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MARITIME STUDIES AND TRANSPORT
PORTOROZ, SLOVENIA

International
Maritime
Science
Conference

April 28th-29th, 2014
Solin Croatia
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Book of Proceedings

6th International Maritime Science Conference
April 28th-29th, 2014, Solin Croatia
TRANSPORT AND SPATIAL CORRELATION OF REGIONAL DEVELOPMENT

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ABSTRACT

The paper is intended to analyze transport and spatial correlation in strategic context of European regional development, which assumes the all levels of regional planning, and especially with regards to integration role of cities as nodes of cohesion policy. Additionally, the paper discusses transport function in urbanization and transport sector as one of the main sector of green economy.

KEY WORDS

Transport, cohesion policy, urbanization, regional development, green economy

1. INTRODUCTION

The special requirement in the process of strategic transport planning is articulated through the sustainability of the existing and new forms of land and transport usage. This refers both to indicative impacts which the conventional transport modes have on the environment and to the complex interactions between transport, land use, and human activities. Based on Deakin’s definition, sustainable transport is considered as transport that satisfies the needs of mobility with simultaneous preservation and promotion of the human health and eco-system, economic development and social equity now and in the future. Planning of sustainable development is directed to achieving all three targets simultaneously and in a fair manner regarding accessibility and mobility. Furthermore “…the idea of sustainability has come to be understood as a collective process for considered decision-making and action, and not simply a particular end-state or outcome. Also, the concept is broad enough to include a variety of initiatives – ranging from cleanup and redevelopment of brownfields to inner city revitalization to energy-efficient transportation – and planning for sustainable development increasingly involves strategic coordination of efforts along all of these lines.” [1]

2. ROLE OF TRANSPORT IN COHESION POLICY

In the political debate on European spatial development, accessibility and mobility are marked as the preconditions of regional economic development. The regions of high accessibility to raw materials, suppliers and markets are, as a rule, economically more successful and more competitive on the global market. Optimization of the infrastructural network is the main instrument of regional economic policy.
Multimodal accessibility of the European core and periphery contribute to the polycentric spatial development, which is to a great extent assured by the accessibility of air transport and extensive railway transport, which is characteristic for big and capital European cities.

The possibility of one-day travelling based on actual travelling times and six-hour stay at the destination clearly reflects the capacity of the accessibility of the European core and periphery and confirms the advantage of the railway for inter-metropolitan transport connections. High level of territorial and transport integration is imminent to the European economic core, the so-called “Pentagon” including a large part of Great Britain. The Iberian Peninsula is connected with the core, and the connections between the core and the countries such as Poland and Hungary are visible; however, the intensity of these connections is significantly lower in comparison to the connections within the European core. The possibilities of one-day trips from or to the Baltic region – Estonia, Latvia and Lithuania, the region of south-eastern Europe – Romania, Bulgaria and Greece, as well as Turkey, do not exist at all.

About 75 percent of the European population lives in urban environments. The urbanization trend in Europe is worrying. Almost one quarter of the European Union territory is directly included in urban usage, and by 2020 eighty percent of the population will inhabit the urban areas with most diverse needs of land use in and around cities.

Every day the conflicting changes of land use are visible, and they lead to spatial degradation and disturbance of the landscape. [3]
The increase of multimodal accessibility in the regions of Eastern Europe has positive impact on the competitiveness of these regions and territorial cohesion on the European plan. However, as the share of urban population increases, the share of the population in the rural area proportionally decreases. The entire complex of negative consequences of the population and consequently traffic concentration in the European cities is primarily manifested on the environment and human health.
The problems of transport development, and particularly of the transport infrastructure development, similarly to other important infrastructural sectors – energy and water-supply – are marked by extreme specific characteristics, which directly connote the role of the state, public and private sector in their development and management [5]:

- At national and metropolitan levels the transport infrastructure is closely correlated with the spatial planning and has high impact on the spatial structuring of the overall economy. These are the areas of the most important state responsibility, which require proactive planning as addition to adequate policies of prices and taxes.
- The transport activity, especially in the road branch, has substantial negative external effects – congestion, environmental pollution and casualties, which internalization directly into the structure of infrastructure usage prices and charging is hard to achieve in sense of common practice. This means that the interventions of state in the improvement in allocation of financial resources are necessary.
- Transport infrastructure along with efficient maintenance tends to have a long lifetime so that economic investment priorities in it depend to a great extent on the uncertain projection of demand in the future. Additionally, the capital charging often represents regarding size the highest share of the total costs of services and therefore it is necessary for the state to absorb certain risks in the realization of the desired structure of spatial and economic organization of regions.

The intention in the development of regions and local communities is the achievement of the transport system configuration which respects four vital dimensions [6]:

- Transport dimension – adequate balance between public and private share in satisfying the needs of all the market segments;
- Ecological dimension – retaining of the overall volume of pollution caused by the transport modes at an acceptable level;
- Economic dimension – potential of creating new financial resources by the solutions of giving “value for money” and the capacity for inducing the desired behaviour (demand) of users through fair charging mechanisms (without discrimination);
- Social dimension – provision the citizens with transport system which meets their needs.

Since it is difficult to achieve the optimal system, in modeling the public transport it is possible to accept also the solution of establishing certain compensation between these domains in compliance with the social and economic and cultural reality of each specific area, and conditioned political option and related financial support as the result of interaction between the local, regional and national level of interventions. The applicable model is, therefore, in the function of the strategic level of defining the objectives as response to individual and social interests of the participants.

Transport policy in the future has to solve the problem of compatibility with climate and energy policy in a comprehensive manner, which is at the same time physically dispersed. The potentials of transport de-carbonization refer to:

- reduced need for the mobility of people and goods,
- improvement of efficiency of the existing transport network,
- shift in the modal structure of traffic, which will reduce the transport load and support the ecologically acceptable and sustainable transport modes for cleaner environment and healthier society,
- new technological solutions for the reduction in the usage of fossil fuels and the CO₂ emission levels in road transport.

It is necessary to improve the connecting of primary and secondary transport networks, especially in new members of the European Union, so as to balance the standards of accessibility at the national levels of the respective regions.
The de-concentration of external transport connections of the European Union understand the development of:
- new seaports for the overseas transport and routing of sea highways in the Mediterranean;
- intercontinental airports outside the domicile space of the European Union,
- continental connections, primarily of railway transport towards Asia, and towards the Maghreb countries.

Although the transport policy has substantial impact on the spatial development, especially by instruments of investments into the infrastructure and instruments of the pricing policy, the strategic attribution is related to comprehensive continental nature of the development of internal and external accessibility, and reduction of external costs in transport. In this sense the European Commission has not got the sufficient capacity of impact due to excessive dispersion of investing into transport projects, primarily by accession countries, and due to substantial difference in the development challenges of old and new members of the European Union.

The objectives of transport development of the developed European Union countries are to the greatest extent directed towards improvement of intermodality of the network and efficiency of the transport systems, whereas the dominant development preoccupation of the countries of mid-eastern and south-eastern Europe is the improvement of accessibility of the transport networks.

3. GEO-TRANSPORT RELATION IN URBANIZATION AND REGIONAL DEVELOPMENT

Complex interactions between land use and human activities have stipulated the specific morphology of the cities and urban areas which, depending on the level of synergy inter-sector planning at the local, regional and national level, manifests itself differently in the economic, ecological and social dimension of urban development.

Urbanization means continuous process of designing settlements, heterogeneously in time and space; therefore, unique observation of completely different geneses in which different phases of the process, as well as geographical and historical specifics of a certain urban region are reflected is not adequate.

In principle, general development correlation of demographic and spatial structure of cities can be identified. Cities have specific position in the migration processes, and strategic planning of urban development predetermines the level of polycentricism of the territorial development and consequently the social and economic cohesion.

Depending on the constellation in urban hierarchy this process is reflected at different levels – demography of the capital cities has influence at the national and increasingly at international level, of the cities of lower hierarchy characteristic at regional level, and of small cities at local level. The problems of intra-urban dynamics are focused on two paradigms of spatial and social cohesion – suburbanization and gentrification.

At inter-regional plan, the long-term urbanization cycle started long ago by the urbanization phase led by the rural-urban migrations and industrialization.

This was followed by the phase of suburbanization, during which the peripheral settlements grew faster than the urban core. During the third phase, the suburbanization was intensified and acquired the characteristics of counter-urbanization, i.e. process characteristic for the most densely populated areas.

In this phase the place of residence shifts to the urban periphery towards small or mid-size places of less urbanized metropolitan environment, with the population and labour market being proportionally reduced in the urban core. The last phase is re-urbanization led by the policy of revitalizing the city centers and the social and cultural development.
The urbanization cycle recognizes two scenarios of the shift in the spatial structure of the cities. The first scenario is the extension of the city without restrictions in the way of intensive suburbanization of peripheral city areas, resulting in landscape fragmentation due to the transformation of the functions of agricultural and natural areas into the residential areas, and specialized zones of industrial, commercial or transport infrastructure, and on the other hand to deterioration of the urban centers. Such development trajectory suits on the one hand the spatial fragmentation and atomization and on the other hand the social segregation.

The second scenario is restricting or preventing urban expansion towards the periphery by way of concentrating all human activities and functions of public services on a smaller consolidated area, and preservation and cultivation of natural green areas. This development path understands the control of the disorganized process of urbanization by means of revitalization of the city and increase in the population density within the urban structure, and re-naturalization of the parts of the territory, which parries all the strategic aspects of sustainable development.

The theoreticians distinguish two categories of agglomeration growth in urban development. The first is the category of continuity, which includes models of modular constant growth of urban parts which are multiplied with the same homogeneous characteristics and repeating structure or cellular stochastic growth according to the classical development algorithm.

The second one is the transformation category, which understands the model of city transformation into a metropolis in the manner of the transformation of one-way flows into two-way or tangential flows, which do not pass through the city nucleus any more (Figure 4).

In the analysis of the relation of the urban and rural region, and the relation of the urban centre and peripheral settlements the specific categories of space with the potential of functional symbiosis can be distinguished – urban core, internal and external populated parts form the urban area of the city; suburban areas include villages in the close vicinity of the cities under the influence of uncontrolled urban expansion and suburbanization processes, and villages in the city periphery. The third circle of scope is the rural hinterland. Smaller and mid-size settlements in the hinterland can exist with the potential for connecting with the major city centre. Figure 5 shows a simplified model of different spatial categories with the examples of topical interests of rural – urban cooperation.
The location and distance between the agglomerates pre-supposes the selection of the topics for collaboration of local and regional significance.

In central parts of the cities the topically relevant issue is the control of urban expansion and provision of open public spaces.

In parts with related activities and public functions the priority is the design of clusters and networking.

In peripheral parts the interest is on rural – urban cooperation in providing better accessibility to urban infrastructure and public facilities or valorization of the landscape and cultural assets for the needs of recreation or tourism.

In the entire metropolitan region the joint interest is related to marketing in the market placement, complementary strategies and sustainable development.

The problems of peri-urban development connote the strategic contents of sustainable development with the focus on spatial dimensioning and distribution of metropolitan functions, which will allow from the aspect of economic growth functional networking of the cities and their market competitiveness at global, regional and national level, from the aspect of the protection of the environment and nature alleviate the landscape fragmentation and climate changes, and from the aspect of social advancement prevent social segregation and ensure fair participation of all the population groups in the life of urban community.

The strategically postulated European spatial development is reflected in the concept of the polycentric urban development, which is based on the complementary aspects of urban morphology (number and hierarchy of cities) and functional relation between urban areas (networks, flows, cooperation), and opposes the concept of monocentrism and urban expansion to peri-urban areas of natural spaces and resources.

Such polycentric development has been delegated to different spatial level with specific objectives:

- at the macro-level of Europe – promotion of several global integration zones next to the existing “pentagon”;
- at inter-regional level – integration of urban regions and stimulation of functional complementarities;
- at intra-regional level – optimization of economic performances by improving the connections and better cooperation.
Extreme potential is obvious in the region of pentagon area extension to the region of Central Europe which regarding population and space can match the scenario of the global integration zone development.

In this sense the interregional cooperation of the capital cities of the region in functional complementary development is of crucial importance, particularly the strategically harmonized development of intermodal transport network and provision of accessibility of infrastructure at intra-regional and national level.

4. CITIES AS CARRIERS OF GREEN ECONOMY

On the track of Green Economy Initiative (UNEP, 2008), Green Growth Strategy (OECD, 2010), the Development Strategy of Smart, Sustainable and Inclusive Growth of the European Union (Europe 2020) and the accompanying Initiative for Resource-Efficient Europe – the transport has been identified conditionally, principally, and functionally as one of the main development sectors.

Green economy, according to UNEP definition understands a new model of synergy action at all levels, which is based on the ecologically compatible usage of resources, economic efficiency and social equity.

The transport acquires the attribute green when it supports the environmental sustainability in a way of protecting the global climate, eco-system and bio-diversity, public health and natural resources.
The objectives of green transport are not only the reduction of greenhouse gas emissions, air pollution, noise and space consumption, but rather also reduction of poverty and support to economic growth.

In parrying the set objectives the development approach is promoted which apart from efficient technologies includes also smart urban planning, development of the public transport system of high quality and efficacy, comprehensive infrastructures for bicycle and pedestrian traffic, and efficient logistics.

By analyzing the existing strategies, policies and networks at the European and transnational level, there are numerous different documents and initiatives, which may represent frames of development of joint agendas and collaborative projects of metropolitan areas.

In this sense it is strategically of extreme importance that the geo-transport position of Croatia is evaluated in the context of its territorial belonging to the region of Central Europe, and as result of elaboration of development projections that the integration in the global competitive Central European macro-region is insured. [10]

The cohesion policy of the European Union is the main instrument of implementing the objectives of economic, social and territorial cohesion. It consumes the second largest part of the European Union budget, including several funds, and it is adjusted to the umbrella strategy of the European Union for the growth and employment.

The shift from the traditional concept of cohesion policy as the redistributive instrument towards the concept of allocation perspective of the “on the spot based” policy with the target development mission, represents the essence of the cohesion policy after 2013. In the fifth cohesion report of the European Commission the focus is on the functional and flexible approach. Depending on the case, adequate geographic dimension is ranked from the level of macro-region, such as the region of the Baltic Sea or the Danube region, to the metropolitan region or cluster of the rural areas and commercial places. Such flexible geography can optimize the positive and negative effects of concentration, reinforce the connections and facilitate cooperation and be more efficient in further territorial cohesion.

In 2010 the European Commission adopted the Strategy for the Danube region as a comprehensive strategy of the target macro-region of eight European Union member countries – Germany, Austria, Hungary, the Czech Republic, Slovakia, Slovenia, Bulgaria, and Romania, and six countries that were not European Union members – Croatia, Serbia, Bosnia and Herzegovina, Montenegro, Ukraine, and Moldavia, which considers a number of challenges, requires better coordination and cooperation in the priority areas of economic, ecologically sustainable and social regional development, including the priority of improving the mobility and intermodality.

The development strategy of the European Union Europe 2020 for smart, sustainable and inclusive growth, which was adopted in 2010, identifies the priorities of the economic, sustainable and social development and management of financial resources.

Within the strategy, the internal market, global competitiveness, cohesion and environmental protection, mainly de-carbonization of transport, are the development objectives that require holistic approach and balanced solving. The set priorities and development guidelines have to be included in the sector planning strategies and strategic projects on all territorial levels.

The source document Territorial Agenda of the European Union from 2007 was the first step in the
institutionalization of the territorial cohesion as shared responsibility of all the European Union members.

The amendment of the Territorial Agenda for 2020 the promotion of the polycentric and balanced territorial development is identified as the main cohesion element to strengthen the economic competitiveness of the European Union. The cities have to design innovative networks to improve their global competitiveness and promote sustainable development.

The polycentric development is necessary at all levels – macro-regionally, cross-border, national and intraregional. The polarization between the capital cities, metropolitan areas and small and mid-size places has to be prevented, and the policy must contribute to the reduction of territorial polarization and regional inequality addressing the bottlenecks for the growth in compliance with the development strategy Europe 2020.

Trans-European transport network TEN-T is a project of developing intermodal transport network of the European Union countries, that was accepted by the European Parliament in June 1996 with the task of improving the economic and social cohesion, connecting the islands, inaccessible and peripheral regions with the central regions of the European Union, by means of interconnections and inter-operability of national transport networks of the ground, air, sea and inland waterway transport, including the European satellite navigating system Galileo.

In the light of the debate about the new TEN-T regulation initiated by the adoption of the Green Paper on the Process of Reviewing the TEN-T Policy 2009, the working documents of the European Commission propose redefinition of the development plans of the so-called Core Network with horizon up to 2020 and Comprehensive Network with the horizon up to 2050, which means also the new two-layer approach in the methodology of planning and implementation of future TEN-T projects. Comprehensive transport network means wider platform for adopting legislation and technological development and the means of further promotion of spatial integration and regional accessibility.

Core transport network is the carrier of strategic planning of the most important transport infrastructure, which has to include the main nodes (cities, agglomerations, ports, airports, and intermodal platforms) and connections, integrate all the transport modes, allow sustainable, efficient, safe and protected transport services in passenger and cargo flows. The development of the core transport network is the continuation of the past decision and achievement of the European transport policy, priority TEN-T projects and the main European projects of developing intelligent transportation systems or interoperability, recognising the needs of stronger connecting of the transport and infrastructural policy and openness for the technological and operative innovations.

By accession of Croatia into the European Union, the city of Zagreb has been included as the main hub of the core network, and the port of Rijeka as the main port of the core network in Croatia. Before the accession into the European Union, Croatia participated in the work of the South-East Europe Transport Observatory. The importance of the SEETO comprehensive network as the basis for the evaluation of the necessary investments into the development of the transport infrastructure of the South-eastern Europe is specially connoted in recent documents of the European Commission [11]. The establishment of an integrated transport information system TENtec for South-eastern Europe has been planned. The importance of the cooperation of the European Union, international financial institutions and regional participants in the selection and preparation of the project.
The regional transport development, including the development of the Croatian transport system, apart from spatial dimensioning of infrastructural network, has to be harmonized with the reference strategic guidelines of the European transport and environment policies, which understands inclusion of the principles of integration, intermodality and sustainability.

Transport is one of the key challenges of the Strategy of Sustainable Development of the European Union. Although the strategic objectives of the transport development do not change, the context of the conditions of their implementation is variable. Unpredictability of the prices of fossil fuels on the market, progressive globalization processes, war crises, and terrorist threats, enlargement of the European Union, economic recession and the related crises – all these are the specific risks that affect the need to review the strategic documents, adaptations of instruments of the transport policy and dynamics of implementing the innovative technological, operative and economic models.

Master-planning of integrated intermodal transport operations with the accompanying network of logistics and distribution terminals, investment prioritization of using the existing corridor capacities of regional transport network and affirmation of the transport function of natural resources and ecologically acceptable transport options are the necessary frames of the transport policy in responding to the requirements of sustainable development – economic growth, ecological balance and social advancement.

Management of flows at the integrated intermodal transport network by applying the intelligent transport systems represents a challenge but it is also a necessary strategic option of common transport policy in Europe. The realization of regional projects, for instance the development and implementation of the satellite system Galileo requires multilateral and global harmonisation and cooperation.

Transport remains in any case the key factor of integration processes both in the spatial and in the economic sense, but the emphasis is on the request to change the structure of transport operation per transport modules (modal shift) and qualitative upgrading of the transport network with adequate interfaces of the transport modes and smart systems of management.

The social and economic efficiency of the transport system is not only indicated by technical elements of the transport network or the volume of the transport operation, expressed by the length and density of network or transport production, but rather also by the qualitative aspects of transport demand management, which are articulated...
through transport safety and environmental protection, and finally by spatial, demographic and economic cohesion of the region. In all European strategies, the cities are the carriers of regional integrations and cohesion development, and functional alliances of the cities are the prerequisite of the economic competitiveness at all levels. In this sense the transport sector plays the dominant role in providing accessibility and mobility. The connectivity of the nodes, networks and corridors has to be strategically planned in a holistic way of intra-regional, inter-regional and macro-regional urban integration. The development of Croatian cities has to be therefore strategically considered comprehensively at all levels and sector-integrated. At intra-regional level, strategic planning of development is most closely connected to the concentration of the urban functions and functional cooperation with the cities and settlements in the catchment zone, in order to ensure development of the entire region. The spatial urban planning and transport development have to be interconnected in program development and operatively, and in making operational plans it is necessary to include as partners the private sector and the citizens. The revitalisation of the urban core and settlements on the city periphery, as well as the re-naturalization of the peri-urban area can be implemented exclusively by supplying an efficient public urban transport, mainly the rail transport. It is also necessary to develop a green infrastructure for bicycle and pedestrian traffic. In the wider catchment zone, all the suburban settlements and small and mid-size cities in the hinterland need to be efficiently connected by transport, first of all by rail transport and rapid-buses. The development of the metropolitan regional network means inter-county and intercity cooperation. One of the examples of the best practice is the SprintCity project of regionally integrated development of the settlements along the railway stations, which promotes the transit-directed development, interaction of the spatial development and mobility as well as coordination and cooperation of various stakeholders – regional/city administration, operators, and citizens. The transport connections of the cities in surrounding, as well as the settlements in the interspaces, should be strategically designed by means of two-way and tangential connections.

ACKNOWLEDGMENTS

The research of Transport and Spatial Correlation of Sustainable Regional Development is partially supported by University of Zagreb Grant, Contract No. 2013-ZUID-21.

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