

**DLR Position on
the European Commission's Communication on
„A Sustainable Future for Transport”
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DLR at a glance

DLR is Germany's national research centre for aeronautics and space. Its extensive research and development work in Aeronautics, Space, Transport and Energy is integrated into national and international cooperative ventures. As Germany's space agency, DLR has been given responsibility for the forward planning and the implementation of the German space program by the German federal government as well as for the international representation of German interests. Furthermore, Germany's largest project-management agency is also part of DLR.

Approximately 6,200 people are employed at thirteen locations in Germany: Köln (headquarters), Berlin, Bonn, Braunschweig, Bremen, Göttingen, Hamburg, Lampoldshausen, Neustrelitz, Oberpfaffenhofen, Stuttgart, Trauen and Weilheim. DLR also operates offices in Brussels, Paris, and Washington D.C.

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Introduction

DLR welcomes the European Commission's communication on a sustainable future for transport and appreciates the opportunity to participate in the debate.

The Communication outlines the European Commission's political goals for a future sustainable transport system on the basis of trends and challenges, objectives and possible instruments to implement them.

The TRANSvisions report as underlying scientific base of the Communication gives a comprehensive insight in transport scenarios of the future and opens the floor for further in-depth discussions.

Relying on its vision and mission, DLR would like to contribute to the following issues:

- Towards a Sustainable Transport System,
- The Multi-modal Transport System,
- Modal Transport Networks,
- Transport Vehicles,
- Transport Users,
- Pricing and Funding,
- Research, Technology and Innovation.

Towards a Sustainable Transport System

DLR shares the European Commission's goal to establish a sustainable transport system that meets society's economic, social and environmental needs and is conducive to an inclusive society and a fully integrated and competitive Europe. We feel it is as essential as necessary step to have broadened the scope of sustainability of transport from the environmental aspect to the dimensions of economy, society, and environment.

This goal will be fairly hard to achieve and will cost a lot of efforts. All the more as the trends and challenges (e.g. ageing, urbanisation, globalisation) as identified in the Communication are not that easy to handle. Moreover, for the first time in history transport faces two challenges, which in principle have the potential to lead to a permanent and ubiquitous limitation of transport: climate change and scarcity of fossil energy resources.

All in all, research and development will have to come up with novel and innovative solutions in order to tackle the goal of sustainability. As transport is a complex system, it will not suffice to overlook parts of the system, but it will be mandatory to consider and research all levels of transport:

- the multi-modal transport system, its interactions and impacts (system level),
- the modal transport networks, their infrastructures and inter-modal interfaces (traffic management level),
- the vehicles and their interfaces to the transport networks (vehicle level), and
- the transport users, their needs and behaviour (user level).

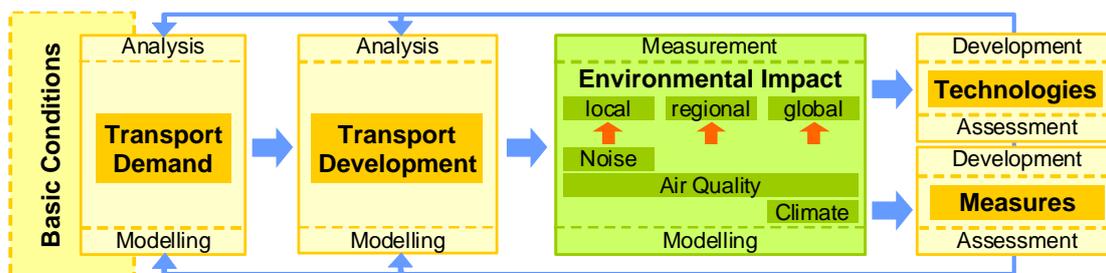
To succeed in the end, DLR is convinced that it will be necessary to join research forces, to share research infrastructures, to exploit synergies from different scientific disciplines and to foster an even closer cooperation between research, development and industry. In addition, we feel that the high-level education and promotion of young talents in transport-related research and development is an important issue.

DLR is ready for taking up the challenges and therefore will be glad to continuously accompany the European Commission on their track to a long-term strategy for a sustainable transport system. Together with our European partners we will develop further scientific and technical excellence, in order to advance and to enrich all levels of transport.

The Multi-modal Transport System

To respond to society's needs the multi-modal transport system as a whole as well as between and within its parts is required to be: safe, secure, environmentally friendly, fast, reliable, accessible, comfortable and cost-efficient. To find the right balance in case of conflicting requirements will be one the grand challenges. The policy-oriented conclusions in the Communication seem to fit well to this demand.

Nevertheless, to improve the transport system itself, in our opinion research will first have to fill the existing gap of understanding the complete process chain from transport demand and traffic flow to the effects of transport and to make it predictable for people and goods in all transport modes (see picture of principle). This will need cutting-edge analytics including advanced modelling tools.



To develop a sound knowledge base and reliable cause-effect-relationships for the interaction of transport with the environmental impact (e.g. climate, noise), the introduction of novel technologies (e.g. alternative drives, light-weight design) and regulatory or fiscal measures (e.g. road pricing, cash-for-clunkers) is deemed to be essential for further discussions on balance and sustainability.

This is also true when talking about the double decoupling of transport growth: first the decoupling from economic growth, which aims to overcome limits for economic growth caused by limits of the transport system (e.g. congestion, capacity); second the decoupling from environmental impact, which aims to overcome limits for transport growth caused by limiting the environmental impact (e.g. climate, noise).

DLR fully agrees that the double decoupling is a necessary goal for the future. To reach this goal it is imperative from our point of view that transport policies are carefully assessed and take into account all relevant interactions and boundary conditions already prior to their implementation. This will be basic to finding a fair balance and being in line with the goal of sustainability.

DLR shares the view of the European Commission's communication that urbanisation will become increasingly important. Urbanisation, however, can only be sustainable, if research on land use and transport, and transport planning go hand in hand. New concepts like the carbon neutral city or the renaissance of the compact city require totally new approaches in transport. On the other side, urbanisation may lead to depopulation in rural areas. To find solutions for public transport that help maintain the attractiveness and liveability of rural areas therefore is another important challenge in transport policy.

Information and communication technologies (ICT) will be highly relevant for improving inter- and co-modality. While building important interfaces between the different modes of transport, they will reduce barriers for mode changes and simplify access through better and faster information. At the same time, ICT will support the effectiveness of transport modes and their interconnectivity. This is especially true for traffic nodes like airports or railway stations where ICT provide the informational and organisational link between air, road, and rail; the same is true for ports and their link between sea, road, and rail. By the broad implementation of ICT, European transport networks will be subject to an optimisation within and beyond the borders of countries, transport modes and systems. As an important although very sensitive side-effect the interrelation of ICT, and safety and security should be kept in mind.

The mitigation of, but also the adaptation to climate change will be vital for the transport system. Having transport safety and security in mind as well as critical infrastructures, measures will have to be researched and developed that prepare the transport system to deal with the effects of increasing periods of heavy rain, storms and heat.

Modal Transport Networks

DLR agrees with the Communication's statement that optimal use of existing facilities can already achieve a lot with limited resources. Consequently, traffic management issues dealing with the increase of effectiveness and efficiency, or the harmonisation of procedures and standards are of utmost importance.

A convincing example for air transport is the de-fragmentation of European airspace leading to a Single European Sky. For rail transport it is the European Train Control System that aims for inter-operability throughout Europe. Nonetheless, this effort needs further attention as it is of highest relevance for cross border transport.

These actions can hardly mask that the intra-modal reserves haven't been exploited yet. Full integration and inter-operability of all the individual parts of a network are crucial for its optimal functioning. Service quality indicators could help to encourage the introduction of new concepts.

Information and communication technologies will further contribute to a better data exchange between infrastructure and vehicles using the network. Moreover, they will allow special safety features in order to avoid accidents.

However, if new infrastructure is to be built, transport planning jointly with research on land use and transport will have to propose the best solution considering the goal of sustainability.

DLR is in line with the Communication that transport security for all transport modes and for critical infrastructures is a necessity. But legislative measures can only mark the first step. In our opinion, further efforts are needed to implement security concepts for all modes of transport.

Transport Vehicles

Transport vehicles are in the focus of every current discussion on how to comply with the goal of sustainability. No wonder, as vehicles by far are responsible for most of the energy

consumption and the environmental impact in the transport sector. Research in how to reduce weight without losing stability, comfort, and safety features, how to introduce alternative drives and fuels aims to decrease pollution. Further measures will have to counteract transport noise. Although of high importance to the overall goal the vehicle-oriented aspects seem to be of minor relevance in the Communication.

Information and communication technologies will have an increasing role as they will not only be the interface to the infrastructures, but also the basis for most of the assistance systems in vehicles (e.g. navigational systems, collision avoidance systems). Moreover, the reduction of accidents and fatalities as well as “sustainable driving” of vehicles is strongly connected to future assistance systems.

Transport Users

The ageing society will massively influence the transport system as demand will alter quantitatively and qualitatively. Vehicles, modal transport networks and traffic nodes will have to cope more and more with the needs of elderly people. This highly affects also the area of passenger information. To deal with two completely different user groups, the majority of elderly people with less interest in the most-modern technologies and the minority of young people with just the opposite interests, will be extremely challenging for every research work in this field.

How to influence user demand and user behaviour? The answer to this question probably represents one of the keys to success for the goal of sustainability. It is closely linked to the multi-modal transport system issues as described above.

Pricing and Funding

Obviously, pricing is a major point for choosing a transport mode. Consequently, the European Commission favours pricing as their main control option. From DLR's point of view this approach seems too limited and has to be widened.

As mentioned earlier, at the present time the impact of regulatory or fiscal measures on the whole transport system can only rudimentarily be assessed. The identified gaps will probably be filled step by step in the future. The knowledge gained thereby needs to be shared and agreed upon on the national or European level or even worldwide, depending on the mode of transport.

For some modes of transport a European system might be established as a pilot for the rest of the world. But global transport networks like air transport and shipping will need a global solution to ensure appropriate handling and also a level playing field for international transport means. DLR encourages an international approach to discuss and probably set up worldwide systems for setting prices, especially according to the environmental impact.

But pricing will not be sufficient to decouple growth of transport from the environmental impact. Additional efforts are necessary to develop new technologies for transport to reduce the environmental impact. Therefore, DLR proposes that a significant share of the income generated by such pricing systems should be invested in the necessary research work.

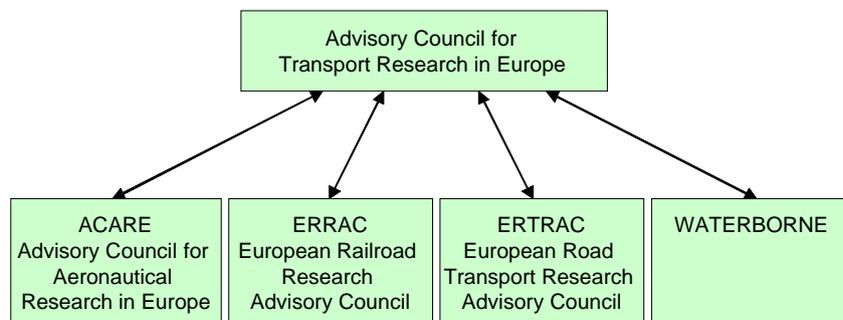
Research, Technology and Innovation

Policy initiatives are a pre-requisite for shaping a sustainable future for transport. But these initiatives need an in-depth understanding of the complex interactions between political, economic, social, environmental, and technical aspects of the transport system. To overcome the several hurdles towards a sustainable future for transport, research and development will be the main drivers for solutions on the system, management, vehicle, and user levels of transport.

Therefore, DLR would have welcomed a more visible role of research and development in the European Commission's communication. Without research and development Europe will not be able to achieve its goal to be at the forefront of transport services and technologies. But most probably these aspects and the correlation of ambitions and research funding will be part of the next steps towards the White Paper.

Long product and system cycles (in particular in ship, rail and air transport) need strategic approaches, as decisions taken today will have their impact particularly in the long run. To ensure this kind of approach, a continuous debate between all stakeholders is required, as already realised in some transport related European Technology Platforms (e.g. ERTRAC, ERRAC, ACARE), where member states, industry, operators, universities and research organisations are working together to define jointly the strategy for transport research in Europe.

Why not using ERTRAC, ERRAC and ACARE as example for all transport modes and also for the whole transport system by improving the system of European Technology Platforms and adapting the other modes and the whole system to the same principle? An Advisory Council for Transport Research in Europe could take the mode-specific inputs as a basis for an overall, multi-modal approach with respect to technology but also to institutional enablers (see picture of principle):



Beside this strategy-oriented approach, DLR is convinced that the European research and innovation system could be further improved in order to better support the goal of sustainable transport and at the same time to serve the spirit of the European identification and integration process.

We think that the system needs to cover the whole innovation chain from gaining knowledge, developing technologies, demonstrating technologies, to system demonstration and implementation. This requires different types of cooperation of all research stakeholders from universities and research organisations up to industry, including operators and regulators.

While the creation of knowledge is performed by universities and research organisations, supported by the industry, technology development is done by direct cooperation between

universities and research organisations and industry, whereas product development is conducted by the industry, supported by universities and research organisations.

Although research, technology and innovation play a very important role in DLR's strategy and should do so in European transport, we hesitate to support a solely technology-led approach, as used in the Communication's title. As described in the beginning of this chapter, from DLR's point of view a holistic approach is deemed to be the adequate way. Competing technologies ask for technology assessment and subsequent ranking which we feel to be a prominent policy task.