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STRATEGY OF ENVIRONMENTAL PROTECTION IN TRAFFIC AND TOURIST FLOWS

SUMMARY

A whole range of dangerous substances and harmful organic and inorganic materials are transported daily through the system of traffic and tourist environment and flows. The use of these substances covers a wide range: in the production of drugs, agrotechnical protective means, fertilisers, paint and varnish, polymers, detergents, fuel, and in other industries.

Within the strategy of environmental protection and the tourist and traffic surrounding, the producers and traffic societies take relatively good care about the so-called technological safety during the production, handling and transport of the dangerous substances.

According to the legislation, the obligations accepted from the Basel Convention, and conclusions of the United Nations Conference on Environment and Development (UNCED) etc., the elimination of the harmful matter and waste from the Croatian ecological environment has a strategic objective, although the necessary protective measures have not been undertaken and organised completely yet, just as the knowledge in case of major accidents with dangerous material has not been acquired yet.

In the transport environment and the tourist flows it is necessary to strengthen the control of selection, development and introduction of the technologies that include dangerous substances. On the other hand, the technologies that represent an excessively big risk regarding accidents, with the possibility of endangering the inhabitants, goods and eco-environment, should be strongly opposed to.

1. INTRODUCTION

A number of activities, such as production of food or tourist industry, see their chances for development and marketing only in qualitative environment. The data monitored at the strategic centre for ecology indicate that further development, even only of these two industry branches, is impossible in the same way as up to now: by using and irretrievably destroying the natural resources. The destroyed, devastated or neglected agricultural land, or unlimited change of use of the most fertile land for industrial or urban construction measured in hundreds of thousands of kilometres.

The Adriatic seaside, but also the mountains of the Alps and the Dinaric Alps hardly manage to resist the concrete and waste, not to mention the acid rain and forest fires.

On the other hand, the road traffic, for example, pollutes the air primarily by pollutants whose influence in the USA amounts to about 60%, in Germany 54.6%, in Russia about 13%, and in Croatia the pollution is estimated at about 5.65×10^6 t, with annual increase of 4.19% and a portion in the global pollution of 0.074% CO₂.

Exhaust gases are considered to participate with 95 to 99% in the total pollution produced by one road motor vehicle. Thus, 55 to 60% pollutants are caused by the road motor vehicles, about 10% from the industry and 10% from other resources.

Taking into consideration the accelerated increase of the industrial activities, which have, after 0.6% in 1994, 1.7% in 1995, and 4.3% in 1996, grown significantly, the gross national product has been realistically increased in the year 1997 by about 5.5%, reaching the 78% of its level in 1990. This was predominantly influenced by the increase of the tourist traffic by 42% and the activities in civil engineering by 16%, as well as industrial production which increased in 1977 by about 6% compared to 1966.

As a rule, the gradual revitalisation of the tourist traffic (number of bed-nights in 1997 amounted to 59% of the one achieved in 1990), the main incentive for the production growth came in 1997, caused by intensifying the reconstruction process and the infrastructure construction.

Therefore, the development strategy tends to improve the industrial flows in the field of environmental protection and improvement. In the immediate short-term period, the objective is to create an economic basis for the repair of the condition in the critical areas as well as of the production which pollutes the environment, and in the long-term to select such development which will be environmentally friendly.

2. TRANSPORT OF DANGEROUS SUBSTANCES IN TOURIST ENVIRONMENT

The number of dangerous substances in tourist - traffic environment is very big.¹ On the other hand, insufficient attention is paid to the dangers, and even less to the damage that could be caused.

Up to 1997, for example, not one adequate information bulletin, publication or manual was published nor promoted, which would educate the public about the dangerous substances in traffic and tourism and of course, about the damage that they can cause in tourist traffic and eco-system.

The analyses in some industrial companies in the 1980s resulted in publishing the Journal "Kemija u industriji 1987" (*Chemistry in Industry 1987*) which provided certain information about the dangerous substances (chemicals) and dangers and damages that they might cause in the traffic - tourist environment.

Regarding these issues, more detailed information is provided by ADR and the Croatian regulations ("NN, No. 97/93")².

According to regulations, dangerous substances are those substances whose properties such as explosiveness, melting, toxicity, corrosiveness and flammability can endanger health or life of people, cause material damage and pollute the environment (soil, water and air). Very often there is a danger of fire (acetone, benzol, petrol, ethanol, ether, kerosene, methanol).

Flammable liquids are most frequently transported, since they are used as liquefied fuels (petrol, gas oil, paraffin, kerosene, fuel oil and others), e.g. lubrication oils, various solvents (alcohol - methanol and ethanol, ethers, petrol and other industrial raw materials).

Combustion of petrol or diesel fuel in internal combustion engines produces the biggest amount (about 98%) of CO₂ and H₂O as non-toxic components, about 2% of toxic components (CO, CH, NO_x, SO_x) and 0.8% solid particles which are the primary air pollutants whose number exceeds 200.

The road motor vehicles consume petrol and diesel fuel as power supply, which contain basically about 85% carbons, C, about 5% hydrogen, H₂ and somewhere about 0.5% additives.

One ton of fuel emits about 3.667 tons of CO₂ by stoichiometric combustion in the engine of the road motor vehicle.

The analysis of the consumption of oil and its products over the last twenty years provides the possibility to predict that the primary sources of energy in the world will stay the same and approximately constant by the year 2000, and that the consumption will be reduced over time, especially in the developed coun-

Table 1 - Chemical composition of road vehicles exhaust gases

Components	Vehicles with Otto engine	Vehicles with Diesel engine	Mean chemical contents
Nitrogen, N ₂	74-77	76-78	75-77
Oxygen, O ₂	0.3-8.0	2-18	4-9
Water steam, H ₂ O	3-5.5	0.5-4.0	-
CO ₂	5.0-12.0	1.0-10.0	2-4
CO	5.0-10.0	0.01-0.5	1-10
NO _x	0.0-0.8	0.0002-0.5	0-0.8
Hydrocarbons	0.2-3.0	0.009-0.5	0.2-3.0
Aldehydes, RCHO	0.0-0.2	0.001-0.009	0.0-0.2
Soot, g/m ³	0.0-0.004	0.1-1.1	0.0-1.1

tries³ it is declining slowly. In the developing countries, the production grows about 2% on the average.

This means that the emission of CO₂ from the road motor vehicles also remains at the same levels or declines slowly, which can be seen in Table 2.

Table 2 - Consumption of oil and motor fuel in the world and the emission of CO₂

(numbers in brackets refer to CO₂ in x 10⁶ t)⁴

Countries	1980		1987	
	Oil	Motor fuels	Oil	Motor fuels
OECD	1818 (6666)	1254 (4598)	1659 (6083)	1145 (4189)
Developing countries	523 (1918)	361 (1324)	603 (2211)	416 (1525)
Socialist countries	671 (463)	463 (1698)	679 (2490)	468 (1716)
World x 10 ⁶ t	3012 (11045)	2078 (7620)	2941 (10784)	2029 (7440)

Table 3 - Some properties of flammable liquids

Types	Volume, %		Temperature, °C			Rel. air density
	DGE	GGE	Pour point	Combustion	Boiling point	
Acetone	2.6	12.8	-17.8	456	56.5	2.0
Benzen	1.3	7.1	-11	560	80	2.8
Petrol	1.4	7.4	-37.8	456	-	3.4
Ethanol	3.3	29	12.8	365	78	1.6
Ether	1.9	36	-45	160	35	2.6
Kerosene	0.7	5	43-72	210	150-300	-
Methanol	6.7	-	36	390	64	1.1

Source: ADR - 1995

During transportation through tourist regions and landscape, there is a danger of fire and explosion.

The lower limit of explosiveness is the smallest amount of gas volume combined with air.

Most of them are dangerous for health, since they can be narcotic, toxic and irritating.

Due to great sensitivity they are packed in steel, aluminium, solid containers, plastic barrels or joint packing with internal glass packing, depending on physical and chemical characteristics.

The packaging of the dangerous goods have to indicate the toxicity, damaging, corrosive characteristics, irritating, explosive and fire-fighting operation.

Due to the position of Croatia in the geo-traffic, cultural and tourist aspect towards Europe and the world, about 120,000 to 220,000 tons of flammable substances and gases, 50,000 to 120,000 tons of toxic and harmful substances, and 20 to 50 tons of radioactive materials are transported constantly along its road network. There are more than 63% of flammable liquids and gases and over 33.5% of toxic substances in the total amounts.

Among the harmful substances (liquids) passing through the traffic and tourist system of Croatia, there are: acids (chloric, sulphurous, acetic, etc.), alkali (sodium hydroxide solution, potassium, ammonium), salts (cyanide, sulphides, hypochlorides, chromate), elements (chlorine, sulphur, zinc, powder aluminium), other inorganic substances (carbides, arsenic, propanol, butanol, glycol), ester (ethylacetate, butitacetate, melillocrylate, pitalen, etc.)

According to the Basel Convention, Article 13, Item 3b, the Government Administration for the Protection of the Environment, Tourist and Transport Flows of the Republic of Croatia, send regularly reports to the Basel Committee on the transport of dangerous substances, waste and other ecologically harmful and dangerous materials. During 1994, the dangerous materials were imported into Croatia on two occasions. On both occasions it was the import of oil products and the ground water waste (Y 9) from the Republic of Slovenia. Thus, the national importer - the company "RIJEKATANK" from Rijeka, imported a total of 5,430 tons of waste which has been safely taken care of, deposited, i.e. the dangerous substance has been recycled (R 9).

The ratification of the Basel Convention and its entering into force in August 1994, provided the reliable assumptions for the export of other dangerous substances from Croatia, at the same time not damaging people, transport and tourist systems, environment and the tourism in general.

After the Government Administration for the Environmental Protection granted permission, the "C&S" Ltd. company from Zagreb, exported in December 1995 two shipments of "PCB" waste to France

for incineration. A total of 18,388 kg of transformers filled with "PCB" and 3,450 kg of liquid "PCB" was exported. The ecological waste, "PCB" was collected from several Croatian companies and carefully eliminated out of a wider area and the transport system.

The elimination of dangerous substances from the Croatian traffic and tourist environment has a strategic aim, but the protection measures have still not been sufficiently organised (established) yet.

The organisation of the protective system is neither adequately organised in the neighbouring countries, their organisations and companies. In the Republic of Slovenia, there are greater stocks of dangerous (toxic) substances. There are, being transported constantly, about 600 tons of chlor, 20,000 tons of sulphate acid, 2,000 tons of mineral acids, 85 tons of various kinds of cyanide, 30 tons of arsenic, 3,500 tons of carbide, 11,000 tons of orthoacid, 5,000 tons of various types of dissolvents, 300 tons of protective media, etc.

Due to the uncontrolled or partly controlled pollution of soil, tourist environment (sea, rivers and forests), and transport, humans, flora and fauna are biologically increasingly endangered. Therefore, in many countries in the world, especially those of tourist orientation, the ecological disasters have caused irreparable damage, leading to extinction of many animal and plant species.

The pollution of the sea along the coast and the littoral of the eastern Adriatic coast, is present in almost all the towns from the Bojana to the Soča, with gross disturbance of the eco-system in the bay of Boka Kotorska, Gruža, Petka and in the old harbour, as well as in the Rijeka Bay, Pula, Rovinj and Poreč regions. The pollution is obvious in the burdening of the aquatorium, not only by the untreated human effluent, but also by letting into the sea various toxic compounds (heavy metals, polychlorinated biphenyl, chlorinated aliphatic hydrocarbons, detergents) and a number of other compounds, which together with nutritious salts directly enter the trophic chain. The concentration factors, especially of heavy metals, go from several hundreds to several tens of thousands of times, and many of them are mutagens or cancerogenic compounds. Considering that sea organisms which have absorbed the dangerous substances, serve as human food, it is certain that the repercussion could move much further, going beyond the tourist environment to a much wider scope.

Italian rivers bring into the Adriatic about 73×10^9 m³ of water annually, the Croatian rivers about 22×10^9 and the Albanian about 28×10^9 m³ annually. The abundance of river water brings also huge amounts of terrigenous sediments, as well as a lot of anthropogenic waste. If one considers that the northern part of Italy is agriculturally and industrially the most developed region in Italy, (the triangle: Milan -

Venice - Torino), it is obvious that the Italian rivers, especially the river Po, bring huge amounts of waste material into the waters of the northern Adriatic. It is estimated that about 100 m³ of waste flow per second with the river water into this part of the aquatorium, which is about 3.2x10⁹ waste annually. Adding to this the intensive transport operating in the Adriatic (about 40,000 ships annually, and about 130 million tons of cargo in Italian harbours, and 30 million tons in Croatian harbours), and the knowledge that about 100,000 tons of oil, and various different hydrocarbons are let into the Adriatic annually, one may imagine what kind of ecological system awaits us in the future, unless adequate protective measures are taken before this happens.

The sea and the sea climate influence very favourably the human health. The main healing substances and factors originate from the sea, the sun and the air, as well as from a number of natural factors which generate the natural climate. With intensified substance exchange within the organism, the seaside climate influences favourably the regeneration and circulatory process of the blood, bone marrow, skin pigmentation, and strengthening of the physical protective power.

In spite of a number of advantages and conditions offered by the sea and the sea environment to the health of people, the famous explorer Jacques Cousteau, who scientifically investigated the environment and the seabed, predicted that about 30-40% of all living species in the sea will be extinct by the end of the century, i.e. by the year 2000 due to pollution.

The application of the international - European and national regulations on transport of dangerous substances, the protection of the eco-system, the situation is changing, but slowly. It is not possible to achieve complete safety and protection of the system, since, in spite of the implementation of the modern transport technologies, it will be impossible to completely avoid all the disasters (power supply, natural, etc.), as well as the pollution of the ecological system in the traffic and tourist environment.

2.1. Dangerous substances in traffic and tourist environment

Dangerous substances, classified according to ADR, RID, and national regulations, have toxic, flammable, contaminant and harmful properties. Self-ignition occurs frequently. When a certain substance (sulphur or similar) by staying in the air or in contact with water, starts to burn without any presence of fire or open flame. The self-ignition (fire) results from the tendency to oxidation (in the narrow sense by mixing with the oxide from the air), causing the rise in temperature and ignition.

Compared to the European countries, Croatia is a relatively small (weak) generator of the emission of dangerous substances (about 0.5% of the total European emission of SO₂), regardless of the big amounts of dangerous substances that are found in transportation.

The pollution is much greater that comes into our regions either by long-distance transport, by sea or other types of transporting dangerous materials. According to the "EMP" data, more than 40% of SO₂ emission in Croatia is estimated to originate from outside its borders and the traffic system and thus the SO₂ particles start to deposit. The most exposed are the seaside regions, the northern part of the Adriatic and Gorski Kotar, with its concentration of industry, power supply and to some extent the transport infrastructure. The inner part of Croatia, with major pollution, are the industrial Lika basin of the Kvarner Bay, and to a lesser extent also other developed regions (Zagreb, Sisak, Kutina).

In order to protect the environment and for preventive measures, the majority of industries have a detailed program and relatively good insight in the sources of pollution. The programs of activities developed in accordance with the European regulations,

Table 4 - Emission of SO₂ in 1990 in the Republic of Croatia

Preliminary data on SO ₂ emission for 1990 in Croatia		
Emission Source	SO ₂ emission in 1990 (t)	participation in emission
TE Plomin	43.991	
TE Rijeka	10.434	
TE Sisak	10.270	
TE-TO Osijek	1.190	
TE-TO Zagreb	2.043	
EL-TO Zagreb	1.470	
INA Refinery Rijeka	21.045	
INA Refinery Sisak	6.645	
INA Petrokemija Kutina	1.420	
Željezara Sisak	3.697	
Koksara Bakar	4.778	
Total:	106.985	60.65 %
Other industries	28.160	15.97 %
Transport	15.840	8.98 %
General consumption	25.400	14.40 %
overall:	176.385	100.00%

Source: "Okoliš", 38/39, page 6

exist in: INA, HEP, Željezara Sisak (ironworks), the "Viktor Lenac" shipyard, and others.

Regardless of the dangers and possible damage, until now, there were no detailed estimations of the SO₂ emissions nor of any other dangerous materials, in Croatia. The approximations lead to a conclusion that the total emission of SO₂ in 1980 amounted to about 160,000 to 200,000 tons annually. Only from the thermal power plants, during the period from 1980 to 1990, the emission ranged from 60,000 to 70,000 tons annually, which is about 30-35% of the total emission of sulphur (IV) oxide of the tourist and transport environment. Out of the mentioned amounts, over 63% (about 40,000 tons) of sulphur (IV) oxide is emitted only by one power plant, the TE Plomin.

According to the protocol about further reduction of the sulphur emission, signed by Croatia as well, the peak value of the sulphur emission has been predicted of 133 Kt in 2000, which is a reduction by about 11% compared to the emission estimate in 1980.

The long-term plans of economic development in HEP, INA and others include: desulphurisation in the TE Plomin, modernisation of INA refineries, and introduction of gas by the Government, construction of roads (integration of the traffic - tourist system of the country into the European traffic system), installation of catalyst in all vehicles, improvement of performances, introduction of lead-free gasoline, as well as a number of other measures that result in reduction of emission of toxic substances (sulphur etc.) in the existing thermal power plants or others under construction (by using adequate fuel and desulphurising plants), thus reducing the sulphur in TE even to 50,000 tons annually.

By implementing and abiding by the legal regulations, Croatia can meet, in the near future, the requirements listed in the Protocol⁵ about the further reduction of sulphur emission, as well as of other harmful substances (elements), which can be seen in Table 5 and Diagram 1, about the octane values of certain octane levels, with relation to the considered and compared numbers of vehicles.

Table 5 - Portion of single octane levels in relation to the total number of vehicles

IOB	1985	1087	1989	1991
86	28.8 %	25.1 %	17.3 %	15.2 %
87	0.1 %	0.0 %	0.0 %	0.0 %
88	0.8 %	2.4 %	0.8 %	1.8 %
89	0.0 %	0.0 %	0.0 %	0.0 %
90	1.0 %	1.1 %	0.1 %	0.7 %
91	14.4 %	13.2 %	14.9 %	16.2 %
92	0.7 %	0.7 %	0.6 %	0.5 %
93	0.1 %	0.7 %	0.0 %	0.0 %
94	7.0 %	6.2 %	4.8 %	1.7 %
95	0.3 %	0.4 %	0.3 %	1.8 %
96	2.2 %	3.1 %	0.8 %	0.6 %
97	5.2 %	5.1 %	2.3 %	1.7 %
98	39.4 %	42.0 %	58.1 %	59.8 %

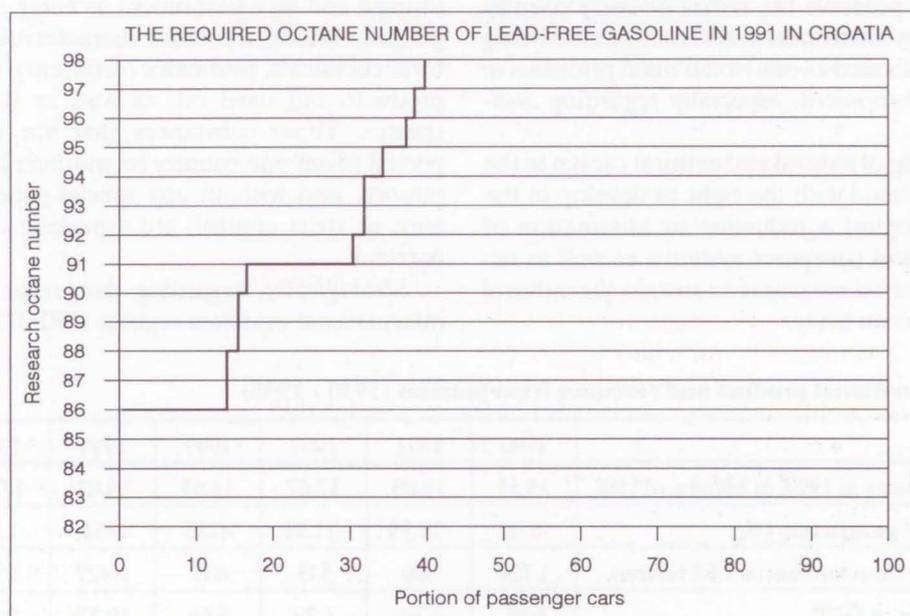


Diagram 1

Lead-free motor gasoline was introduced in Croatia in 1986, by accepting the specification for lead-free motor gasoline 95 and 91, which agreed with the EU standards. The consumption was negligible during its introduction, and during the gaining of independence of Croatia (in 1990) the portion of consumption of BMB was about 2.0%. The portion in the consumption of various types of petrol in 1994 was: motor gasoline (with lead) 77% and lead-free motor gasoline 95 (14.5%).

Compared to the EU countries, the consumption of lead-free gasoline was at the level of Spain (22.2%) and the biggest portion was in Germany (92.3%). Relatively low consumption of lead-free gasoline in Croatia is the consequence of the structure of the motor pool in the country, still consisting mainly of vehicles without catalysts or catalytic converters.

Due to war circumstances in the Republic of Croatia, the last analysis of the structure of passenger motor vehicles in the country was carried out in 1991, presented in Table 5 and Diagram 1.

In Diagram 1 it is obvious that the portion of passenger vehicles of octane level was increasing during 1991. There was a significant influx of vehicles (with converter) of octane level 95. The vehicles (without converter) of octane level 98 are still quite numerous, which means that they will still be predominant in the total number of vehicles for some time.

3. SUSTAINING HEALTHY ENVIRONMENT AND HERITAGE - PREREQUISITES FOR A MORE SUCCESSFUL DEVELOPMENT OF TOURISM

The need to preserve the riches of every country regarding healthy environment and heritage are being increasingly confirmed as one of the main priorities in considering development, especially regarding ecology and tourism.

The sustaining of natural and cultural capital in the future can be related with the right to develop in the present. This implies a reduction or elimination of non-ecological and consumer systems, as well as acceptance of required measures to sustain the cultural benefits of the community.

Therefore, the Declaration from Rio (UNCED, 1992) regarding tourist development, is of high strategic value, considering the importance of this activity.

The increasing importance of tourism within the world economy, as a great consumer of natural and cultural assets, is beyond dispute. It is little known that in the world proportions, tourism is the third export industry, following immediately after oil and automobiles.

Regardless of the tourism development in the world, it was interrupted in Croatia by the war, and the indicators can be best seen in Table 6.⁶

In August 1990, the Serbian riot in Knin stopped the tourist flows. The connection between the North and the South was cut and the tourists both domestic as well as foreign, started a fast evacuation from the tourist destinations. Obviously, the war had a drastic influence on the national tourist industry. On the other hand, it can be seen in Table 6, that tourism was here one of the greatest losers. Tourism is the essence of dialectic between the environmental protection and the need for economic and social development.⁷ Therefore, the ecological common sense is very important in order to sustain this essence.

The industries related to travelling and tourism exceed 12% of the world gross national product of every sixteenth worker in the world, and moreover, amount to 7% of all the investments in the secondary equipment. However, unless current guidelines are changed suddenly, tourism will at the end of the century become the foremost industry, but foremost also in the sense of new job placements and employment.

According to ecological analyses (6), about 300-400 million tons of dangerous materials are generated annually, and it systematically threatens the tourism and its environment as being extremely dangerous. Among the most characteristic are: agricultural chemicals, pesticides (different), waste from oil products and used oil, as well as flammable substances. Those substances that are illegally transported (from one country to another) for commercial reasons, and without any special supervision, clearance or strict control, are especially dangerous and harmful.

Strategically, regarding dangerous materials, an international evidence register (IRPTC) has been or-

Table 6 - Gross national product and revenues from tourism (1990 - 1996)

No.		1990	1991	1992	1993	1994	1995	1996
1.	GNP in prices in 1990, in billions of US\$	24.34	18.60	12.67	14.65	14.02	17.19	17.97
2.	Real GNP growth rate (%)	-6.89	-19.79	-11.11	-0.85	0.61	1.67	6.50
3.	Revenues from tourism in US\$ billions	1,704	300	543	831	1,427	1,584	1,700
4.	Percentage in GNP	6.98	1.61	4.28	5.66	10.17	9.21	9.46

Source: Croatian National Statistic Bureau, Croatian Ministry of Tourism

ganised, which is the carrier of a part of the program for promotion and protection of the environment, in UN. The International Register (IRPTC) was founded in 1976 in answer to the World Conference for the Environment, held in 1972 in Stockholm, with the task to gather and disseminate information on dangerous materials, their use as well as their damaging effect on people, assets and the eco-system.

The tasks included in the documents made at the conference on the environment are:

- promotion of development and implementation of the methodology of foreseeing the danger, risk for health, environment and traffic and tourism,
- promotion of the economic and tourist development and the implementation of efficient national management of dangerous substances (help in organising the national information system),
- publishing and verification of scientific documents, regarding dangerous substances, their management, with the aim of wider education of different population of people,
- offering information on physical and chemical properties, production, traffic, and use, as well as on the strategy of tourist and traffic flows, and dangers for the plants and animals.

The aim is, therefore, a continuous monitoring and engagement of all the factors, carriers' associations, citizens, and the general community, in implementing the strategies of protection and saving at all levels and everywhere, especially in the traffic and tourist environment and their flows.

For example, in the majority of European countries, about 2 percent of the national product and more are spent on control, protection and sanation of the pollution of the environment and the traffic system. The data for Croatia are quite doubtful, but they may be estimated at about below 1% of the GNP.

4. CONCLUSION

No matter how interesting it is for a country, its tourist and traffic monitoring, to organise the transportation strategy of dangerous substances, chemicals and other flammable materials, these cannot be transported if this strategy has no wider support of the community and if all the protective and safety measures have not been fulfilled.

Dangerous substances have to be transported, but in accordance with the legal regulations, i.e. motor and trailer vehicles, railway traffic system, ships and air cargo traffic, in accordance with the Annex 18 of the Convention.

Regarding legal regulations, no transport or other disaster is to be allowed to occur at any moment (fire,

leakage of flammable liquid fuels, and other chemicals) which could endanger the environment, traffic flows and the tourist system.

Since tourism plays an increasingly important role as a great consumer of natural and cultural resources, further development is not possible in the same way: by exploiting and irreparably destroying of the natural resources.

It is little known that tourism is the third export industry, following immediately after oil and automobiles. The industry related to travelling and tourism exceeds 12% of the world gross national product and employs every 16th worker in the world. If the current tendency continues, it will become the leading export industry by the end of the century, at the same time also regarding employment, traffic etc.

Tourism will become the primary factor for the strategic development of the Croatian economy and transport, regardless of the decline it had during the times of war.

Apart from the economic characteristics it also appears as the disturber of the nature, culture and the environment.

As the international sensitivity and care started to develop, which respects, supports and introduces the development strategy of this industry, tourism, cultural heritage and environment can become the three elements of the economic balanced development.

SAŽETAK

STRATEGIJA ZAŠTITE OKOLINE U PROMETNO-TURISTIČKIM TOKOVIMA I OKRUŽENJIMA

U sustavu prometno-turističkog okruženja i tokova, svakodnevno se prometuje niz opasnih tvari i štetnih organskih i anorganskih materijala. Uporaba tih tvari raznovrsna je: u proizvodnji lijekova, agrotehničkih zaštitnih sredstava, umjetnih gnojiva, boja i lakova, polimera, deterdženata, pogonskih goriva i drugim djelatnostima.

U strategiji zaštite okoliša i turističko-prometnog okruženja, proizvođači i prometne udruge relativno dobro brinu o tzv. tehnološkoj sigurnosti, tijekom proizvodnje, manipuliranja i prometovanja opasnim tvarima.

Sukladno zakonskim propisima, preuzetim obavezama iz Bazelske konvencije, te zaključnim stavovima konferencije Ujedinjenih naroda o okolišu i razvoju (UNCED) i dr., uklanjanje štetnih tvari i otpada s hrvatskog ekološkog okruženja ima strateški cilj, premda još uvijek nisu u potpunosti poduzete i organizirane potrebne mjere zaštite, kao i spoznaja u slučaju većih nezgoda s opasnim tvarima.

U prometnom okruženju i turističkim tokovima potrebno je osnažiti kontrolu nad izborom, razvojem i uvođenjem tehnologija koje uključuju opasne tvari. S druge strane, odlučno se suprotstavljati onim tehnologijama koje predstavljaju suviše velik rizik glede nezgoda, a mogu ugroziti stanovništvo, dobra i eko- okruženje.

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3. ADR - 1996
4. Z.Devide: "Automobil i životna okolina", Bilten znanstvenog savjeta za promet, JAZU, Zagreb, February 2, 1989, pp. 99-103
5. The Protocol on further reduction of sulphur of the Convention about the extensive air pollution signed at the Ministerial level (meeting) in OSLO on June 13 and 14, 1994.
6. It is estimated that the indirect damage, caused by the lck of tourist traffic in Croatia from 1990 to 1995 in the whole tourist sector amount to over US\$ 10 billion, and only in the hotel and catering sector about US\$ 6.8 billion (Ivandić, Radnić, 1996)
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