ensure that Europe's trade flows are not impeded by constraints (be it in terms of capacity, technology or administrative procedures). Europe's major urban nodes – where economic, scientific and cultural life is concentrating – form an integral part of this network in order to make sure these key generators of growth and jobs are smoothly accessible and do not slow down commercial transport flows through congestion, other inefficiency or safety problems.

This new approach sets, for the first time in the Union's transport infrastructure policy, a sound and single framework for the identification of projects throughout the different geographical areas and transport sectors, including innovative technologies. And – more importantly – it enables the development of a mobility system for Europe which enhances accessibility for all citizens and commercial operators and prepares the ground for the mobility needs of the future which combine the objectives of sustainability, efficiency, quality and a growing economy with each other.

This network shall be completed by 2030, and the first 18 months of implementing the new policy approach shows a unique degree of "ownership" and commitment by all those directly concerned: Member States, regions, transport infrastructure managers, operators, other stakeholders and – not least – private investors. The investment estimated to reach this objective is around 700 billion Euro,

and the number of projects that have been identified so far exceeds 2500. This estimate will be further consolidated in the months and years to come, notably through the work of the 11 European Coordinators who are in charge of the so-called core network corridors as well as of some priorities that call on innovation and efficiency.

The network, with its really European approach to project identification backed by a powerful policy basis, contributes greatly to the European Investment Plan. It leads to a unique pipeline of projects which may benefit from the EFSI and help mobilising a significant part of the 315 billion Euro investment.

In order to demonstrate to potential investors – both public and private – the economic benefits which the completion of such a unique European mobility network will bring, DG MOVE has undertaken the study "the cost of non-completion of the TEN-T". This study shows that the steady implementation of this network until 2030 will bring 10 million man-years of jobs in total over the forthcoming 15-years period, and it will add 1,8 % to Europe's GDP until 2030.

Job-creating effects

These job-creating effects include:

- direct effects, i.e. effects which are directly related to the construction of the projects (thus identified – in a unique way – from the perspective of a single European policy);

- indirect effects which are also incurring during the construction period and concern other sectors, such as services in relation to construction;

- secondary effects which result from a changed structure in trade and factor productivity.

Direct effects during construction represent a high share during the period until 2030, with a peak around the middle of the 15-year period at stake. They not only concern traditional construction works but also other sectors such as the electronic/ equipment industry. Indirect effects concern sectors such as construction and electronic material provision, hotel and food industry etc.

The significant reduction of travel times and transport costs as well as the improved accessibility of all regions and economic centres, which will result from the completed trans-European transport network, leads to significant positive employment changes far beyond construction. They will benefit a wide range of other market services such as planning, transport industry, trade, communication, banking or tourism. These are the sectors that will see the most important job creation.

Since the completion of the trans-European transport network aims at creating an important permanent asset for Europe, the share of these secondary effects will not only increase over time until 2030 (compared to the share of direct and indirect construction effects); it is expected to continue growing beyond this target year. Furthermore, once the current objective of the TEN-T completion – 2030 – is achieved, the network will need to be maintained and further developed in order to keep abreast with future innovative developments of the transport system and with societal changes. This is expected to lead to the further generation of new / innovative jobs in the infrastructure development sector in the long run.

GDP effects

In particular the “secondary” employment effects will have an impact on citizens’ consumption and spending patterns. This has been calculated by the authors of the study as translating into a cumulative GDP surplus of 1,8 % until 2030. It can be assumed that positive spatial effects, as well as this GDP impact remain at least unchanged after 2030 since productivity enhancements and structural changes (e.g. in the field of trade or new company creations) will continue to stimulate job creation. There are reasons to expect that the positive effects may even be accelerated after 2030.

The full study is available here:
http://ec.europa.eu/transport/themes/infrastructure/studies/doc/2015-06-fraunhofer-cost-of-non-completion-of-the-ten-t.pdf

ANNEX
Methodological details

Dr. Wolfgang Schade
Head of Research, CEO

The cost of non-completion of TEN-T – brief technical summary

The approach applied was to assess what wider economic effects would occur when Europe failed to complete the core TEN-T network by 2030 as required by the TEN-T guidelines. The main input for the study comes from the 9 workplans (=project lists) of the core network corridors (CNC). The EC had undertaken these studies during 2014 and they produced altogether a project list of 2,700 projects to implement the CNC.

The main tool applied by the study is the integrated assessment model ASTRA that integrates transport models and a fully flegded macro-economic model for each of the EU27 Member States (Croatia is not implemented and modelled, yet).

The project lists provide investments of the 2700 projects with the details on the investment amount in €, the timing and the type of investment e.g. network, tunnel, bridge, station, innovative technologies, etc. These investments have been spread over time and split onto the economic sectors modelled in ASTRA e.g. construction, electronics, metal products and were thus prepared as input to the ASTRA model.

The second major input were estimates of the time savings that could be achieved by the projects. Depending on the project characteristics e.g. high-speed rail, two-lane motorway, ERTMS installation, etc. the time savings were quantified by the study experts. As several CNC cross each other, overlaps of projects between the different CNC have been considered.

The ASTRA model was then used to analyse a number of scenarios and compare these against the European Reference Scenario, which has been defined by various DGs in the past. In line with the EU policy acquis, this Reference Scenario assumes the implementation of core TEN-T network. The scenarios of the study were constructed such that the projects were not further implemented from 2015 until 2030. This means investments were reduced and travel times increased, which in the ASTRA model then also increases transport cost.

The above described scenario inputs trigger the transport and economic models of ASTRA kicking off a cascade of direct, indirect and second round economic effects. The direct effects occur in the transport sector and the sectors providing the investment e.g. construction or electronics. These trigger indirect effects in their supplier industries via the input-output structure applied in the model. Together these change sectoral value-added and employment and the total effects lead to a change of GDP. Form the altered GDP start the second round effects where consumers would dispose of less income and reduce consumption such that sectors providing consumer goods start to lose demand. This process repeats year-by-year in the model and the impacts accumulate over time.

In parallel, trade structures are altered and the improvement of total factor productivity is dampened by the transport changes. These structural changes of trade and productivity overlay with the previous direct, indirect and second round effects and together generate the impacts on GDP and employment, which are estimated at being a loss of -1.8% of GDP in 2030 and about 730,000 jobs not created in that year by not implementing the core TEN-T network.

For the period 2015 until 2030 the loss of GDP amounts to 2,570 billion € for the nine CNC and more than 3,000 billion € for the core TEN-T network. Over 10 million jobs would not be created in the EU28 over this period without the core TEN-T network.

The study has been carried out on the basis of projects with a total investment volume of 457 billion € (compared to the total of around 700 billion € which has been estimated by the European Commission as total need for the completion of the core network by 2030. The 457 billion € investment basis for the study represents those projects which are most mature and for which solid forecasts were available at this stage.

Until 2030 the GDP multiplier is close to 6, which means that per any 1 € invested about 6 € of additional GDP will be created until 2030. The nine CNC reveal a job multiplier of 19,600 additional jobs per billion € of investments. The sensitivity scenarios analysing the specific impact of cross-border projects and innovative technologies reveal that these generate substantially higher multipliers for the EU, about triple than the average of the CNC.

It can reasonably be argued that the structural change will be maintained after 2030 such that the GDP mulitplier will continue to grow. As in particular the spatial and regional economic changes kicked-off by large transport infrastructures unfold over decades there are even reasons to expect that the mulitplier could grow in an accelerated way due to further structural changes occuring after 2030.