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## **TRANSPORT SYSTEM AS AN ELEMENT OF SUSTAINABLE ECONOMIC GROWTH IN THE TOURISM REGION**

### **Summary**

*Transport is an economic activity whose aim is to transfer people and goods on determined distances in planned period of time, using specific labour devices and procedures.*

*Economy development depends on transport, and among economic activities that are totally based on transport tourism has a distinguished position. Owing to transport, the most distance tourism destinations become available, but at the same time pollutions and visual degradation of nature caused by transport jeopardises, for tourism, the most important resource. This leads to a concept of transport and tourism sustainable regional development.*

*The Adriatic region consists of extremely heterogeneous groups of countries, taking into consideration the level of economy development. As for the Region, tourism is among all economical activities the most important one, this points out the necessity to define a Regional strategy of sustainable development with special emphasis to transport and tourism. Such strategy should include the frame for mutual harmonization of national transport systems, and their harmonization with EU transport system according to: technical and technological characteristics of infrastructure and transport capacities, quality level of transport services, as well as ecology and safety standards.*

**Key words: transport system, tourism, sustainable development, Adriatic region.**

## **1. INTRODUCTION**

Transport system is a whole composed of technical, technological, organizational, economic and legislative elements, with the aim to perform transfer, loading and unloading of goods and passengers. Taking into consideration that for majority of economic activities certain elements of transport system are indispensable, any economic development is not possible without transport system development.

In order to enable ecologically sustainable development, subjects of economic policy should specially take into account that the development of those economic activities that have negative impact on nature should be kept under control. One of such economic activity is transport, whose influence upon nature consists in pollutants emission, noise and smoke production, visual degradation of nature and many other negative consequences that cannot be overlooked.

Part of economy system that is easily affected by nature devastation is tourism, thus preserved natural scenery is one of the most important prerequisites for its development. At the same time tourism efficiency mainly depends on transport accessibility. This contrariety points out the necessity to define a concept of sustainable development of economies based on transport and tourism as the optimum solution.

## **2. TRANSPORT IN ECONOMY DEVELOPMENT**

The history of mankind is a history of economy development, and history of economy development is a history of transport development. During that long time, periods of more developed economic activities which forced transport to develop rapidly, were followed by periods when more developed transport was forcing faster development of economic activities.

Transport enables transfer, loading and unloading of goods and passengers, using specific means for work, working procedures and engaging capital, which in different transport modes and circumstances produces different profit.

Modern trends of transportation means and infrastructure development, together with reduction of employees' number, (mostly those working on transportation means management, due to a process of automatization) stress the well-known characteristic-transport is a capital intensive activity.

In front of people employed in organization and performing a transport process more and more complex demand is put. Therefore, a needed level of knowledge and abilities is becoming higher, and the real organisational structure of working staff must match the formal. Scientific and technical-technological progresses in transport are continuously stimulated by economical principles, ecology and safety.

Thanks to transport, dislocation of production and consumer site is possible, as well as the dislocation of supply sources compared with production factories. All this enables organizationally very demanded "just in time" supplying model or some other complex logistics processes in supplying production or consuming sites.

In people transfer, transport makes possible dislocation of source and destination of working force, as well people mobility that leads to everyday activities organization for which change of place is necessary.

On one side the irreplaceable role of transport in goods and passengers flows present in all economic and social activities; on the other side extremely inconvenient influence on life quality and nature, determine a need to analyse and manage transport activity towards defined aims.

That is why a system approach is more and more applied in transport research. Optimisation of a transport system, taking into consideration the impact of surrounding, makes possible higher profitability of transport enterprises and maximum effects of economy and social activities.

Transport engages more than 29,8 per cent of total year energy consumption, which is proportional to nature pollution.<sup>1</sup> Forests, meadows, lakes, mountains and seashore where objects of transport infrastructure are situated have lost their natural beauty, and peace is replaced by noise.

On transport routes accidents happen everyday, in which people material goods and nature suffer. In USA (1996) 2 293 000 accidents were evidenced, with 3 511 000 injured and 41 907 killed, while in Japan in 771 084, accidents with 942 203 injured and 9 942 killed were evidenced!<sup>2</sup>

As a rule more developed economy goes side by side with more developed transport, which confirms a thesis of their mutual interdependence. This fact is confirmed by data about transportation work in some European countries.

Table 1 Volume and Structure of Goods Transport in some European Countries in 1997.  
( in mlrd tkm)

Country	Railway	Road	Inland waterways	Pipeline	Total
Germany	72,70	245,66	62,15	13,50	393,66
France	54,82	160,23	5,97	22,10	243,12
Spain	11,49	-	-	6,53	-
Italy	25,45	207,22	0,20	13,20	246,07
Greece	0,34	12,74	-	-	13,18
Slovenia	2,85	-	-	-	-
Croatia	1,88	1,09	0,00	1,00	3,97

Source: Prijevoz, skladištenje i veze u 1998. Državni zavod za statistiku, Zagreb, 1999,p.107

Economically most developed European countries like Germany, France and Italy produce the largest volume of transportation work. This is a result of huge amount of produced goods that have to be transferred to consumers, production sites, or ports in order to be transported by sea. For their production a transfer of large quantities of raw materials and semi-products was needed too.

<sup>1</sup> Wagener N., Environmental protection and Safety Standards. Transurb Consult and Elmar Hertzog und Partner Management Institute GmbH, Berlin, 1997, p.5a.

<sup>2</sup> Prijevoz, skladištenje i veze u 1998. Državni zavod za statistiku, Zagreb, 1999.,p.114.

Figures in table 1 point out another well-known fact, which represents one of the most important EU traffic problems-the disproportion of road transport share in intra-European goods flows (Germany 62,4 per cent, France 66,0 per cent, Italy 84,23 per cent).

The share of other transport branches is relatively small because there are no natural conditions for certain traffic solutions (for instance in Italy inland waterways) or because of ineffective transport policy that should stimulate for economy and society optimal transport modes of cargo (for instance railways, inland waterways or pipelines).

From the table 1 it could be deduced that the structure of transport in Croatia is more convenient. Unfortunately, data for other transitional countries were not available and a comparison of Croatia with similar economies was not possible. Figures concerning Croatia should not be a reason for great satisfaction, for it is well known that Croatian transport system is below European quality standards. Apparently, such characteristics of transport satisfy a modest volume of production, but a process of modernization is already being undertaken with the aim to be in harmonization with development of economic activities.

In the field of passengers transport the situation is very similar to those in goods transport although some differences could be noticed.

Table 2 Volumes and Structure of Passengers Transport in some European Countries in 1997.  
(in mlrd pkm)

Country	Railway	Car	Bus	Total road	Total
Germany	64,02	740,50	68,00	808,50	872,52
France	61,88	685,10	42,00	727,10	788,98
Spain	17,88	-	-	-	-
Italy	49,50	633,20	88,07	721,27	770,77
Greece	1,81	30,10	5,83	35,93	37,74
Slovenia	0,62	-	-	-	-
Croatia	0,98	-	4,46	4,46	4,46

Source: Prijevoz, skladištenje i veze u 1998. Državni zavod za statistiku, Zagreb, 1999,p.107.

The similarity in transport volume of goods and passengers flows can be seen in the fact that most of traffic is linked to road. Passenger car is considered a vehicle without substitute in organisation of everyday activities and many transfers on longer distances (for example excursions and tourist journeys) are organised by car or bus. Urban transport is generally performed by buses and only in large cities they are in a position to share this role with some system of railway or electric transport system.

The possibility to influence upon the role of road transport in passengers flows is limited, because a car has not an alternative neither among road vehicles nor among other transportation means. The substitution of other modes of road passengers' transport seeks extreme organisational effort and investments from the subjects of transport policy on national and local level.

In Croatia the structure of passengers transport is in accordance with the structure in other European countries (for which data were available). Such situation leads to a conclusion that in front of them a serious task arises- how to transfer a part of transport volume that is actually performed by road transport to other transport branches, specially railways which is at disposal in all counties and almost all routes as well as roads.

Besides intermodal systems for goods flows, more attractive are becoming “high speed” passengers’ trains as the only alternative to road transport at the moment.

### 3. TRANSPORT AND TOURISM IN SUSTAINABLE REGIONAL DEVELOPMENT- ECOLOGY AND SAFETY ASPECT

Tourism can be considered as economic activity totally dependent on transport. The influence of transport on tourism is varying from extremely propulsive to very restrictive. Although tourism consists in temporary change of residence with the purpose to enjoy in rest, entertainment, recreation, sports, businesses., it includes transport as well, because the transfer of tourists is necessary.

Transport development always gives an impulse to tourism development, influencing on massive tourist flows, accessibility of cross-ocean destinations or nearer destination stimulating building up of necessary transport infrastructure.

At the same time tourism has an impact on transport and stimulates the expansion of infrastructure on locations, which would be left out of development plans, or the technical-technological progress of transportation means with the aim to satisfy specific tourists needs.

Transport and tourism are meritorious for considerable amount of GDP and have a pretty high share in those economies that dispose of comparative advantages for these activities development. Of course the amount of GDP is extremely different in highly developed countries compared with transitional countries. But, it should be pointed out that together both activities have a share of 20 to 25 per cent in total GDP, and that the share of tourism is twice as big as the share of transport.

Table 3 The Share of Tourism and Transport in GDP in Selected Countries of Europe and SAD

Country	Year	Trade, hotels and restaurants	Transport, warehousing and communications
USA	1986	17,5	6,2
	1992	16,8	6,0
	1993	16,8	6,1
	1994	16,3	5,9
	1995	16,1	5,8
	1996	16,1	5,7
France	1986	14,7	6,1
	1993	15,1	5,9
	1994	15,0	5,8
	1995	15,8	5,9
	1996	15,6	5,9
	1997	15,4	5,9
Spain	1986	20,1	5,4
	1994	22,5	5,7
	1995	-	-
	1996	-	-

Italy	1986	19,0	5,7
	1993	18,3	6,1
	1994	18,4	6,3
	1995	19,0	6,6
	1996	18,9	6,5
	1997	18,7	6,6
Greece	1986	11,9	6,8
	1993	13,8	7,1
	1994	13,5	7,2
	1995	13,8	7,3
Slovenia	1990	13,1	6,5
	1992	12,9	6,5
	1993	12,9	7,3
	1994	14,8	7,5
	1995	15,0	7,7
	1996	14,0	7,6
Croatia	1995	14,2	9,6
	1996	15,2	8,8
	1997	15,6	8,7

Source: UN Statistical Yearbook. New York, 1998-2000, vol.42-44.

The interdependence of transport and tourism has a negative aspect as well. Transport, as mentioned earlier, has an extreme negative impact on nature that can be seen in: noxious gasses and substances emission, noise emission, visual degradation of natural scenery, water and soil pollution with hazardous substances pouring out and the like.

The actual moment of tourism is characterised by high rates of growth that should according to prognoses continue in near future. Special attention is given to numerous kinds of selective tourism, among which, because of expanding devastation of nature, more attention is paid to different products deriving from ecological tourism. These important kinds of tourism are contrary to transport system development especially road transport that compared to other transportation branches is the most aggressive one according to ecological criteria.

Table 4 Energy Consumption and Pollutant Emission in Road Transport

Type of vehicles	Spec.consump. l/100 km	Pollutant emission (in g/veh./km)				
		CO	No <sub>x</sub>	HC	CO <sub>2</sub>	SO <sub>2</sub>
- car						
(gas) in city traffic	11.6	45.0	1.2	6.4	315	-
on highway	5.3	12.5	1.6	1.3	160	-
(diesel) in city	9.4	1.7	0.8	0.5	331	0.08
on highway	5.8	0.7	1.7	1.0	201	0.06
- bus						
in city traffic	33.0	18.0	15.5	12.0	1158	1.70
on highway	32.0	3.8	15.0	2.7	1123	1.50

- supply vehicle						
in city traffic	16.0	55.4	3.0	6.0	498	0.18
on highway	-	-	-	-	-	-
- freight vehicle						
in city traffic	-	-	-	-	-	-
on highway	33.0	8.0	17.5	2.8	1158	1.59
- motorcycle						
in city traffic	6.0	15.6	0.1	14.0	163	-
on highway	3.5	8.5	0.2	4.7	-	-

Source: Wagener N., Environmental Protection and Safety Standards. Transurb Consult and Elmar Hertzog und Partner Management Institut GmbH, Berlin, 1997. p. 5a

Road transport is well known for one more very important problem of modern traffic- the safety of people and material goods. In Croatia during 1996 11 740 traffic accidents with people involved were evidenced, in which 16 182 persons were injured and 721 were killed.<sup>3</sup> Comparing these data with safety parameters for Slovenia, and taking into consideration the number of inhabitants of both countries it can be deduced that the safety level is similar. Among other EU countries Slovenia occupies the leading place as the country with the lowest safety level.

Unfortunately, the unsatisfying safety parameters in Croatian road transport are not changing despite numerous activities undertaken by the Ministry of maritime affairs, traffic and communications in cooperation with The Ministry of internal affairs (Traffic police) focused on diminution of accidents and more equal division of labour between transport branches.

In international tourists flows (1998) the highest share is addressed to air transport (43,7 per cent), only a little bit lower to road transport (41,4 per cent), while the share of other transportation branches is almost symbolic.<sup>4</sup> In Croatia the share of road transport in tourism flows is more than 90 per cent.<sup>5</sup>

If these facts are put in comparison to interdependence of transport and tourism, not only in Croatia but also in Europe, serious measures have to be undertaken towards definition and organization of a sustainable development concept. It should include not only transport and tourism but also all the other activities that base their development on transport but always bearing in mind that nature is an unrestorable resource to be preserved for future generation.

<sup>3</sup> Prijevoz, skladištenje I veze. Državni zavod za statistiku, Zagreb, 1999, p. 112

<sup>4</sup> Tourism Highlights 2000. WTO, August 2000, p. 3

<sup>5</sup> Mrnjavac, Edna. Tourist Transport and Environmental Protection. 15<sup>th</sup> Biental congress "Hotel 2000 Tourism and Hospitality: Trends and Challenges for Future", Opatija, 2000, p.

### **3. OPTIMIZATION OF TRANSPORT AND TOURISM IN THE ADRIATIC REGION**

The Adriatic region is well known for highly developed tourism. The majority of emitive market is concentrated in Middle Europe in highly industrialised countries such as Germany, Austria and Italy, and in a group of transitional countries such as Slovenia, Czech Republic, Hungary, Poland and Slovakia.

Relatively small distance till emitive market points out a need for high level of integrity between regional and European transport system. In this case it is not only a harmonization of technical and technological standards of transport systems, but also a physical connection and therefore a harmonization of transport systems on all levels is indispensable.

There are three aspects of integration that have to be pointed out:

- technical characteristics of transport infrastructure in the region have to be harmonised with the EU transport infrastructure;
- quality of transport service on the regional territory has to be in accordance with the quality of transport service in EU;
- ecological and safety standards in the region have to be harmonised with those on EU territory.

Inhabitants of EU are used to modern transport infrastructure that enables high quality service and simple organization transport process organization, as well as easy accessibility of any destination with relatively small effort. When they start to plan the vacation they expect at least such transport conditions on which they are used in their living place, or they will chose another destination that is approachable by modern transport infrastructure.

The quality of transport service depends on infrastructure quality but also on characteristics of transportation means such as comfort, speed, safety and low price. Tourists will usually give preference to those destinations that are approachable by transport modes of such characteristics.

The ecology and safety level, compared with former two characteristics, is by no means considered to be that factor that will have predominant influence when choosing a tourism destination. Ecology and safety standards are not easily noticed as the factors mentioned earlier. Their influence is on a long-term level, and leads to minimization of market attractiveness of tourism destination because of nature devastation and lower safety.

#### **4.1. Interdependence of Transport and Tourism-Example of Croatia**

Croatian economy is based on tourism and transport. Although as a tourism destination it is accessible by all transportation branches, their capacities are fare from being used uniformly.



Table 5 Tourists Arrivals in Croatia by Transportation Mean

Means of transportation	1987	1989	1994	1997	1999 <sup>2</sup>
Car	57.4	63.0	55.8	66.2	63.1
Car with trailer	-	-	10.2 <sup>1</sup>	9.4	14.2
Motor home	-	-	-	3.4	3.7
Bus	9.2	12.1	15.8	12.5	7.8
Motorcycle	-	1.6	0.9	1.3	1.1
Total road traffic	66.6	66.7	82.7	92.8	89.9
Railway	2.9	1.8	1.7	0.6	0.1
Airplane - charter	21.2	13.9	7.1	3.6	5.2
Airplane –liner	7.6	7.1	5.3	1.7	3.5
Total air traffic	28.8	21.0	12.4	5.3	8.7
Ship /ferry/ yacht	1.7	0.5	3.2	1.3	1.3
Overall total	100.0	100.0	100.0	100.0	100.0

Source: TOMAS '97. Tourist Attitudes and Expenditures in Croatia – Trends in Tourism Demand and Expenditures 1987 - 1997 (Special Report). Institute of Tourism, Zagreb, 1998, p. 16. ; Survey on Tourist Gratification in Maritime Towns, Summer '99, Tourism, Institute of Tourism, Zagreb, vol.47, no.4 / 1999., p.370.

Note: <sup>1</sup> This figure includes motor homes  
<sup>2</sup> Data refer to the summer of 1999

The figures concerning 1987 and 1989 include only foreign tourist arrivals. It means that tourists from former Yugoslav republics and Croatia have not been taken into consideration. If the statistics contained their arrivals too, the share of road transport would be higher. The short distances motivate them to travel mainly by their cars. The figures referring to the years 1994, 1997 and 1999 contain Croatian tourists as well as foreign tourists from about ten European countries. Therefore these figures are more suitable for statistical analysis and comparisons than the former years' figures.

Undoubtedly, the majority of tourists coming to Croatia in the last ten years have used road transport. Its share is permanently rather high and in last year amounts almost 90 per cent. More than 2/3 of this percentual amount accounts for cars, which represent the mean of transportation most frequently used by tourist coming to Croatia. The reason for this is that Croatia is a country for family holidays, and the quality of service offered by the other modes of transport is lower than the quality of transport by car. In addition to this, due to its reasonable purchasing cost, flexibility and individuality, car is the mean of transportation most frequently used for other purposes as well.

The share of various types of road vehicles has changed considerably in the observed period. In 1987, tourists mostly used cars and buses, whereas, towards the end of the past decade, the number of cars towing trailers, and motor homes began to increase. Furthermore, the significant increase in the share of road transport in tourist arrivals at the end of the observed period is mainly due to the growing use of those vehicles that are used exclusively for tourism purposes.

The role of other transport modes is steadily declining. In 1987 air transport accounted for almost 1/3 of total transport, whereas, last year it dropped threefold. This difference derives from the fact that figures for 1987 and 1989 included tourist arrivals from no European countries too, which could reach Croatia only by airplane. Besides that, a change in

the emission market can be noticed – in the past ten years the number of visitors from distant countries has decreased in favor of visitors from Central Europe, where the structure has also changed in favor of tourist from transitional countries.

Railway transport participated with a symbolic amount of significantly less than 1 per cent. The reasons for this extremely unfavorable condition lay in outdated infrastructure and facilities that can offer only poor-quality and non-competitive transport services.

Maritime transport, despite occasional mild oscillations, does not feature a downward trend and can be considered to be satisfactory. Nevertheless, the extremely modest share of merely 1,3 per cent at the end of the observed period was brought about not only because of changes on the emission market, that is, a multifold drop in the number of Italian tourists, including boaters, but also because of the technical and technological obsolescence of seafaring facilities.

Safety parameters in certain transport modes in Croatia indicate some similarities compared with ecology parameters. An analysis that has been made during 1999 with the aim to contribute to the National strategy of safety in traffic included two main Croatian routes of utmost importance for tourists' flows. These were: Rijeka-Zagreb (road and railway) and Rijeka-Dubrovnik (road and ships line).

Table 6 Traffic of Vehicles and Passengers, Traffic Accidents and Their Consequences on the Route Rijeka-Zagreb

Road	1993	1994	1995	1996
Average day traffic per year	9 050	9 399	9 750	12 527
Vehicles traffic	3 303 250	3 430 635	3 558 750	4 572 355
Passengers traffic	17 375 095	18 045 235	18 734 355	24 050 587
No. of accidents	1 108	1 185	1 233	1 244
No. of killed pass.	28	18	18	12
No. of seriously injured pass.	64	79	55	64
No. of injured	156	167	156	148
Railway	1993	1994	1995	1996
Passengers traffic	1 769 448	1 749 368	1 421 551	1 302 864
No. of accidents	4	7	6	2
No. of killed pass.	3	3	1	1
No. of injured	1	5	4	2

Source: Božić m et al. Brojenje prometa na cestama RH. Prometis, Zagreb, 1994-1997  
Statistics MUP RH, Odjel prometne policije, Zagreb, 1998.

Note: Passengers traffic per year has been predicted according to empirical parameters of average no. of passengers in a road vehicle.

Table 7 Traffic of Vehicles and Passengers, Traffic Accidents and Their Consequences on the Route Rijeka-Dubrovnik

Road	1993	1994	1995	1996
Average day traffic per year	7 095	7 169	7 243	8 121
Vehicles traffic	2 589 675	2 616 685	2 643 695	2 964 165
Passengers traffic	13 621 691	13 763 785	13 905 770	15 591 340
No.of accidents	3 170	3 939	3 495	2 743
No.of killed pass.	59	88	79	66
No.of seriously injured pass.	206	360	398	255
No.of injured pass.	438	826	845	723
Maritime line	1993	1994	1995	1996
Passenger traffic	242 002	182 117	155 275	144 329
Vehicles traffic	35 669	31 475	28 858	26 306
No.of accidents	-	-	1	-
No.of killed pass.	-	-	-	-
No.of seriously injured pass.	-	-	1	-
No.of injured pass.	-	-	-	-

Source: Statistics JP "Jadrolinija", Sektor plana i analize, Pravna služba, Rijeka, 1997.

Note: Passenger traffic per year has been predicted according to empirical parameters of average no. of passengers in road vehicles.

Figures in both tables indicate that road transport is an extremely insecure transport mode. On Rijeka-Zagreb railway, in all the accidents, road vehicles were present too. In future, when road-railway crossings in the same level will be substituted by crossings on different level, railway transport on the mentioned route could be considered almost absolutely safe.

Similar conclusion derives from figures illustrating the safety level on Rijeka-Dubrovnik route. Liner maritime transport with only one accident is really a very safe transport mode.<sup>6</sup>

A comparison of figures on the roads Rijeka-Zagreb and Rijeka-Dubrovnik clearly points out how insecure the second relation is. It is well known under the name Adriatic tourists road and is for many seashore destinations the only way to reach them.

If reassuming ecology and safety parameters on the main Croatian corridors a conclusion arises that they cannot be considered satisfying. This negative characteristic is not

<sup>6</sup> In the period 1945-2000 on all the lines organised and performed by Croatian shipping operators the number of accidents is symbolic, no persons were killed and few were injured.

so obvious because tourists' flows are relatively weak; they are in a process of expansion and tend to reach pre-war levels in a few years. At that moment it will be obvious that tourists reach Croatia mainly using road transport that at the same time devastates nature and for all participants is not a safe way of travelling at all.

On a short-term level transport policy is focused to build up road infrastructure that will lead to easier transport accessibility of the country and probably to higher safety level on Croatian roads. On the long-term level the aim of modernization of Croatian transport system should be the stimulation of other ecologically more acceptable modes of transport such as railway (high-speed trains), maritime transport and in some circumstances even air transport, in order to avoid destruction of the main Croatian tourism advantage – the preserved nature.

#### **4.2. Determinates for Defining a Concept of Sustainable Development of Adriatic Region**

The Adriatic region consists in heterogeneous group of countries. The difference between countries is shown in level of economy development—from highly developed Italy, middle developed Slovenia to modest developed Croatia, specially Bosnia and Herzegovina, Albania and Montenegro.

Besides that the national economy structure is very different from one country to the other— from developed tourism countries like Italy and Croatia, to modest developed tourism countries like Slovenia, and modest developed other countries in the Region. Among tourism countries themselves there are considerable differences— Italy and Slovenia are at the same time emitive and receptive countries, while Croatia is a typical receptive tourism destination.

In the Adriatic region as a whole, and in each country, the process of economy development was mainly harmonised with the process of transport development. This has led to differences in transport systems that cannot be neglected.

Before defining a concept of sustainable development, the characteristics of transport and tourism, as well as their interdependence, have to be analysed. The criteria of optimisation have to be defined too. Each of the country in the Region has, according to its comparative advantages, a need to give priority to economic activity that can be opposite to other countries development aims.

Therefore, after defining a national concept of sustainable development in the field of transport and tourism, coordination on regional level is necessary. In this optimisation process, according to objective criteria, some other priorities (transport routes, tourism objects location, kinds of tourism offer) for the Region as a whole may arise. They have to be taken into consideration in a concept of sustainable development according to safety and ecology standards.

The basic question of the Region development is: in one heterogeneous region such as the Adriatic region, how to reach a certain level of homogenous, which will primarily lead to transport, and tourism development? In this context some measures that will as a consequence have the unification of transport parameters are:

- built up of transport infrastructure on relations covered by Pan European network of traffic corridors;
- harmonisation of priorities and dynamics of transport infrastructure built up in the Region;
- definition of state strategy transport development taking into consideration the aims of regional development, specially the role of transport in tourism;

- acceptance of principles upon which the common transport EU policy is based, when defining national transport policy in the Region;
- state stimulating those technical and technological modes that lead to higher transport quality;
- definition of national strategy of safety in transport with detailed measures for implementation;
- definition of national ecology strategy in which special attention will be given to transport influence to nature and adequate protection measures;
- among these measures transport modes that maximal preserve nature have to be chosen and further on by means of transport policy their implementation stimulated;
- transport policy should be detailed, in order to pave the way to defined aim fulfilment.

Besides all these, there is another very important task to be carefully examined-the choice of methodology. Experience has shown that better results in a whole research can be obtained with system approach application, which is always including the impact of surrounding.

So, after having defined a Strategy of sustainable development of transport and tourism for each country in the Adriatic region, all these concepts have to be harmonised and act as a whole-the system of sustainable development of transport and tourism in the Adriatic region. A common body, whose aim is to perform this task, should define the criteria for optimisation, and after the application of system approach point out the priorities.

These priorities need not necessarily match completely the priorities in partial national strategies of sustainable development. This fact is easily to understand if one bears in mind the basic cognitions and principles of system approach, and should not be understood as an obstacle but as a first step to a continuing process of harmonization.

## **5. CONCLUSION**

Transport is an economical activity whose aim is to perform transfer of people and goods by engaging specific labour devices and procedures. Economy development is totally depending on transport, and among activities, which without transport cannot be organised; the distinguished place is occupied by tourism.

According to UN statistics their share in GDP of most European countries as well as in USA varies between 20 and 25 per cent. In tourism flows almost the most important role is played by road transport whose share is about 41 per cent.

Transport makes accessible all tourism destinations even those most distant, enables massive scale tourism, and high quality of transport services. At the same time, transport is meritorious for devastation and pollution of nature, and nature is considered the most precious resource of tourism development. The most distinguished place in nature devastation is played by road transport, which leads to a question of its controlled development or some substitutive solutions especially in tourism regions.

The Adriatic region is well known for tourism, which is considered to be a most important activity. It consists of countries that are very different among them according to the level of economy development.

In order to optimise a system of economy development in the Adriatic region a concept of sustainable development with special reference to transport and tourism has to be defined. Taking into consideration the importance of tourism for the Region, the crucial starting point is the harmonization of national transport systems with EU transport system.

This should be performed according to these elements: technical and technological parameters of infrastructure and transportation means, quality of transport services, as well as ecology and safety standards.

Literature:

- 1.Božić, M et all. Brojenje prometa na cestama RH. Prometis, Zagreb, 1994-1997
- 2.Mrnjavac, E. Tourist Transport and Environmental Protection. 15<sup>th</sup> bienal congress"Hotel 2000 Tourism and Hospitality: trends and Challenges for the Future", Opatija, 2000.
- 3.Wagener N. Environmental Protection and Safety Standards. Transurb Consult and Elmar Hertzog und Partner Management Institut GmbH, Berlin, 1997.
- 4.Prijevoz, skladištenje i veze u 1998. Državni zavod za statistiku, Zagreb, 1999.
- 5.Pregled zadovoljstva gostiju u primorskim gradovima,ljeto 99. Institut za turizam,Zagreb,Turizam, 4/1999.,vol.4
- 6.Statistics MUP RH, Odjel prometne policije, Zagreb,1998.
- 7.Statistics JP"Jadrolinija", Sektor plana i analize, Pravna služba, Rijeka,1997.
- 8.Tourism Highlights 2000, WTO, 8/2000.
- 9.Tomas 97-Tourist Attitudes and Expenditures in Croatia-Trends in Tourism Demand and Expenditures 1987-1997. Institut za turizam, Zagreb,1998.
- 10.UN statistical Yearbook, New York, 1998-2000, vol.42-44