

# **SUBSIDIARITY IN STRATEGIC TRANSPORT PLANNING**

**Sanja Steiner, Josip Božičević**

*University of Zagreb, Faculty of Transport and Traffic Sciences,  
Croatian Academy of Sciences and Arts*

## **ABSTRACT**

In the analysis of strategic goals of the transport development some non-transport syllabuses can be observed, e.g. ecological and social. These are subsidiary goals that indirectly dictate the targeted transport development based on the sustainability principles, concretely induction of the transport demand as function of ecological balance and poly-centricity of transport network. The objective of social cohesion understands insurance of extra means for the transport connection of the allocated countries in order to establish equal conditions of market competition and basic movement freedoms.

*Keywords: transport strategy, transport policy, subsidiary objectives, sustainability, social cohesion*

## **INTRODUCTION**

The economic and social benefits of transport industry are doubtless. At the European Union level the transport sector participates with a share of about seven percent in the gross domestic product and about seven percent in the employment. 40 percent of investments are related directly or indirectly to the transport sector, also 30 percent of energy consumption, etc.

The negative aspects of transport, however, regarding accidents, pollution and congestion have managed to reach or to exceed the level of positive effects. These transport caused social costs that have not been internalised in transport sector but are compensated for from other public sectors or community, are articulated in the notion of external costs.

Recent studies have brought, unfortunately, the estimate of the external transport costs (without congestion costs) in the amount of about eight percent of the gross domestic product for 15 EU countries, i.e. fourteen percent of the gross domestic product for the transition countries of the Central European Initiative.

Considering that the road transport has a share of more than 90 percent in the generation of external costs, consequently the strategic guidelines of further transport development are

no longer based on the demand-orientation, but rather on goal-orientation i.e. targeted induction of the desired transport demand.

The regional approach to regulatory harmonisation, infrastructure planning and management in the transport sector, contributes to faster implementation of the instruments of Common Transport Policy with a vision of modelling the integrated trans-European transport network.

In this sense the subsidiary objectives of transport system development are articulated by the notions of sustainability and social cohesion.

## **SUBSIDIARY OBJECTIVES OF TRANSPORT DEVELOPMENT**

Strategic transport planning understands identification of relevant goals of long-term development that serve as input-guidelines of the transport policy and the origin of adopting the development guidelines and decision-making in the governmental executive bodies.

Strategic goals of the transport development in Europe are – integration into the Trans-European transport network, fair pricing in transport, environmental protection, transport safety, social cohesion and strengthening of the transport market.

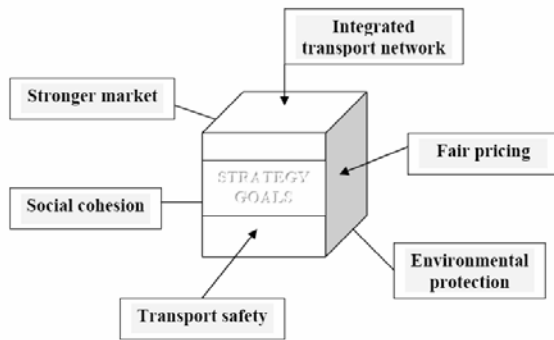


Fig. 1 Strategic objectives of European transport development

In the analysis of strategic goals of the transport development some non-transport syllabuses can be observed, e.g. environmental and social.

These are subsidiary goals that indirectly dictate the transport system development – targeted development based on the sustainability principle, concretely induction of the transport demand as function of ecological balance and poly-centricity of transport network development.

The role of the transport system in keeping up with the requirements for free movement of goods, people (labour), services and capital is irreplaceable.

Therefore, the main function of the transport system is to insure spatial integration and social cohesion, as well as economic integration.

The problem of social cohesion was actualized in the eighties by Greece and Spain joining the European Union, so that the establishing of the so-called cohesion funds insured extra means for the transport connection of these allocated or peripherally located member countries, in order to establish equal conditions of market competition and basic movement freedoms of people, goods, services and capital.

Implementation of goals of the transport development primarily assumes regulatory autonomy of the transport sector and consistent inter-sector cooperation, in order to insure efficiency in the key aspects: regulatory policy, transport management, investment policy, tax and price policy, physical planning and social policy (Steiner, 2006).

## TRANSPORT POLICY AND SUSTAINABILITY

In process of strategic transport planning, special request refers to the sustainability of current and emerging land use and transportation

patterns. This topic reflects both the significant impacts that current patterns of transportation have on the environment and the complex interactions between transportation, land use, and activity systems.

„Sustainable transport is seen as transportation that meets mobility needs while also preserving and enhancing human and ecosystem health, economic progress, and social justice now and for future. Planning for sustainable development aims to attain all three objectives simultaneously and in a just manner, considering access as well as mobility in the process“ (Deakin, E., 2001).

Problem issue of strategic transport planning is closely connected with insufficient sector’s co-ordination within state administration and executive function delegated to bottom level. This is indicative weakness both for policy making in developed EU countries and transition countries. In 2002 OECD initiated MONIT (Monitoring horizontal innovation policy) project aimed to consider relationship between innovation policy and four policy areas – regional development, ITC, transport and sustainable development. With regard to limitations of single goal policy making, the prerogative of co-ordinate and coherent policy is horizontal approach with cross-sector interfaces.

According to the assumptions of EU common transport policy, as well as the ECMT strategy of sustainable transport development, the main guidelines of complementary transport policy should be:

- target planning and managing of traffic flows;
- reduction of the harmful influence of transport on the environment;
- improved transport safety;
- increased efficiency of transport system;
- compensation of the transport market deregulation and liberalisation consequences.

Some of mentioned guidelines, especially those related to environmental protection, seem to be insensitive to the criteria of satisfying the real transport demand, but in the long run they ensure optimal integration of transport sector into the national and international frames of progressive economic development.

The Renewed EU Sustainable Development Strategy (EU SDS, 2006) identifies seven key challenges and corresponding targets, operational objectives and actions.

One of them, titled Sustainable Transport, has overall objective to ensure that transport systems meet society’s economic, social and environmental needs whilst minimizing their

undesirable impacts on the economy, society and the environment.

Operational objectives and targets in great extent refer to subsidiary condition of future transport development:

- Decoupling economic growth and the demand for transport with the aim of reducing environmental impacts;
- Achieving sustainable levels of transport energy use and reducing transport greenhouse gas emissions;
- Reducing pollutant emissions from transport to levels that minimize effects on human health and/or the environment;
- Achieving a balanced shift towards environment friendly transport modes to bring about a sustainable transport and mobility system;
- Reducing transport noise both at source and through mitigation measures to ensure overall exposure levels minimize impacts on health;
- Modernizing the EU framework for public passenger transport services to encourage better efficiency and performance by 2010;
- In line with the EU strategy on CO<sub>2</sub> emissions from light duty vehicles, the average new car fleet should achieve CO<sub>2</sub> emissions of 140g/km (2008/09) and 120g/km (2012);
- Halving road transport deaths by 2010 compared to 2000.

Concrete actions have been predicted at the level of the European Union and member states, which include following measures (European Commission EU SDS, 2006):

- improvement the economic and environmental performance of all modes of transport and, where appropriate, measures to effect a shift from road to rail, water and public passenger transport including lower transport intensity through production and logistic process reengineering and behavioral change combined with a better connection of the different transport;
- improvement of energy efficiency in the transport sector by making use of cost-effective instruments;
- focusing on possible alternatives to road transport for freight and passengers including the appropriate development of the Trans-European Network and inter-modal links for freight logistics, inter alia by implementing measures envisaged in the Commission action programme for inland waterway transport “NAIADES” and the “Marco Polo II” Programme;

- usage of infrastructure charging for all modes of transport drawing on new opportunities arising with new satellite, information and communication technologies. In the framework of the Euro-vignette Directive, a generally applicable, transparent and comprehensible model for the assessment of all external costs is prepared by the Commission to serve as the basis for future calculations of infrastructure charging;
- striving to make progress towards effective global solutions for the reduction of harmful impacts of international maritime and air traffic;
- increasing road safety by improving road infrastructure, by making vehicles safer, by promoting common European-wide awareness campaigns with a view to changing road user behaviour as well as by establishing cross-border enforcement;
- development and implementation of the urban transport plans and systems by local authorities, in line with the thematic strategy on the urban environment, taking into account the Commission technical guidance for closer co-operation between cities and surrounding regions;
- development of a long term and coherent EU fuel strategy.

Progress inventory analysis shows that Europe is not yet on a sustainable transport path. Energy consumption by transport, used as a proxy for transport demand, grew at an average rate of 1.3% per year between 2000 and 2005 in the EU-27, only slightly less than the 1.7% average for GDP over the same period, showing no real signs of decoupling.

Transport greenhouse gas (GHG) emissions are still growing, with an average annual growth rate of 1.2% between 2000 and 2005 in the EU-27. In 2004, domestic transport was responsible for 21% of total GHG emissions in EU-15. It grew by 26% between 1990 and 2004 whereas emissions from most other sectors decreased during the same period. Average CO<sub>2</sub> emissions emitted per kilometre from new passenger cars have decreased steadily from 2000 to 2004 in the EU-15, at an average annual rate of 1.3%, but this is not sufficient to reach the 2008/09 target, or the 2012 target.

The objective of achieving a balanced shift towards environmentally friendly transport modes has not been achieved. The EU-27 share of road in inland freight transport has continued to increase, albeit relatively slowly, since 2000 to reach 76.5% in 2005. Passenger-kilometres by

car showed a relative stabilisation in the EU-15, but still reached 84.8% of total inland passenger transport in 2004. Road congestion has been increasing (European Commission Progress Report, 2007).

Progress has been made on reducing pollutant emissions from transport, with emissions falling by 4.4% per year on average between 2000 and 2004 for ozone precursors, and by 4.2% for particulates.

Despite the increase in road traffic, there has been a steady reduction in the numbers killed in accidents in both the EU-27 and the EU-15. The EU-15 is well on track to meet the proposed target of halving the number of deaths by 2010 compared to 2000, but the EU-27 lags slightly behind.

Key EU policy developments include the Commission's mid-term review of the Transport White Paper; the Green Paper on Urban Mobility, the adoption of Regulations known as Euro 5 and 6 standards, which setting stricter standards for cars and light commercial vehicles; and Commission proposals to amend the fuel quality directive and Directive 2003/96 regarding minimum excise rates for road diesel and to include aviation within the EU emissions trading scheme. A railway liberalization package has been adopted and the legal framework for public transport services has been revised.

Further measure of SDS implementation within EU member states refers to promotion of technology for fuel efficiency, greener propulsion and environmentally friendly, less energy intensive modes of transport; tightening of pollutant emission standards and greenhouse gas intensity for all transport modes; continuing the development of noise mapping and measures to reduce transport noise at source; launching action on urban mobility and making optimal use of logistics; and development of methodologies for infrastructure charging.

Economic justification of implementing the planned goals of transport policy within the enlarged European Union is based on the estimate of the amount of external transport costs, which is in transition countries, due to the low quality transport system, almost doubled than the average at the European Union level.

Besides capital investments in environmentally friendly transport infrastructure, the transport policy can additionally stimulate these transport modes by various mechanisms - e.g. by subsidising and through benefits, but also by higher taxes on road vehicles, which is a significant method of compensation for external

costs of road transport, and by expansion of the toll charging and higher tolls on road infrastructure.

With regards to undesired trend of "automobile booming", transport policy has to show special sensitivity for solving the issues of urban transport management, so that mixed instruments in co-operation with health, social and other departments should primarily influence the following:

- shift of transport demand from individual to public and non-road transport modes, and
- prevention of superfluous traffic by reducing travel distances, by using information and communication technologies, and especially for the reduction of peak loads.

The accompanying measures of implementing the mentioned guidelines refer to:

- preparation of the expanded plans and financing for public passenger transit;
- promotion of ecologically friendly transport modes, mainly walking and cycling, as well as at the same time healthier transport modes;
- programme of restrictions in using motor vehicles in the urban area;
- programme of integral adaptation of transport infrastructure and public transit means to the enabled persons and senior users needs.

## **TRANSPORT POLICY AND SOCIAL COHESION**

The efficiency of transport system is an extremely important element in strategic planning, distinguishing two groups of indicators – quality and productivity on one side and allocation and ecological dimensioning on the other.

Mobility which does not satisfy the additional requirements of allocation and ecological efficiency, i.e. which does not fully cover the external (social) costs may be characterised as being inefficient.

Each form of mobility improves the competitiveness among regions and local communities, their production and manufacturers. This results in turn in economic growth and physical expansion, i.e. infrastructure integration. Physical interaction does not necessarily reflect also the optimal transport situation, so that in strategic transport planning, the goal-oriented approach in accordance with the spatial development policy is justified.

The key indicator for the evaluation of infrastructure contribution in the integration

process is the affordability, so the connections of regional networks are of crucial importance here.

The planning principle is based on a clearly defined correlation between the accessibility of a region and the induced growth effects.

In this context the spatial impact of the two transport policy areas can be identified as most effective – infrastructure investments and pricing (Bröcker and Schneekloth, 2005). European Commission clearly articulated the subsidiary objective of social cohesion through a comprehensive programme that include launching of Trans European Transport Network project with 30 priorities as well as developing methodology for internalization of external transport costs.

Related infrastructure investments are co-financed by the structural funds because they tend to respect regional policy supporting less favored region and assure the spatially balanced economic development. Pricing policy, on the other side, have to assure efficiency of transport industry favorizing the environmentally friendly transport modes.

“The establishment and development of Trans-European Transport Network TETN contribute to important objectives of the Community such as the good functioning of the internal market and the strengthening of the economic and social cohesion” and have “...to ensure a sustainable mobility for persons and goods, in the best social, environment and safety conditions, and to integrate all transport modes...” (European Parliament, 1996)

The monetary weight that the Commission given to the trans-European transport networks requests appropriate assessing the impacts of transport policy measures related to the political goals of Maastricht Treaty, especially – balanced economic development, sustainable growth, convergence of economic performance, high levels of employment and social security, and economic and social coherence and solidarity between the member states. These goals connote the fundamental policy principles of either “efficiency” or “equity” (Bökemann, Hackl, Kramar, 1997). The goals of economic growth are clearly addressed to efficiency, whereas the promotion of social coherence and solidarity can be understood as equity goals. It is obvious that there is a “discrepancy between equity and efficiency goals in regional policy” (Bökemann, 1982). Therefore the policy makers have to decide how much weight to give to each of these fundamental directions, since they cannot optimize both simultaneously.

Development of trans-European networks in the areas of transport, telecommunications and energy infrastructures is not only directed at facilitating the free movement of goods, persons, services and capital, but also at supporting social and economic cohesion.

The trans-European transport network fosters regional convergence from a European perspective by making the Central European markets better accessible from the periphery of the European Union.

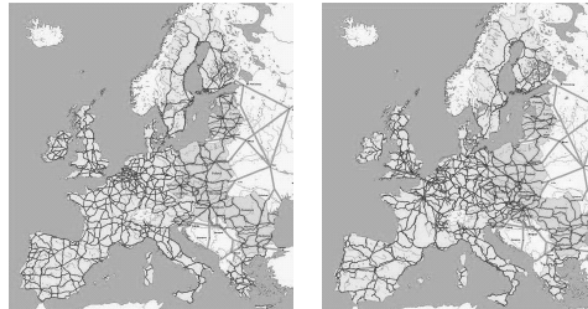


Fig. 2 TEN: Strategic road and rail networks (TINA Secretariat, 1999)

“Both road and rail connections make up dense networks which cover the whole area of the EU25 and make the majority of NUTS2-regions well accessible. A closer look to the networks, however, reveals that only the bigger regional and national centers are connected, whereas many rural and densely populated areas are largely ignored. Therefore the TETN do not support convergence within the less developed member states: Spatial inequalities in market accessibility on the NUTS2- level would not be reduced” (Kramar, 2005).

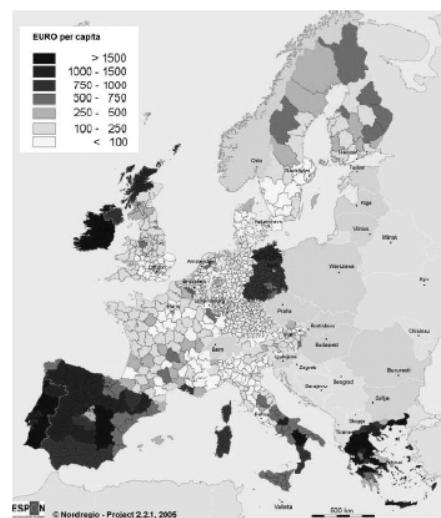


Fig. 3 Spatial distribution of Structural Fund spending (ESPON, 2004c)

The transport policy of the European Union toward non-member countries has been articulated by determining the Pan-European corridors and areas as the development priority of the capital transport infrastructure investments and projects of harmonizing technical and exploitation standards.

Consequently, the accession countries use financial instruments of pre-accession funds (PHARE, ISPA, CARDS, new IPA), and countries with benefits various types of financial support.

For the transition countries of Central Europe, in the pre-accession period, the TINA (Transport Infrastructure Needs Assessment) project was carried out, identifying the needs for investments into the transport infrastructure on corridors, in order to harmonize the technical and exploitation standards of the national transport networks.

In this period the transition countries in South-eastern Europe were not accession candidates so that their infrastructure needs failed to be evaluated within the TINA project.

Analogue to the TINA project, which was completed in 1999 an whole series of projects was initiated for determining the regional transport network for South-eastern Europe and the evaluation of the required investments – TIRS (Transport Infrastructure Regional Study) and REBIS (Regional Balkans Infrastructure Study) studies which were used as the basis to start the SEETO program of defining the basic regional transport network for South-eastern Europe. Following the signed Memorandum of Understanding, a five-year plan of SEETO network development has been adopted, and the specific feature is that this network, apart from the sections of Pan-European corridors in the region, includes also a certain number of routes of regional significance. SEETO network is the basis for prioritization of the infrastructure transport development projects, which are financially covered by the sources from pre-accession funds – ISPA strategy and the new IPA program (Steiner, Dadić, Božičević, 2008).

## CONCLUSION

The transport system development, apart from the physical dimensioning of the infrastructure network, needs to be harmonized with the referent strategic provisions of the European Union common transport policy, which assume incorporation of the principles of integrity, interoperability and sustainability into the national transport policies.

In terms of integrity, the planning of infrastructure network with the aim of integration into a wider regional network determinates the development priorities. Complementary transport development is the strategic orientation of the enlarged European Union, with the backbone of infrastructure development predetermined by the set of Pan-European corridors and the Trans-European transport network.

The instruments of the transport policy, especially in urban transit, should be used to stimulate the alternative to road motorized transport – non-motorized transport, high-speed railways, and modal shift of demand from individual to public transport.

An important aspect in transport planning and designing, especially of capital transport infrastructure, is the standardization of conditions for efficient transport sector management, i.e. standardization of the application of intelligent transport systems in the network design.

Apart from the special sensitivity in (re)modelling of the chronically lagging behind facilities in the transport system development – public local transport and ITS applications, there is one more segment of transport development that is strategically dominant – intermodal transport.

The implementation of the interoperability principle dictates the development of intermodal transport options with the aim of optimizing the usage of natural resources. From the aspect of sustainability, transport development is marked by coordinated approach to modelling the economic growth, ecological balance and social development.

The problems of transport development, and especially the development of the transport infrastructure, similar to other important infrastructure sectors – energy and water supply, has been marked by extremely specific features, that directly address the role of the government and private sector in their development and management:

- At national and metropolitan levels the transport infrastructure correlates closely with the spatial arrangement and has high effect on the spatial structuring of the total economy. These are the fields of highest government responsibility, which require proactive planning together with adequate price and tax policies;
- The transport activity, especially in the road branch, has substantial negative external effects – congestion, pollution, and accidents that are reflected with greater seriousness

than the generated externals in other sectors directly in the structure of prices and charges. This means that the government interventions in improving the allocation of financial resources are necessarily;

- The transport infrastructure with efficient maintenance tends to have a long life-cycle and investing priorities depend to a great extent on the uncertain projection of the demand in the far future. Additionally, capital charging often represents the highest share of total costs of services and therefore it is necessary for the government to absorb certain risks in the realization of the desired structure of the space and economic organization of a country.

## REFERENCES:

- [1] Steiner, S. (2006), *Elements of Transport Policy* (in Croatian), University of Zagreb, Faculty of Transport and Traffic Sciences.
- [2] Deakin, E. (2001) *Sustainable Development and Sustainable Transportation: Strategies for Economic Prosperity, Environmental Quality and Equity*, Working Paper 2001-03, University of California at Berkeley, Institute of Urban and Regional Development.
- [3] Bröcker, J., Schneekloth, N. (2005), *European Transport Policy and Cohesion: An Assessment by CGE Analysis*, 45th ERSA Conference.
- [4] *Renewed EU Sustainable Development Strategy – EU SDS (2006)*, Doc. 10917/06, Council of the European Union.
- [5] European Commission (2007), *Progress Report on the Sustainable Development Strategy*, COM(2007) 642 final.
- [6] Decision 1692/96/CE (1996) of the European Parliament and of the Council.
- [7] Bökemann, D., Hackl, R. and Kramar, H. (1997), *Socio-Economic Indicators Model and Report. SASI Deliverable D4. Report to the European Commission. Institut für Stadt- und Regionalforschung, Technische Universität Wien.*
- [8] Bökemann, D. (1982), *Theorie der Raumplanung*. München: Oldenbourg.
- [9] Kramar, H. (2005), *Cohesion and Growth in the EU: Is there a conflict between national and regional convergence?* AESOP Congress Vienna University of Technology.
- [10] TINA Secretariat (1999), *Proposed Trans-European Transport Network for the enlarged Union.*
- [11] ESPON (2004c), *Project 2.2.1: The Territorial Effects of the Structural Funds. Final Report.*
- [12] Steiner, S., Dadić, I., Božičević, J. (2008), *Croatian Transport System in the Process of European Integration*, 11<sup>th</sup> International Conference on Transport Science, University of Ljubljana, Faculty of Maritime Studies and Transport.