transport in the cities, pollution of the environment, transport strategy, sustainable development, legal regulations

Aleksandra VASILJ, Biljana ČINČURAK*
University of J. J. Strossmayer, Faculty of law
Stjepana Radića 13, HR- 31 000 Osijek, Croatia
**Corresponding author.* E-mail: biljana.cincurak@pravos.hr

MODERN REQUIREMENTS OF LEGAL REGULATIONS FOR TRANSPORT IN THE CITIES AND NECESSITY FOR MAKING SECTOR STRATEGY IN ORDER TO HARMONIZE WITH OTHER MODES OF TRANSPORT

Summary. Crucial problem of transport in the cities, as a source of pollution of the environment, are uncontrolled individual motorization, permanently increasing number of motor vehicles on the roads and streets that expels human primary need for walking.

Reduced social area is also loaded with vibrations and increased sound pressure which often exceeds recommended 80 dB/A.

Accent is on ecological problems caused by: polluted air, which comes from gas emissions (full of aerosol, metals, dust, soot, smoke), cutting and disappearance of green areas in order to provide space for transport, making huge amount of secondary waste (e. g. tyres, metal, used oil, liquids).

To improve present sequences and reduce negative effects in the future it is necessary to take different measures: fiscal, administrative, educational, which will restrict use of individual, particularly car traffic. Same measures should be used to encourage users to use public transportation.

Transport in the cities, with all weaknesses and comparative advantages, should be separately analyzed mode of road transport and also be an individual part in strategic documents.

The most important questions that such strategy of transport in the cities should include are: regulation, privatization or other more efficient mode of organization in public transport of passengers, as well as urban elements of sustainable development of the urban areas and transport.

NOWOCZESNE WYMAGANIA PRAWNYCH REGULACJI DLA TRANSPORTU W MIASTACH I POTRZEBA STWORZENIA STRATEGII SEKTORA W CELU HARMONIZACJI Z INNYMI RODZAJAMI TRANSPORTU

Streszczenie. Podstawowym problemem transportu w miastach, jako źródła zanieczyszczeń środowiska, jest niekontrolowana indywidualna motoryzacja, notorycznie zwiększająca ilość pojazdów na drogach, która wypiera podstawową potrzebę człowieka, jaką jest chodzenie. Zmniejszone obszary nie będące ulicami są narażone na wibracje i zwiększony hałas, który często przekracza zalecane 80 dB/A.

Akcent postawiono na problemy ekologiczne spowodowane przez: zanieczyszczone powietrze, które pochodzi z emisji spalin (pełne aerozolu, metali ciężkich, pyłu, siarki i dymu), wycinanie zielonych obszarów w celu zapewnienia odpowiedniej przestrzeni dla transportu, tworzenie dużej ilości odpadów (na przykład opony, metal, zużyte paliwo, ciecze).

Aby poprawić obecne następstwa i zredukować negatywne efekty w przyszłości, konieczne jest podjęcie różnych kroków: fiskalnych, administracyjnych, edukacyjnych, które ograniczą indywidualne użytkowanie samochodów i ograniczą ruch.

Transport w miastach, ze wszystkimi swymi słabościami i zaletami, powinien być osbno analizowanym rodzajem transportu i być osobną częścią w dokumentach strategicznych.

Najważniejsze sprawy, które taka strategia transportu powinna obejmować to: regulacje, prywatyzacja lub zorganzowanie innych bardziej wydajnych rodzajów transportu publicznego pasażerów, jak również miejskie elementy ciągłego wzrostu obszarów miejskich i transportu.

1. INTRODUCTION

Today, urban areas are main living space for the majority of human population, thus it is natural that they should get the highest possible level of life quality.

Transport, as important component in development and functioning of modern city, is from one side everyday need for all its residents, and from the other side it also causes unavoidable consequences. This derives problems in transport organization and development, which can be solved by current and/or palliative solutions or on base of permanent and profound concept. At the same time, it is necessary to eliminate negative environmental consequences that come from transport (air pollution, noise, area occupation, vulnerability of participants in transport) and simultaneously to enable fulfilment of transport requests and citizens needs [19].

Watching transport and traffic, in the cities and in general, we can note that state (with its budget models) governs huge investments (e. g. roads, railways, ports) and other transport systems. Private market usually cannot start such projects due to large long-term risks.

Transport in big cities is complex. Each city organizes its transport according to its demands and possibilities, therefore it is hard to identify or unify urban transport in the world.

In its early beginnings urban transport developed relatively uniformly and slowly. By introducing automobiles into urban transport development of both a city itself and urban transport has sped up. According to many, urban transport problems emerge literally from excessive accumulation of cars in the city centre. Every city solves this problem in its own way.

In modern conditions urban transport has increasingly more complex transport demands, and conditions of its normal functioning are getting more complicated.

A fast development rate of a city as well as complexity of that development results in numerous conflict situations in the life of a city. For normal functioning of an urban organism increasingly greater demands are set on traffic.

Development of transport demand by the end of the 20th century showed that middle developed countries were exposed to less uncertainty than developed countries.

Taking into account specific qualities of those countries as well as engineering and technological development in general, to a great extent and with a certain delay middle developed countries followed the path already taken by the developed countries.

By the end of the year 2000 Croatia was considered to be developed just like France and Belgium in the 1970-ies. Commencing from that fact and based upon the principle of analogy, transport demand in France and Belgium in the year 1970 might be used as the basis for approximate estimation of transport demand in our big cities in the year 2000 and onward [18].

Very huge differences in the level of development of economically undeveloped countries, in which the domestic product per capita in 1983 ranged between 80 and 1,200 USD, as well as specific characteristics of individual countries, do not allow us to apply a similar analogy. Therefore, assessment of transport demand in undeveloped countries necessitates research of the impact of individual factors based upon which changes referring to population mobility in each country are to be estimated [18].

Urban mass transport and its types are determined by functioning of life in urban areas. This problem does not relate only to the city itself; it refers to everything that gravitates toward the city, so that suburban transport will dictate types of transport, too.

The early beginnings and types of organised transport in cities and suburban areas in compliance with their development were recorded in the second half of the 19th century. That period is characterised by emergence of automobiles and other means of transportation – railway, tramway, bus, subway, etc.

Cities often developed faster than their urban transport and other urban infrastructure so that in certain periods public transport represented an obstruction to further development of urban communities. Due to low accumulation and reproduction potential of public urban transport activities, city administrations were slow in reaching a decision as to investing into public urban transport until it became an obvious obstacle to further development of the city itself. At that point transportation plans were designed and carried out that would reduce urban transport problems for a certain period of time, until the next development threshold.

As a complex system, public urban transport consists of many subsystems that might be considered from different standpoints and classification is most often done according to the means they use or the usage path. Subsystems under consideration in that case are bus, trolley and railways (tramway, subway, and railway). Since transport potential of individual systems differs, they are combined with each other in order to satisfy transport needs of citizens as well as possible.

"Traffic is one of the principle factors affecting urban sprawl and spatial structure. A possibility of spatial mobility of people and goods is reflected in urban construction and spatial arrangement of urban activities. Therefore, for understanding urban spatial structure and development it is also necessary to study traffic beyond the city edge" [21].

The overall development of urban spatial structure depended heavily on urban transport development. Railway was very important for urban development since it improved spread outward from the centre and conditioned the so-called classical form of suburbanisation. The city extended along the tracks, which often departed from the city in a star-like form, enabling thereby suburbs to develop along them. Because of this, we do not study traffic only within the framework of city boundaries.

Structure of public transport of some urban community is of prime importance to economic prosperity. Structure and features of the transport system depend primarily on the urban structure, i.e. size of the city, its form and position of residential areas, business centres, work zones and other function.

2. ENVIRONMENTAL PROBLEMS

Problems that occur in individual motorisation are: transport in standstill, visual degradation of natural and urban area, environmental problems such as polluted air, disappearance of green areas, pollution with secondary waste (e. g. tyres, metal, used oil, liquids) and noise caused by transport vehicles.

Transport in general, therefore urban transport, is responsible for 25% of global CO_2 emission, due to combustion of fossil fuels. Combustion of fossil fuels causes emission of harmful gases that contribute to the greenhouse effect and acid rain (CO_2, CO, CH, NO_X, SO_2), solid particles (dust, soot, smoke) and metals (Pb, Cu, Zn).

Sources of air pollution can be divided as:

1. Movable sources – vehicles that release pollutants into the air (motor vehicles, locomotives, vessels, aircrafts)
2. Immovable sources – industry, electrical energy machinery, etc.

Sources of air pollution should be made, manufactured, equipped, used and serviced in such way that they do not emit pollutants in air over emission limiting value, in quantity that can harm people health, animals, plants, quality of life and environment.

Effects of atmospheric pollution are different, and can be observed through a few components:

1. Reduction of visibility (interferences in air and road traffic)
2. Effect on materials (mechanical and chemical activity and damages of building materials, corrosion, damage of rubber, leather, paint, etc.),
3. Effect on plants (slowing down its growth, necrosis, reduction of fruit),
4. Effect on animals (acute and chronic diseases, death, hard development),
5. Effect on health of the people (acute and chronic diseases, death, difficult development, respiratory disorders, allergy).

2.1. Motor vehicles as a source of air and environmental pollution

One of the most serious environmental pollutants in modern society is traffic, motor vehicles that pollute air, soil, water in share higher than 80% [14]. Emissions depend on vehicle quality, vehicle construction, driving methods, climate conditions, servicing and maintenance of engine and its age.

2.2. Ways of environmental pollution caused by road traffic

Mobility generates transport growth in all European places with same "picture" of outcomes: congestion, wasting of time and pollution of living area.

Environmental pollution comes to expression especially in urban areas which are dealing with serious distortion of environmental balance. Reasons of distortion we can find in many segments, but the most important are vehicles among which road vehicles dominate in list of pollutants. As noticed problem, ecological conditions in city and suburban area are becoming actual subject of concern for the world population which has caused this problem.

Transport in the cities is conditioned with different factors: traffic density, type of road, driving methods, traffic regulation, legislative and curative measures, etc. All factors make one group and affect energy consumption and emission of pollutants.

Problem is that local government usually cannot fight with such problems alone; therefore it is necessary to interconnect on European level.

2.3. Organizational-educational measures of environmental protection

Organizational-educational measures:

- Efficient and quality urban space – ensuring higher rate of using public transport, usage of environmentally friendly motor vehicles in urban transport, improving ecological characteristics of transport systems, rising quality of urban planning and zoning in order to reduce motorized journeys.
- Efficient and quality public transport – ensuring priority on city roads for public transport, implementation of programs for improving and betterment of transport service.

Organizational measures for environmental protection are also:

- use of so called *green traffic lights* at crossings with relevant traffic ways
- shifting individual transport to public transport of passengers
- make harder and/or prohibit driving in the centre of the city or in some parts of the town
- dispersion of institutions and exchange centres
- passing priority for public transport
- taxation of individual vehicles
- increasing prices for parking
- higher taxation of new cars
- increasing prices of fuel
- decreasing prices of lead-free petrol
- networking and building cycle tracks and foot paths

Enumerated organizational measures contribute to reduce air pollution caused by combustion of fossil fuels from motor engines.

Educational measures must take standpoint about society responsibility of every individual in transport system that pollutes environment. With improvement of educational system, in meaning that individual has to be aware about interaction with its environment, main goal must be achieved – protection of entire environment in which human being as only pollutant is passing leaving adversities in deposit to all that suffer that adversities.

2.4. Financial measures of environmental protection

Road transport, especially motor vehicles, disturbs environmental balance. Environmental vulnerability is especially serious in industrial and traffic developed countries.

Therefore, transport is not only necessary and useful but also harmful activity.

In an attempt to minimize bad effects of transport to environment, internationalization of external costs of transport is necessary- this requires that all transport costs (direct and indirect) have to be included in transport service price.

An important reason because of road transport has been developing, and in the account of other transport modes, is the fact that it has not been burden with all expenses that it has been made.

When calculating caused expenses and all relevant influences numerous problems appear, connected with identification of heavy road vehicle and with calculating of economic consequences. However, the prevailing stand is that the payments in infrastructure sector and its costs should be separated from general fees whose goal is to create income. Their purpose should also be specific, only for this purpose.

In the recent ERRAC-a [8] research it has been determined that in the EU cities there are 40% trams and light rail vehicles that are older than 20 years old and should be replaced before 2020, while in the new EU countries there are 67% of such vehicles. For successful financing of urban transport project it is necessary to take some measures: financial, budgetary and administrative instruments including also special local taxes, all considering problems in long-term. All interested parties on local, regional and national level and at EU level must give their contribution. In addition, users must pay a fair price for transport services. Establishment of public-private partnership is also necessary, with clear and stable legal framework.

Income from parking could be used for financing of urban transport, especially for fulfilment of some measures in urban transport. Considerations of transport experts are focused to establishment of "Euro vignette" with urban dimension – urban tolls will be used for development of all types of vehicles and infrastructure. This with launching methodology for counting external costs [4] in transport.

Global questions regarding financing of urban transport are often asked, and they are important for transport market and its economic and legal solutions.

- Who wants or who needs to invest in business that is going to fail?
- Why tram companies must service road around tracks, tracks etc. while buses and other vehicles have right to use roads for free?
- Did five working days week, which became common, reduce usage of public transport?
- Wasn't television also important factor which hold many families at home instead to go out and use public transport?
- Are transport companies in poor condition with old system, old equipment, high service expenses and higher costs of labour force, capable for recovery?
- And what would happen if car had been constructed before electric tram? [18].

3. LEGAL NORMS THAT REGULATE AND IMPROVE TRANSPORT IN THE CITY PROBLEMS

On the Agenda 21 of the United Nations, the First European Conference on Sustainable Cities and Towns took place in Aalborg, Denmark on 24-27 May 1994. The Conference adopted the Aalborg Charter, which provides a framework for the delivery of local sustainable development, and calls on local authorities to engage in Local Agenda 21 processes.

Regarding transport development in the cities, main orientation should be mentioned:
We, cities and towns, shall strive to improve accessibility and sustain social welfare and urban lifestyles with less transport.

We know that it is imperative for a sustainable city to reduce enforced mobility and stop promoting and supporting the unnecessary use of motorized vehicles.
We shall give priority to ecologically sound means of transport (in particular walking, cycling, public transport) and make a combination of these means the centre of our planning efforts.
Motorized individual means of urban transport ought to have the subsidiary function of facilitating access to local services and maintaining the economic activity of the city." [3]

Certainly, The Aalborg Charter watches cities and their government as a whole with accent on self-government functions and other functions that are appropriate for modern organization of the city.

Here we can state with regret that the common development and tendency of city development and development of transport in it are still far away from accordance with principles of sustainable development. In fact, negative impacts of accelerated development, are partially shown in the analysis of sustainable development, thus chosen solutions of development respond only to parts of sustainable development demands.

Attempts to terminate traditional unsustainable mode of urban transport act only declarative in the past ten years. It will take longer period for serious change and transformation. Reform is required.

Growing number of city residents and urban way of living are still typical sort of modern civilization development. Big cities are becoming bigger, consuming neighbouring space and settlements and making metropolitan areas. These areas depend on car transport even when adequate systems of public transport exist. Increasing share of older population also affect changes in transport demand.

Strategies of transport development in the cities are common documents. Because transport is one of sectors of public activity, therefore strategy of transport development is sector strategy; its content is smaller and more specialised than overall strategy of transport development. Most often, strategy of transport development in the cities is integral part of overall state's strategy of transport development. Strategies should respect cities, their needs and transport. City government has important role in implementation of such strategies.

3.1. What can be done?

EU environment policy aims to promote sustainable development and protect the environment for present and future generations. It is based on preventive action, the polluter pays principle, fighting environmental damage at source, shared responsibility and the integration of environmental protection into other EU policies. The objective now is to enhance mobility while at the same time reducing congestion, accidents and pollution in European cities.

The European Commission has recently completed a mid-term review of its transport policy (European Transport Policy for 2010: Time to decide). The White Paper identified as main challenges to the imbalance in the development of the different transport modes, congestion on routes and cities, as well as in airspace, and the impact on the environment. It proposed policies to adjust the balance between the modes, stressed the need to do away with bottlenecks in the trans-European networks (TENs) and to reduce the number of road accidents. It called for an effective policy on infrastructure charging and argued that its position in international organisations should be strengthened.

The key policy objectives are built around four main pillars:
• Mobility: The EU must offer the necessary level of mobility to people and business;
• Protection: protect the environment, ensure energy security, promote minimum labour standards, protect the passenger and the citizen;
• Innovation: increase the efficiency and sustainability of the growing transport sector, develop and bring to the market new innovative solutions;
• International dimension: the EU must be a united, leading player in the international transport stage.

Implementation of EU directives is slow, and even when the directives are implemented they do not always have the intended results. Much scope for improvement exists in the urban transport sector. Until now, the EU has not played a large or direct role and most active in this area are cities themselves. However, the Commission has stepped up its involvement and issued in September 2007 a Green Paper "Towards a new culture for urban mobility". The Green Paper states that throughout the EU congestion poses a real threat to the economic development level of cities, while urban transport has negative effects on climate change, air quality and noise levels, endangering the health and wellbeing of citizens. The aim is to stimulate discussion on urban mobility at European level, inviting all relevant parties to participate in a consultation process and debate on the best options to achieve a sustainable urban mobility. The Green Paper looks at options to make European cities fluid and accessible for all, with a smart, safe and less polluting mobility.

Creating a high-quality urban environment is a priority of the Lisbon Strategy - to "make Europe a more attractive place to invest and work" – in order to enhance its potential for economic growth and job creation.

Essence is in making mobility strategies in the cities at the European level that can be successful only with resolute enforcement at the local level.

In the past few years progressive city authorities in developed cities use environmental zones. Environmental zones are an effective means to combat air pollution. Several European cities have an environmental zone or have announced plans.

Different transport modes cause different external costs, and many transport activities do not pay full costs. Main systems of charging have general or specific character. Specific charges in use refer e. g.:

- purchase of vehicles (sales tax, taxes for vehicle transfer)
- vehicle ownership (property tax, registration tax, driver licence fee)
- special charges (fuel tax, additional fees for entering environmental or special zones)
- direct charges (bridge toll, toll, taxes on weight, length and heavy vehicles) [19].

Charges e. g.: vehicle tax, import tax, environmental tax, parking fees, etc. are also in use

The Republic of Croatia, as a candidate state for full membership in the European Union should harmonize its regulations with the EU *acquis*. The transport policy is a very complex and comprehensive chapter representing more than ten percent of the European *acquis* and which is of strategic importance for any country. The EU transport legislation has a goal to improve the functioning of internal market by supporting efficient, ecological and to the user acceptable services.

In chapter regarding environment, the *acquis* comprises over 200 major legal acts covering horizontal legislation, water and air quality, waste management, nature protection, industrial pollution control and risk management, chemicals and genetically modified organisms (GMOs), noise and forestry. Good progress has been made in the areas of air quality and waste management. Numerous new Acts were recently passed (Environment Protection Act, Physical Planning and Construction Act etc.). In Plan for implementation, obligations from White Paper are priority.

Croatia has been cooperating with the European Environment Agency (EEA) since 2003 and submitting data to the European Environment Information and Observation Network (EIONET). The Croatian Environment Agency was established in 2002 to provide accurate information and data in the field of environment, to set up and develop the National Environment Information System (NEIS) [23].

The "polluter pays principle" is already in operation in Croatia. Since 2001, each motor vehicle has to pass an annual eco-test - in accordance with EU technological standards (Council Directive 96/96 EC of December 2, 1996), in order to monitor and determine its pollution level. An eco-fee is paid

every year for every registered vehicle, in accordance with the vehicle age. The proceeds of this tax are allocated to the Fund for Energy Efficiency and Environment Protection. The "user pay principle" has been applied since 1972, with the introduction of the toll motorway system in Croatia.

4. CONCLUSION

Crucial problem of transport in the cities, as a source of pollution of the environment, are uncontrolled individual motorization, permanently increasing number of motor vehicles on the roads and streets. Analyses show that even though transport is one of the major pollutants of physical and social environment, in this moment planed and well organized strategy for that area does not exist. This is a serious problem, because transport is developing fast. Increasing volume of travelling and fuel consumption will represent bigger pressure to living surroundings, because of higher pollution that comes from road transport.

An important reason because of road transport has been developing, and in the account of other transport modes, is the fact that it has not been burden with all expenses that it has been made. Global questions regarding financing of urban transport are often asked, and they are important for transport market and its economic and legal solutions.

Enlargement of travel volume and fuel consumption will represent greater pressure on living environment, due to bigger pollution that comes out from road transport.

In that way, a number of modes for reduction of road transport influence on urban area have been recommended:

- Efficient and quality urban space – ensuring higher rate of using public transport, usage of environmentally friendly motor vehicles in urban transport, improving ecological characteristics of transport systems, rising quality of urban planning and zoning in order to reduce motorized journeys.
- Efficient and quality public transport – ensuring priority on city roads for public transport, implementation of programs for improving and betterment of transport service.

Organizational measures for environmental protection also are:

- use of so called *green traffic lights* at crossings with relevant traffic ways
- shifting individual transport to public transport of passengers
- make harder and/or prohibit driving in the centre of the city or in some parts of the town
- dispersion of institutions and exchange centres
- passing priority for public transport
- taxation of personal vehicles
- increasing prices for parking
- higher taxation of new cars
- increasing prices of fuel
- decreasing prices of lead-free petrol
- networking and building cycle tracks and foot paths

Enumerated organizational measures contribute to reduce air pollution caused by combustion of fossil fuels from motor engines.

Educational measures must take standpoint about society responsibility of every individual in transport system that pollutes environment. With improvement of educational system, in meaning that individual has to be aware about interaction with its environment, main goal must be achieved – protection of entire environment in which human being as only pollutant is passing leaving adversities in deposit to all that suffer that adversities.

Inclusion of proposed recommendations in national strategy of transport development in the cities will ensure exploitation of their potential for protection of living area. Strategies of transport development in the cities are common documents. Most often, strategy of transport development in the cities is integral part of overall state's strategy of transport development. Strategies should respect

cities, their needs and transport; city government has important role in implementation of such strategies.

At the same time it will contribute to modernization of national strategy, which will be imperative in the future, and also because of the need of harmonization with strategies and standards of European Union. EU environment policy aims to promote sustainable development and protect the environment for present and future generations. It is based on preventive action, the polluter pays principle, fighting environmental damage at source, shared responsibility and the integration of environmental protection into other EU policies. The objective now is to enhance mobility while at the same time reducing congestion, accidents and pollution in European cities. Implementation of EU directives is slow, and even when the directives are implemented they do not always have the intended results.

We can state with regret that the common development and tendency of city development and development of transport in it are still far away from accordance with principles of sustainable development.

References

1. Bauer Z.: *Razvoj i planiranje prometa u gradovima*. Informator, Zagreb, 1989.
2. Black A.: *Urban mass transportation planning*. New York, McGraw-Hill, 1995.
3. *Charter of European Cities and Towns towards Sustainability (The Aalborg Charter).* First European Conference on Sustainable Cities and Towns, Aalborg, 1994.
4. COM(2006.) 314 final: *Europe moving - Sustainable mobility for our continent, Mid-term review of the EC 2001 Transport White Paper.*
5. Črnjar M.: *Ekonomika i politika zaštite okoliša: ekologija, ekonomija, menadžment, politika.* Rijeka, Ekonomski fakultet Sveučilišta u Rijeci, Glosa Rijeka, 2002.
6. ECMT: *Efficient Transport of Europe – Policies for Internalisation of External Costs.* Paris, 1998.
7. Hanson S.: *The Geography of Urban Transportation.* The Guilford Press, New York, London, 1986.
8. *Light Rail and Metro Systems in Europe*, ERRAC, Brussels, 2004.
9. Lončarić-Horvat O., et al.: *Pravo okoliša.* Organizator i Ministarstvo zaštite okoliša i prostornog uređenja, Zagreb, 2003.
10. Marić V.: *Metode optimizacije javnog gradskog prometnog sustava.* PhD dissertation, Faculty of Transport and Traffic Sciences, Zagreb, 1 G. R. Ch. 1997.
11. Mihoci F., et al.: Strategija razvitka prometa u gradovima. Suvremeni promet, No. 1-2, 2000, p.76.83.
12. Padjen J.: *Prometna politika*. Informator, Zagreb, 1996.
13. Padjen J.: *Regulacija i privatizacija javnog gradskog prijevoz.* Ekonomski pregled, No. 7-8, 1996, Zagreb, p. 383-393.
14. *Panorama of Transport,* European Commission, Eurostat, 2007.
15. Pavić Ž.: *Pojam i tipologija gradova u teoriji i praksi*. Zbornik radova Pravnog fakulteta u Zagrebu, 56, 1989, p. 1091-1105.
16. Šimulčik D.: *Optimalizacija razvoja prometne infrstrukture - čimbenik funkcioniranja prometnog sustava*. Bilten znanstvenog savjeta za promet, HAZU, No. 3, 1990, p. 40-42.
17. Transport and environment: on the way to a new common transport policy, European Environment Agency, 2007.
18. Vasilj A.: *Grad i promet.* Osijek, 2006.
19. Vasilj A.: *Problematika javnih ovlasti u uređenju prijevoza u velikim gradovima*. PhD dissertation, Osijek, 2004.
20. Vasilj, A., Činčurak, B.: *Zaštita kakvoće zraka od štetnog utjecaja cestovnog prometa – nužnost donošenja novih provedbenih mjera.* XV International Scientific Symposium Transport Systems 2008, Opatija, Suvremeni promet, br. 3-4, str. 239-242.

21. Vresk M.: *Grad i urbanizacija*: *osnove urbane geografije*. Školska knjiga, Zagreb, 2002.
22. World Commissions on Environment and Development, *Our Common Future*. Oxford University Press, Oxford, 1987.
23. *Screening report Croatia. Chapter 27 – Environment* http://ec.europa.eu/enlargement/pdf/croatia/screening_reports/screening_report_27_hr_internet_en.pdf

Received 22.06.2009; accepted in revised form 20.09.2010