GREEN PAPER

TEN-T: A policy review

TOWARDS A BETTER INTEGRATED TRANSEUROPEAN TRANSPORT NETWORK AT THE SERVICE OF THE COMMON TRANSPORT POLICY

Contents

1. Introduction

Trans-European transport network (TEN-T) policy aims at providing the infrastructure necessary for the internal market and the achievement of the Lisbon agenda objectives on growth and jobs, as well as helping ensure accessibility and boost economic and social cohesion. It supports every EU citizen's right to move freely within the territory of the Member States. Furthermore, it integrates environmental protection requirements with a view to promoting sustainable development.

The € 400 billion invested so far in a network which was established by the European Parliament and the Council in 1996 and last amended in 2004[1], has contributed to completing a large number of projects of common interest, interconnecting national networks and overcoming technological barriers across national borders. There is however still a long way to go to implement the initial plans fully – because of both the intrinsic long-term character of the projects involved and considerable delays in the realisation of many projects.

Almost one third of the amount invested so far has come from Community sources[2]. The European citizen may not however always find it easy to see the results of the overall TEN-T policy action and the European added value generated by the contributions from the Community. The objectives have been rather broad, which made it impossible to meet them fully within the limits of the available instruments. And in certain respects, they may also have lacked specificity, which made it difficult to focus action and generate effective impacts and visible results. The Commission therefore believes that it is not only time to ask why the objectives have only been partially achieved but also if these

---

[1] Decision N° 1692/96/EC of the European Parliament and of the Council on Community Guidelines for the Development of the Trans-European Transport Network, last amended by Decision N° 884/2004/EC of 29 April 2004

[2] Grants from the TEN-T budget, the Cohesion Fund and the European Regional Development Fund as well as loans from the European Investment Bank

objectives are still sufficient to give forward looking answers to future problems, and to ask what means are needed to achieve fully tomorrow's TEN-T policy objectives.

While transport policy aims at promoting economically and environmentally efficient, safe and secure transport services within the internal market and beyond, TEN-T policy needs to ensure their full functioning, based on an integrated and innovative infrastructure that keeps pace with technological developments in the energy, infrastructure and vehicle[3] sectors. It should reflect, more than it has so far, established European objectives – not only in the transport sector but also in the wider political, socio-economic and institutional context.

Besides strengthening TEN-T's role within the framework of the Lisbon Agenda, Europe's growing global role requires due attention in the development of the future TEN-T policy. Europe's economic growth and the creation of jobs also depend on its international competitiveness, which needs to be supported by good transport connections with other parts of the world. Good connections to all of Europe's immediate neighbours, including Africa, are furthermore vital from an economic, political and security point of view.

Over and above everything else, the fight against climate change requires Europe-wide measures to strengthen Europe's global leading role. Transport and transport infrastructure are areas which offer considerable potential for positive contributions. Climate change objectives should be placed at the centre of future TEN-T policy and be reflected in a truly European approach. Through a process that integrates economic and environmental objectives, is clearly oriented towards the needs of efficient freight and passenger services on a co-modal basis and involves innovation, future TEN-T policy should become a sound basis for an effective contribution to the Community's climate change objectives.

All this justifies undertaking a fundamental review of TEN-T policy rather than just reviewing and possibly updating outline plans and priority projects. While building on the experience gained and the results achieved so far, the policy approach needs to be subject to a broad review first. Given the scope of the task – in political, socio-economic, institutional, geographical and technical terms - the Commission seeks to involve stakeholders on the broadest possible basis, so as to ensure that available expert knowledge, experience and views are duly taken into account. This is why the Commission has begun the TEN-T review process with a Green Paper, summarising its current reflections and inviting contributions, before coming up with possible legislative and other proposals.

2. The foundations on which the future TEN-T policy rests

- *The EC Treaty*

[3] The term "vehilce" as used throughout this paper refers to transportation means of all modes

Articles 154 – 156 of the EC Treaty, define the Trans-European Networks policy and its contribution to achieving the objectives of the internal market, social and economic cohesion for the benefit of all its citizens, economic operators and regional and local communities, inter alia by targeting Community action to promote interconnection and interoperability of national networks, as well as access to such networks. Furthermore, sustainable development must be integrated into the policy. The TEN-T guidelines were subsequently developed to help realise the Treaty provisions which stipulated that they identify projects of common interest and that the Community may support projects of common interest supported by Member States. To further facilitate implementation, the Commission may also take initiatives to promote coordination amongst Member States.

- *Specifics*

The TEN-T Guidelines envisage the establishment of a single, multimodal network as the ultimate policy objective, covering both traditional ground based structures and equipment (including intelligent transport systems) to enable safe and efficient traffic. Increasingly it also involves the deployment of innovative systems that not only promise benefits for transport but also have substantial potential for industrial innovation.

The projects of common interest on the TEN-T differ considerably from each other in many respects: planning processes, geographical extension and cost, implementation periods and life span as well as investment, implementing and operating structures. TEN-T policy has to cater for a broad range of approaches whereby Member States, playing a leading role in traditional infrastructure provision, work alongside the private sector. The nature of the network itself therefore places particular responsibility on all of the actors involved to share objectives and contribute their respective part to their achievement.

- *Past achievements*

Positive changes resulting from the implementation of TEN-T policy are already visible. National rail and road networks have become interconnected at many points and railway operations across borders are beginning to become interoperable. Community support has provided concentrated funding for major high-speed rail projects, opening up a new generation of passenger traffic which competes successfully with air and private cars. Finance has been channelled, under the Cohesion Fund, towards important projects that connect States and regions with differing development levels and contribute to reducing disparities. And it has provided an important catalytic effect enabling some of the most challenging and complex projects (geologically, technically, financially, legally/administratively) to be taken forward. It has promoted pilot schemes for public-private partnership solutions which allow lessons to be learnt in terms of financing and project management. Not least, it has stimulated Member States, intergovernmental organisations and various public and private bodies to embark on TEN-T projects themselves.

TEN-T policy has also stimulated the development of intelligent transport systems. Apart from Galileo, this sector has – in the fields of road, rail, air and waterborne transport – made significant progress through TEN-T supported projects at Europe-wide or euro-regional many of which would otherwise not have been implemented or launched.

TEN-T policy has begun to provide responses to issues in the field of freight transport, where expected growth (an increase of 34% between 2005 and 2020) underlines the

importance of introducing real co-modal solutions to overcome problems such as congestion, rising carbon dioxide emissions, infrastructure and organisational gaps. The introduction of the motorways of the sea concept - truly multi-modal in nature – may be seen as a first step towards the promotion of green freight transport corridors, which deserve considerably increased importance in further TEN-T development. Finally, it has opened the door to "cleaner" freight transport on a co-modal basis and begun to develop the EU's links to the external world.

- *An assessment of strengths and weaknesses*

Network planning

The TEN-T Guidelines are in the first instance the Community's instrument for policy definition and network planning. The projects of common interest identified in these Guidelines may be defined through their location on outline plans and/or through their characteristics.

The Guidelines, as adopted in 1996 and last modified in 2004 include two planning layers: a comprehensive network layer (outline plans for rail, road, inland waterway, combined transport, airports and ports networks) and 30 priority projects – i.e. selected projects of common interest - as a second layer.

The **comprehensive network** comprises altogether: 95.700 km of road links, 106.000 km of railway links (including 32.000 km high-speed links), 13.000 km of inland waterways, 411 airports and 404 sea ports. The major part of these links and nodes exist already. However, almost 20.000 km of the road links, over 20.000 km of railway links (the overwhelming part of which high-speed lines) and 600 km of inland waterway links remain to be built or substantially upgraded – at an estimated cost of € 500 billion according to recent estimates of Member States[4].

"Planning" this Community network has essentially meant adding up significant parts of national networks for the different modes and connecting them at national borders. While certainly appropriate in the early days of the TEN-T policy, the adequacy of this approach became weaker with each enlargement. There has in fact been no TEN-T network planning driven by genuine European objectives so as to ensure the whole is greater than the sum of its parts. Irrespective of Member States' sovereign responsibility in the field of infrastructure planning and implementation on their territories, the question of how national planning can be combined with a European-level planning that takes account of objectives outside each individual States' perspective becomes more and more relevant as the EU expands and networks become increasingly complex.

The TEN-T **priority projects** essentially represent major rail, road and inland waterway axes that traverse several Member States. Chosen in 2004 in view of their high relevance for trans-national traffic flows, cohesion and sustainable development objectives, they were subjected to a common socio-economic evaluation. However, questions still arise, for example about the methodological backing of their selection, possibilities for their

[4] European Commission, Directorate-General for Energy and Transport, TEN-T – Implementation of the Priority Projects, Progress Report, May 2008

interconnection and extension (both geographically and modally), the approach towards coherent capacity and quality standards, or the means of better stimulating their completion within the foreseen time horizon.

Besides the definition of projects of common interest through their location in outline plans and inclusion in the list of priority projects, the Guidelines set out "characteristics", specifying objectives and criteria backing the identification of projects of common interest. In the field of intelligent transport systems, especially such a **conceptual approach** has constituted the basis for the definition of projects of common interest.

Network implementation

The TEN-T Guidelines are linked with instruments to facilitate the implementation of identified projects of common interest. These are a) various financial instruments based on relevant legislation, including the TENs Financial Regulation[5] and the Cohesion Fund, and loans from the European Investment Bank, b) non-financial instruments such as coordination initiatives taken by the Commission.

So far, the instruments available have been insufficient to deliver full completion of the identified projects of common interest within the time horizon agreed in the Guidelines. This is particularly true for the comprehensive network. Responsibility for completion of the large numbers of projects concerned rests almost fully with Member States, whose investment decisions are essentially driven by national objectives. Community funding under the Cohesion Fund has supported project implementation in eligible Member States, thereby also contributing to the access function (including access to ultra-peripheral regions); TEN-T funding has only been able to address policy objectives partially. Overall, Community resources spent so far have hardly allowed citizens and economic operators to "see the difference" -the European added value - of Community action in relation to the comprehensive TEN-T as a whole. The investment efforts by Member States on their respective territory are mostly seen as national investments rather than as contributions to a Community objective.

The situation has been different with the priority projects, which have been at the centre of Community efforts – both financial and coordination. Although the Community financial resources available remain insufficient to meet fully the needs of these projects, action – directed towards more limited and commonly agreed objectives - has been significantly more effective and visible. The approaching completion of some of these projects provides a concrete illustration of the potential benefits of the TEN-T policy objectives set out in the Treaty. A key TEN-T priority project like the high-speed railway line linking Paris, Brussels, Cologne/Frankfurt, Amsterdam and London has not only interconnected national networks and marked a break-through of a new generation of railway traffic across borders but also helped citizens and business travellers experience the benefits of free movement within Europe. By bringing major European cities closer together, it has had an impact on multi-cultural exchanges, economic relations and urban structures. Rail traffic has become more attractive for travellers, as reflected in increasing market shares along the lines.

---

[5] Regulation (EC) N° 680/2007 of the European Parliament and the Council of 20 June 2007 laying down general rules for the granting of Community financial aid in the field of trans-European transport and energy networks

The Motorways of the Sea priority project (covering infrastructure, facilities, procedures, technologies and services) is intended to foster quality and high capacity integrated multi-modal door-to-door transport services with a maritime leg. It is defined in the TEN-T Guidelines through a conceptual approach setting out objectives and procedures for the identification of projects of common interest. This has helped the Community in developing a practical application of a co-modal transport solution aimed at improving accessibility and reducing emissions from road freight transport. Various Community and national instruments are available, including the TEN-T budget, which mainly addresses super- and infrastructure in ports and hinterland connections. The complexity of procedures for obtaining public financial support and the lack of clear objectives and criteria have however hindered a broad implementation of the concept so far.

As regards intelligent transport systems, TEN-T policy has in particular enabled the preparation of Galileo and the Single European Sky Air Traffic Management Research (SESAR) - major projects of European scope which are expected, once operational, to contribute substantially to the efficient use of transport infrastructure. In road, rail and air transport, as well as in Vessel Traffic Management and River Information Services, ITS projects have been developed in a flexible way, on the basis of characteristics set out in the TEN-T Guidelines. This conceptual approach, leaving room to incorporate technological developments, market needs and cooperation initiatives for partners in different Member States, combined with the 50 % funding possibility for project preparation, has had a significant impact on the development of cross-border projects which might not have existed otherwise. Such a flexible approach to project development, based on pre-established objectives and criteria, should also be suitable for stimulating the implementation of other transport policy objectives – the provision of efficient (both economically and environmentally), safe, secure and high quality transport services.

- *Expected transport demand*

The planning of future transport infrastructure is closely linked to demand forecasts – whether at national or EU level. However, while aiming at providing transport infrastructure that responds fully to future demand, planning authorities face a range of uncertainties about the factors that drive demand, such as -economic and population development, energy price development, transport pricing and taxation, the development of urban and territorial structures, , behavioural changes, technological developments. On the policy side, demand management measures are gaining increasing importance and should also be taken into account in infrastructure planning. These include in particular infrastructure charging and internalisation of external cost as well as the application of intelligent transport systems.

Business-oriented development of transport services in an evolving internal market should also stimulate the efficient use of infrastructure, with a corresponding impact on the development of demand. Building on a co-modal approach that involves effective coordination across national borders as well as ITS applications, such services are growing. EU transport policy focuses on a range of actions in the field, including the Freight Logistics Action Plan, the proposal for a Directive on Rail Freight Corridors and the Single European Sky policy.

Business activities may be able to grow within the existing infrastructure framework in the shorter term. But as they evolve, the appropriate transport policy response will need to evolve too, which could impact on transport infrastructure provision in general, and the "phasing" of infrastructure development. The future TEN-T policy needs to be sufficiently flexible to link transport policy and transport infrastructure development in different time horizons.

Q1 Is the Commission's assessment of the TEN-T development to date appropriate? What further successes and weaknesses should be considered?

3. Issues at stake for the further TEN-T development

Reviewing the TEN-T policy – with the central question of how to shape the future multi-modal network and how to ensure its timely completion – requires a sophisticated combination, at the different levels involved, of planning approaches as well as of implementation capacities and know-how. While duly respecting Member States' sovereign rights for projects concerning their territories, the increasing complexity, innovative character and geographical scope of the tasks at stake also calls for a strong Community role.

Based on the above assessment of the policy, a number of issues for the future are outlined below. This Green Paper is intended to initiate a broad debate on how to develop the best infrastructural concept that can support future transport policy needs; the questions of network planning and its implementation have therefore been separated.

3.1 Network planning

- *The future of the comprehensive network*

The currently existing comprehensive network has been essential for fulfilling the "access function" referred to in the Treaty, and it has proven its worth as basis for support under the Cohesion Fund. Furthermore, it has been important as basis for the implementation of Community legislation in the transport sector – e.g. rail interoperability and road tunnel safety. Its shortcoming, on the other hand, has been the discrepancy between the overall planning ambitions and the means to stimulate and monitor its implementation, and a lack of focus from a European perspective.

Maintaining the comprehensive network layer of the TEN-T would involve reviewing the methodology for its updating and monitoring, and reviewing the instruments for its full and timely implementation, whereby Member States would certainly have to assume more binding responsibility. Abandoning it, on the other hand, would in particular require special attention to be given to ensuring the network access function.

Q2 What further arguments stand for or against retaining the comprehensive network, and how could the respective disadvantages of each approach be overcome?

- *The possible incorporation of a 'priority network'?*

The current priority projects approach reflects major traffic flows between a starting and an end point, without taking account of their continuity, and fails therefore to capture successfully additional 'network benefits'.. To do so, and thereby also enhance the economics of TEN-T projects of high Community interest, the current priority projects approach could evolve towards a priority network approach. Such a network approach would also allow a more systematic incorporation of nodes (which are often the main source of congestion and other inefficiencies), ports and airports as the network's entry points as well as the main inter-modal connection points which underpin a strong network integration. By bringing together, in a single network, infrastructure links and nodes that exist already together with planned infrastructure, the past achievements of the TEN-T policy could also generate additional value.

Any approach towards such a network should, as a starting point, build on a common agreement on clear goals and a transparent and objective planning methodology. These should in particular take account of major traffic flows, both within the Community and with other parts of the world, cohesion objectives through connections between regions with different levels of development, the connection to pools of economic development, the "value of the efforts already spent" on the TEN-T development, environmental objectives, other Community policy objectives (e.g. competition),progressive efforts towards more efficient infrastructure use, the diversity of Member States' situations and the sharing of planning responsibility at Community and national level.

A – geographically defined - priority network should ensure continuity of the current priority projects and build on them where justifiable. Climate change objectives should in the first place guide any approach towards the development of a possible priority network Such a network should therefore be truly multi-modal, enabling major freight and passenger traffic flows to cross the Union in the – economically and environmentally – most efficient way, on a co-modal basis. This calls for the optimal interconnection of modes –for example through hinterland connections of maritime and inland waterway ports or through railway connections to airports – and the inclusion of major projects in intelligent transport systems. While aiming at making a noticeable contribution to the Community's 20/20/20 climate change objectives TEN-T policy should also take account of the need to adapt to possible climate change consequences (such as rising sea levels).

Such a priority network should be distinguished by full interoperability (i.e. implementation of European Rail Traffic Management and all other Technical Specifications in the railway sector; implementation of the Single Sky policy and the ATM Master Plan, interoperability in the other ITS sectors) and, furthermore, aim at agreed capacity standards for all infrastructure elements involved. (Currently, the TEN-T Guidelines only include target standards in the inland waterway sector.) Other Community action that interrelates with infrastructure design – such as the possible introduction of larger and heavier road vehicles or intelligent motorways – should also be taken into account.

A priority network would bring past achievements and current and future challenges of the TEN-T policy closer together Within this framework, the EU could rationalize the identification of projects of common interest and determine more objectively its support

for them through Community instruments, provided projects are evaluated on a harmonized basis. It would not least combine infrastructure measures of different scale – from large long-term projects to projects of smaller scope that can be implemented in the shorter term and thereby enhance the effectiveness and visibility of Community action.

Q3 Could such a priority network approach be more advantageous than the current priority projects approach? If not, why not and what are the particular strengths of the latter? If so, what (further) benefits could it bring, and how should it be developed?

- *A "conceptual pillar"*

The conceptual approach of the TEN-T could be considerably broadened in order to cater for infrastructure needs resulting from business-oriented measures in the different transport service sectors. Sector-related policy objectives and criteria, set out in the TEN-T Guidelines, could guide operators in the development of projects of common interest. Largely aiming at optimising the use of existing infrastructure in capacities at the first stage, such an approach could reflect evolving infrastructure needs, alongside growing demand, in the longer run. It could also introduce, more flexibility into the notion of projects of common interest, allowing a response to market developments that are currently difficult to foresee. It would in particular establish a direct link between the Community's transport policy objectives (such as the promotion of sustainable freight transport through various legislative and policy actions, efficient and sustainable air transport through the Single Sky policy and SESAR) and its infrastructure policy and thereby direct the TEN-T towards its main objective –to serve as the basis for transport services that meet established Community objectives.

Q4 Would such a flexible approach towards the identification of projects of common interest be appropriate for a policy that, traditionally, largely rests on Member States' individual infrastructure investment decisions? What further advantages and disadvantages could it have, and how could it be best reflected in the planning at Community level?

- *Infrastructure issues of particular relevance for the future TEN-T development*

Independently of the future "shape" of the TEN-T, there are a number of specific issues that should be given due attention in the future TEN-T planning. These include, in the Commission's opinion, the following:

Differing needs of passenger and freight traffic

Passenger and freight traffic show different characteristics. Freight traffic is expected to grow faster than passenger traffic, average transport distances for freight are longer than passenger journeys and connecting points between modes and between long-distance and local traffic require different measures. Congestion problems on infrastructure sections may call for a separation of passenger or freight railway lines. In ports and airports, the handling of passengers and freight involves different infrastructure requirements both within the nodes and also in access to these nodes. Freight access by lorry to cities

requires increasing attention in order to take account of environmental or urban planning questions. Whereas each individual case should be evaluated from an economical and environmental point of view, the question may arise if, and to what extent, separate planning approaches for freight and passenger traffic should be addressed within overall TEN-T policy. In both cases, nodes as transfer points between long-distance and urban traffic will require consideration in the future TEN-T policy.

Airports and ports as Europe's connecting points to the world

Airports play a key role for passenger traffic (particularly, in view of Europe's growing global role) and are also gaining in importance for freight transport as an element of co-modality and t he logistic chain. They are expected to face particular capacity constraints in the coming years. Air transport is particularly sensitive to economic, fuel price and security developments and the type and scale of "projects of common interest" within airports may therefore be changing.

Maritime ports, as the origin and destination of the overwhelming part of the Community's international trade flows and a key element of the freight logistics chains have seen steadily growing traffic in the last three decades. The expansion of ports infrastructure, including the creation of proper maritime access infrastructure, involves long preparatory phases and high cost however and therefore poses problems to many ports. Insufficient inland connections, in particular for rail, have furthermore been identified as a key obstacle to a proper integration of ports into logistics chains. Infrastructure capacity problems in certain ports and their land access may have an impact on land transport flows across Europe since, for example, incoming trade flows may concentrate on a few major ports only. The distribution of goods via land routes may then aggravate congestion problems and have a negative impact on overall transport emissions.

Waterborne transport in the EU

On the other hand, the inland waterway network has ample free capacity which is already available or can be activated with relatively limited financial resources. It connects the major seaports and links the main industrial centres in the hinterland, often along heavily charged transport corridors. However, its full and efficient use is still hampered by a number of bottlenecks and shortcomings.

In relation to the further development of motorways of the sea, their definition in terms of objectives, scope and criteria for public support as a stimulator for public and private action should be reviewed. Their "green dimension" should be strengthened, possibly in the framework of the green freight corridor concept. Their economic viability should be strengthened, and interventions of various instruments (at national and Community level) should be streamlined.

Freight logistics

Freight logistics have become crucial for the Community in order to be able to meet the economy's transport needs in a sustainable way. Based on the principle that each mode is used according to its comparable advantages within efficient co-modal transport chains, they play an important role in the achievement of the Community's climate change objectives. They support economic growth while making freight transport more efficient

–from both an economic and an environmental perspective (in particular in view of an internalisation of external cost). In order to enable freight logistics to utilise their growth potential fully, TEN-T policy needs to ensure an appropriate infrastructure basis, in particular in terms of inter-modal terminals, rail, sea and river ports capacity (including land access to seaports) and ITS systems as both infrastructural components and means for tracking and tracing of goods. The development of Green Corridors, within the freight logistics concept, is expected to strengthen the environmental and innovative dimensions; Co-modality, however, is also an important issue for passenger traffic, where seamless flows should be ensured between the different means of public transport (e.g. rail – air), road and public transport and long-distance and urban traffic.

Q5 How could the different aspects outlined above be best taken account of within the overall concept of the future TEN-T development? Which further aspects should be taken into consideration?

Intelligent transport systems

Intelligent transport systems are applicable to all modes of transport, supporting the optimisation of the individual modes and the seamless connection. ITS as the clear potential to enhance efficiency of operations and to improve safety, security and comfort for the user – as EGNOS in 2009 and then Galileo in 2013 become fully operational, these effects will be enhanced. They constitute the bridge between the hard infrastructure and the increasingly intelligent vehicles making use of it. But most importantly, ITS also provides a key instrument for the realisation of major Community policy objectives related to transport and beyond, in the field of safety (better informed and supported users), security (tracing, identification), efficiency of operations, tackling congestion (effective demand management and cross-modal network balancing through pricing, implementation of legal provisions) or fighting climate change (energy efficiency, eco driving, realisation of green corridors and a more efficient and effective European co-modal transport system through e-freight, e-Maritime). In the air sector, for example, a European network system approach is essential to achieve the targets for an efficient, safe and environmental sustainable traffic performance.

Given their relatively low cost compared to hard infrastructure building, and the opportunity to combine and optimise public and private sector investments social benefits and the return on investment are huge – on condition that deployment is concerted, cross-sector and rolled-out all over Europe.

Q6 How can ITS enhance the functioning of the transport system? How can the translation of investments in Galileo and EGNOS into efficiency gains and an optimal balancing of transport demand be ensured? How can ITS be embedded into a multi-modal TEN-T that lowers energy dependency and impact on climate change?

- *Innovation*

Transport infrastructure, including ITS, and the vehicle sector represent a considerable potential for innovation, so that the traditional borderlines between infrastructure and vehicles may be shifting. As regards TEN-T development over the coming decades,

questions arise as to how infrastructure will need to adapt to new generations of ITS and vehicles (e.g. infrastructure implications of intelligent vehicles) and what consequences innovation in infrastructure may have on rolling stock.

New energy forms in transport may well call for adaptations of infrastructure (e.g. filling stations). Latest research on electric and hybrid vehicles is encouraging, because of the possibility of shifting the CO_2 emissions problem from vehicles to power plants, where it could be treated more efficiently and where external costs could be internalized more easily. In the longer term, hydrogen technologies could be very helpful for aviation and shipping.

Besides technological innovation, the objective of ensuring the most efficient use of infrastructure may also call for organisational innovation.

Q7 Do shifting borderlines between infrastructure and vehicles or between infrastructure provision and its use call for a widening of the notion of an (infrastructural) project of common interest? If so, how should it be defined?

- *A TEN-T "core network"?*

In order to make the TEN-T an effective basis for all relevant transport policy objectives and hence highlight its added value as an integral part of the common transport policy, the different "pillars" referred to above could be combined into a TEN-T core network. Such a network could thus include a priority network as well as a conceptual pillar, reflecting the need for flexibility and market orientation. It may also evolve over time, ensure optimal integration of all infrastructure ("hard" and intelligent) and interconnection between the modes, and act as a vector for innovation – both technological and organisational. It could also become the basis for the deployment of various innovative approaches, for example in terms of transport pricing. A core network, distinguished by a strong link with clear European objectives and the highest priorities, could thus be at the centre of the Community's efforts in relation to TEN-T policy.

Q8 Would such a core network be "feasible" at Community level, and what would be its advantages and disadvantages? What methods should be applied for its conception?

3.2. Implementation level

TEN-T policy is only credible for the European citizen if planning options and implementation capacity match. The planning option chosen and the instruments for its implementation must therefore correspond.

- *Overall financing of the projects of common interest established in the TEN-T plans*

Despite all the efforts deployed towards significantly enhancing the efficiency of infrastructure use and responding to demand in the most efficient and sustainable way, the completion of the TEN-T remains a major financial undertaking.

If the comprehensive network is to be retained, the financial implications for its completion would be immense. Community financial instruments as currently designed were certainly unable to stimulate effectively the full and timely completion of all the projects involved. In order for the Community to ensure, in spite of this constraint, that a future decision of the European Parliament and the Council on this matter will be properly implemented, Member States would have to ensure completion of the major part of the projects concerned under their own responsibility. Given the delays in the completion of this network in the past, a more binding responsibility for Member States might be called for. The "access function" of the TEN-T, as referred to in the Treaty, might also need to come under the full responsibility of the Member States concerned.

Projects included in a core network – less extensive than the comprehensive network and marked by a concentration on elements of high relevance for the achievement of the TEN-T policy objectives – would of course also come at a high cost. Each individual project of common interest, however, should have a strong backing in established Community objectives and contribute to reinforcing the soundness of the overall cost estimate of the TEN-T implementation.

TEN-T planning should allow as accurate as possible a cost estimation for the network as a whole. The implementation targets and corresponding cost estimates for the TEN-T Guidelines, which usually have a time horizon of 15 to 20 years, could be split into short, medium and long term perspectives. This could provide a sound basis for discussions on TEN-T financing as a whole, where Member States, Community grant instruments and the European Investment Bank will continue to have major roles to play. Given the long-term nature of the largest TEN-T projects, it is also important to look beyond one period of the Community financial perspectives, in order to provide investors with more certainty for the entire project implementation period.

The implementation of the TEN-T so far has been marked by enormous cost increases. Difficult geological conditions, challenging technical solutions, changes in alignment for reasons of public acceptance, uncertainty about capacity standards at the outset, measures to ensure compliance with environmental legislation or pro-active environmental measures, implementation delays and various other problems have been at the source of these increases. If TEN-T capacity standards are set at the planning level, this may reduce uncertainty. Pro-active assistance by the Commission, using its coordinating role, could address the various difficulties in a homogeneous and efficient way and promote exchanges of best practice, thereby enhancing the soundness of estimates and facilitating project implementation.

The wide range of different project types involved in the TEN-T development calls for different financing solutions. With the increasing market orientation in the transport sector and efforts towards infrastructure optimisation, an increasing number of projects with a full self financing potential should now emerge. Implementation of Community legislation in relation to infrastructure charging and internalisation of external costs should reinforce the self financing potential for all transport modes and in some cases allow for cross-modal financing. The role of the private sector in project delivery could also be further strengthened where appropriate. Community instruments supporting

public-private partnerships should be further strengthened where efficiency gains can be expected. The recently created European Public-Private Partnership Expertise Centre is expected to contribute to further disseminating experience and stimulating the broader development of public-private partnership schemes.

Q9 How can the financial needs of the TEN-T as a whole, in the short, medium and long term, be established? Which form of financing – public or private, Community or national - best suits which aspects of the TEN-T development?

Q10 How can Member States be assisted in ensuring funding and delivering projects under their responsibility? If and how should the private sector involvement in infrastructure delivery be further stimulated?

- *The Community's financial instruments in support of TEN-T implementation*

Grants, in particular under the TEN-T budget line and the Cohesion and European Regional Development Funds, play a major role in both project preparation and implementation phases. Grants are allocated to studies (from feasibility studies to comprehensive technical or environmental studies and costly geological explorations), helping to overcome early stage project difficulties, and to the works phase. A key issue for the future in relation to the implementation of the TEN-T policy is to rationalize the allocation of grants and to link it to the projects' European added value so as to ensure the best value for Community money.

All projects of common interest might therefore be evaluated on the basis of a harmonized and commonly recognized cost-benefit analysis method that establishes the European added value. Such a method should cover external cost as well as network or cohesion benefits, and take account of geographical asymmetries between benefits and financial costs associated with investments (one Member State may, for example, be confronted with particularly high costs for the implementation of a project on its territory, while other Member States may draw disproportionate benefits from this investment). It would allow a fair and objective allocation of grants from the Community budget, and it should allow the allocation of grants to be limited to projects with an established Community added value. In order to obtain a maximum leverage effect of Community interventions towards the achievement of the TEN-T objectives, the management of all available budgetary resources might be combined in a European Infrastructure Fund, focused on supporting TEN-T projects, with different co-funding rates according to the level of economic development of the beneficiary Member States, enabling Cohesion policy objectives and TEN-T policy needs to be closely aligned. The expertise of the TEN-T Executive Agency may usefully contribute in this respect.

Besides grant support, other instruments such as the Loan Guarantee Instrument introduced in 2007 or the Risk Capital Facility (a pilot initiative for equity provision activity under the TEN-T budget) indicate innovative and promising ways to support TEN-T projects. Diversifying the portfolio of instruments, with a particular view to increasing the leverage effect of Community support, adjusting the support to the

particular needs of a project and enabling effective project structuring, might also be considered. Innovative instruments could include Eurobonds.

Q11 What are the strengths and weaknesses of the existing financial instruments at Community level, and are further ones needed (including "innovative" instruments)? How could the combined use of funds from various Community resources be streamlined to support TEN-T implementation?

The Community's non-financial instruments in support of TEN-T implementation Coordination – European coordinators and "corridor coordination"

European coordinators, nominated by the Commission to facilitate the preparation and implementation of certain priority projects, have proven to be effective in a number of instances. Their role could be expanded to help stimulate the implementation of more major TEN-T projects (in combination with well targeted interventions of EU financial instruments). Critical cross-border sections should certainly remain particularly important in this respect, thereby strengthening the prospects for the entire project.

Within a possible core network approach, coordination could certainly play a vital role. Besides the "traditional" priority project coordination through European coordinators, business oriented "bottom-up" projects – such as rail freight or Green Corridors – also clearly call for strong cross-border coordination. Such a "corridor coordination approach" would need to involve all the relevant stakeholders - infrastructure providers, operators, users and local and regional authorities – in order to develop and implement solutions that are acceptable to all and technically, economically and financially feasible. In order to be sustainable, they should include all relevant infrastructure components (e.g. in the case of rail freight corridors: bottlenecks to be removed, inter-modal terminals, connections to ports, ERTMS and ITS equipment). For Community funding purposes, such projects could be treated as a new kind of "European project", to be dealt with as a whole rather than be supported in a fragmented way.

Corridor approaches might cover corridors where the infrastructure implications are relatively small, but on which significant benefits can be realised in the short term, as well as corridors involving critical long-term projects like trans-Alpine or trans-Pyrenees projects. In the latter cases, the approach may involve intermediate infrastructure solutions, helping to improve the economics of the entire project.

Open method of coordination

Application of the Open Method of Coordination (OMC) to the TEN-T could allow the establishment of a common working framework for the Commission, the TEN-T Executive Agency and Member States, providing a common base of knowledge on the TEN-T network. Implemented through the TENtec Information System and its portal, the OMC will allow the main user groups to have access to the data stored in the TENtec database as well as GIS maps with TEN-T data, and to update them. Allowing public access (e.g. to reports and maps with information on the network), it could also be a useful communications instrument to provide information on the Commission's work in

relation to the TEN-T. More systematic and comprehensive information about the TEN-T policy development overall is important in to raising citizens' awareness of its benefits.

Benchmarking could also be considered as a way to stimulate Member States' investment in the TEN-T. The establishment of performance standards, for example, could help in determining capacities for the different types of infrastructure and serve as a basis for the optimisation of infrastructure use and a more rational identification of bottlenecks. Positive experiences have already been made in this respect in the Air Traffic Management Sector whereas, in the rail sector, the identification of infrastructure capacity has proved very difficult. The exchange of best practice promises a number of opportunities for the facilitation of project implementation – in the field of the management of major projects, public-private partnership approaches, and the consideration of environmental aspects in infrastructure planning.

Q12 How could the existing non-financial instruments be strengthened and which new ones could be introduced?

4. Possible options for the further TEN-T development

Based on its reflections under point 4, the Commission considers three options for the further TEN-T development to be possible:

A. Maintaining the current dual layer structure with the comprehensive network and the (disconnected) priority projects

B. Reducing the TEN-T to a single layer (priority projects, possibly connected into a priority network)

C. Dual layer structure with the comprehensive network and a core network, comprising a – geographically defined – priority network and a conceptual pillar that would strengthen the integration of various transport policy and transport infrastructure aspects

Table 1 sets out the benefits and risks of these three options.

Q13 Which of the proposed options is considered to be most appropriate, for what reason?

6. Information for those responding to the Green Paper

Consultation on the issues outlined in the Green paper will be open until [date] 2009.

Contributions may be sent to:
European Commission
DG Energy and Transport
TEN-T
B-1049 Bruxelles

E-mail address: [to be added]

The European Commission will analyse the results of this consultation and use them as inputs to its work on the shaping of this policy area. Please note that contributions and the names of the authors may be published on the internet, unless the authors explicitly refuse their consent to publication when sending the contribution.

Structural options for TEN-T shape

Option	Title	Description	Expected Benefits/disadvantages to be addressed
A	Dual layer: comprehensive network and priority projects (current structure)	Layer 1: Comprehensive network (modal outline plans and traffic management systems as included in current TEN-T Guidelines) maintained in current form Layer 2: Priority projects' approach maintained in current form. Review and possible revision based on provisions of current TEN-T Guidelines, Art. 22 and 23.3: Comprehensive network and priority projects may be revised in the framework of Guidelines' revision if necessary, on the basis of the biannual implementation reports Priority projects shall be subject to a progress report by 2010; amendments to the project list may be proposed if necessary	Benefits: Layer 1: important "medium" for various transport policy objectives (implementation of interoperability, safety and other legislation) and, in the future, possibly, for new technologies, infrastructure charging etc. Also ensures access function for regions. Layer 2: the "visible part" of the TEN-T policy: subject to concentrated Community financial support and coordination initiatives of the Commission. Measurable results with noticeable effect on internal market, cohesion and sustainable transport objectives Disadvantages: Layer 1: No means at Community level to ensure full and timely implementation of projects Layer 2: Network effect at European level is not optimised
B	Single layer: priority projects – possibly in extended form	Single Layer: Priority projects in current form (amended as necessary), complemented by priority infrastructure needs resulting from requirements of various transport services. The priority projects might possibly be connected, and amended as appropriate, into a priority network.	Benefits: Concentration of Community instruments on highest priorities, allowing better prospect of full completion of network within foreseen time frame. High visibility and credibility of Community policy. Disadvantages:

			Comprehensive network with its transport policy and access functions disappears as Community network due to the lack of means for ensuring its proper implementation
C	Dual layer: comprehensive network and "core network"	Layer 1: Comprehensive network (modal outline plans and traffic management systems as included in current TEN-T Guidelines) maintained in current form Layer 2: "Core network" consisting of a) a "geographical pillar" (concretely defined in geographical terms). This includes a "priority network" (starting from the current priority projects' approach) which links up and extends as necessary major trans-national axes, important nodes as inter-modal connecting points (ports, airports, freight terminals etc.) and major European action in the field of ITS. b) a "conceptual pillar" providing the basis for the identification of projects, corridors or network parts over time; based on short, medium and long-term service needs; strongly business oriented. This pillar is defined through conceptual features like objectives, criteria etc. and shall provide a basis for transparent and objective project identification (also as basis for possible Community funding)	Benefits: Layer 1 - as set out in option A. Layer 2: allows greater potential for realisation of true network effects and subsequent reinforcement of MS commitment to complete this network. Also provides a reference basis for transport policies, future innovations (efficient infrastructure use, co-modality, logistics, new technologies etc.) and emissions' reduction objectives. Overall: Allows concentration of Community instruments (financial and coordination) that stimulates full network completion; enhances effectiveness, visibility and credibility of policy. Establishes sound basis for negotiations on Community budget 2014-2020. Disadvantages: Layer 1: lack of means to ensure full and timely implementation, while ensuring important functions for transport policy and network access Layer 2: Inclusion of "uncertain" elements in TEN-T planning which can only be defined through objectives and criteria rather than concrete projects