FUTRE

FUture prospects on **TR**ansport evolution and innovation challenges for the competitiveness of **E**urope

Project in a nutshell

The **FUTRE** project will highlight which future challenges and demand drivers can have a considerable impact on the global demand patterns in the passenger and freight transport and how this might affect the competitiveness of related industries and service providers. In doing so, it aims at bridging the gap between the manifold studies on the future of the European transport system on the one hand, and the issue of competitiveness on the other hand, which needs to be supported by targeted research strategies.

The objective of **FUTRE** is to investigate the challenges for the European transport sector in the long term and to develop strategic options for European transport research policy. With these objectives, **FUTRE** fits very well within the EU transport policy addressing its goals as well as with the paradigm of competitiveness which is emphasised in the transport white paper as well as in the horizon 2020 program.

The **FUTRE** project contributes to the over-arching EU goal as it **investigates the challenges for the competitiveness of the European transport** sector in the long term and **develops strategic options for European transport research policy**. **FUTRE** is anticipated to produce:

- a clear understanding of the current competitiveness of the European transport sector and a framework to assess competitiveness in future worlds,
- an analysis of opportunities and challenges (upcoming technologies, socio-economic aspects and possible constraints) in the long term and how they could affect competitiveness,
- the development of scenarios and the assessment of policy packages and innovation programmes,
- a definition of strategic options for European transport research policy supporting the European transport sector to cope with challenges in the long term, and
- recommendations for future R&D strategy, that could feed into the set-up of the Horizon 2020 Programme.

Key expected outcome

Potential scenarios of transport innovations and their implementation will be described in a key project deliverable. The dynamics between demand and supply side resulting from the innovations' implementation and the resulting impacts on the competitiveness of the European transport industry will be analysed and presented in this deliverable. Based on these findings, **options for the EU research policy** will be developed and presented. This deliverable will provide general guidelines and strategic options of European transport policy and will elaborate recommendations on the design of future R&D strategy. Finally, an electronic publication summarizing key findings of the project, aiming to inform the general public, will be produced as part of the dissemination activities of the project.

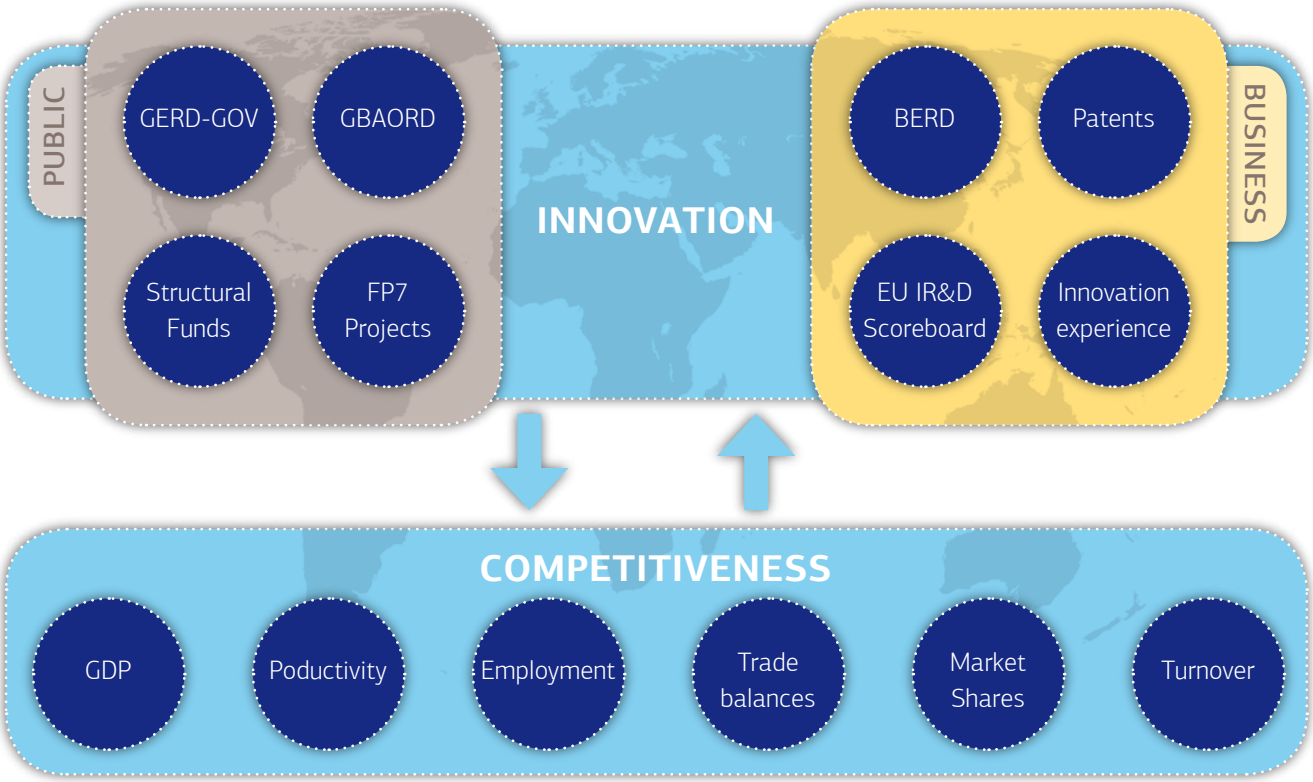
Competitiveness and innovation

The European transport sector faces several challenges for which innovation may play an important role. The current economic downturn imposes a reduction of transport demand, increasing the costs incurred by companies. Innovations that improve the cost efficiency and productivity of the transport sector may reduce the impact of the current economic situation. In terms of environmental challenges, national and international regulations such as the reduction of the transport sector's emissions have created potential markets to green innovations such as electric vehicles. On the other hand the increasing number of population living in urban areas constitutes a challenge for transportation system organization and mobility management innovations.

Companies and governments are fully aware of the benefits that innovation expenditures may have on their economic development and many efforts are made to increase their innovation capacities. There are several indicators that can be used to illustrate the innovation effort made within the transport sector both by the public and business sector. From the public viewpoint, statistics on *Gross Domestic Expenditure performed by the Government sector* (GERD-GOV) show the R&D expenditure by the Government sector for a given year. Another type of indicator is the *Government budget appropriations or outlays for R&D* (GBAORD) which reflects the government intentions to commit money to R&D. At the EU level, statistics on *Structural Funds* and *FP7 projects* are also useful to characterise the innovation efforts in the transport sector.

For the business sector, there are several indicators showing the importance devoted to innovation in transport-related companies. The *Business Expenditure on R&D* (BERD) measures the national R&D expenditure performed by the business sector, while *the EU Industrial R&D Scoreboard*, contains the R&D expenditure of the most important companies. The Community Innovation Survey offers data on the *Innovation Expenditures*, which can be further disaggregated into intramural and extramural R&D, acquisition of innovative machinery, equipment and software and other external knowledge. Finally patents are another important indicator to illustrate the innovativeness of the transport sector.

It is often taken for granted that there is a close correlation between innovation and competitiveness. We will explore this relationship first looking at some indicators of competitiveness such as GDP, employment, productivity, market shares, trade balances and turnover. In a further step we will relate the competitiveness and the previous innovation measures in order to conclude about the degree of relation between both concepts.



First project workshop

FUTRE Workshop "Transport Needs – 2050"

Twelve (12) experts on transport gathered in 17-18 March in Arrábida (Portugal) to discuss the future of transport and unveil a set of scenarios for the development of the sector over the next decades. The workshop, promoted by the **FUTRE** project, aimed to foster a structured reflection on future travel demand needs to assess the effect of future challenges, demand drivers and upcoming innovations on the competitiveness of the European Transport industry.

The experts started the discussion by focusing their analysis on Mega-Trends and how these may affect the transport sector. Insights obtained from the analysis of 14 Mega-Trends were then organized according to their context into social, technological, economical, environmental or political aspects (the so-called STEEP analysis). At the end of this section the participants voted on the most important insights.

Based on the results of the vote the insights were organized in four coherent groups, which were the basis for the construction of scenarios. Experts were asked to look at a group of selected insights to build a scenario. This has resulted in the construction of four different visions for the future:

Forced Sustainability

In this vision scarcity of water and energy lead the world towards a "back-to-basics" scenario; as scarcity increases prices, nations adopt protectionist policies and focus on energy efficiency, trying to re-achieve self-sufficiency. In this scenario globalization trends are reversed, which affect transport demand since international freight and migrations are strongly reduced.

Global Shock

In this scenario a set of catastrophes or serious world events that trigger a change on moral values towards sustainability and a political shift from local perspectives towards global perspectives. While in this scenario there is also a reduction on international transport, a strong reduction in demand for private transport is also considered, as a new set of values gives way to a culture based on shared vehicles and infrastructure, which makes the private car almost socially unacceptable.

Resiliency

The world maintains its accelerated growth trends, with population reaching 9 billion, 85% of which live in cities. Together with climate change effects and scarcity of resources, this leads to more cascading failures. The economy converges at global level, fuelled by migrations and globalization, but inequality increases within countries. Scarcity of resources will lead to a focus on efficiency and recycling. Governments will have an important role and cooperate more. Carbon will become a global commodity and supply chains will be more reliable..

The Urbanized Connectivity

Modern cities emerge as highly innovative and integrated communities, where people focus their consumption on use rather than possession. For the transport sector major innovation will emerge, with autonomous drivers becoming common place and rail emerging as the best alternative to move between major urban centers.

At the end of the day the group managed to create these different visions, that will now form the basis of the FUTRE analysis of future pathways for development of transport demand.

Next Steps

In the upcoming period the **FUTRE** Project will use the initial theoretical results as well as the conclusions drawn from the first workshop to zoom into the factors influencing the future evolution of demand needs and behavior. A future analysis of demand behavior for mobility services and products will be performed, aiming at providing a clear set of possible different pathways for types of mobility services and products demanded in the passenger and freight markets.

In parallel to demand behavior analysis the **FUTRE** Project will also focus on the supply side of transport, identifying anticipated technical and organizational innovations and their potential impacts on competitiveness of the European transport sector, together with their possible constraints and barriers for implementation.

The overall objective of this exercise is to frame qualitative-narrative scenarios for Europe and in less detail for the rest of the world.

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