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1. ABSTRACT

Since its national independence Slovenia has been preparing a series of projects and has been trying to adjust to new traffic and economic demands. The greatest and the most important project, started in the road field, is the completion of its motorway network. The additional construction of 720 km of motorway network should improve the connectedness of the interior of the country as well as the connectedness of Slovenia with the European transport area; it should further the economic growth, improve traffic safety and environment protection against adverse impacts caused by traffic. The project has been under way since 1994 and it has been implemented up to 40%.

The Report describes the course of the project development up to the present, the inclusion of the public into determination processes concerning the course of the motorway alignments, the environment protection, bearers of decision-making, and experiences, obtained by now within the performance of the project, which is of special importance for Slovenia. It describes the mode of financing and the difficulties in the project realisation, encountered in the organisational, technical and financial field. Slovenian transport experts and other participants in the project will obtain rich experiences within the project, which will be used in further phases of the project, as well as in planning and performance of other projects in the field of transport and roads. With the purpose of responding to road user demands and the needs of transport services better and more efficiently, especially in the area of its road network, Slovenia has been performing a series of preparatory works for new projects, which will ensure a sustainable development in meeting transport demands and improving the quality of that part of life, which is influenced by transport and transport policy. A special current question is how to integrate the private sector into the development programmes of transport and road projects. The preparatory phase of the private sector integration into road maintenance projects is completed and new phases are to follow, especially competitive tenders and the realisation of a pilot project.

Simultaneously, organisational changes have been implemented. They follow from Slovenia's independence, its transition to the market economic system and demands for a more efficient implementation of the determined programmes and projects, as well as from the requirements for a better response to the demands of the users of roads and transport services.

2. INTRODUCTION

Slovenia has 20000 km/2 and 2 million of inhabitants. It lies to the south of the Alps in transition from the Pannonian Lowland to the Po Lowland. The length of its public roads is 37,000 km, whereof 6,057 km are state roads, the rest is local roads under the management of municipalities. 450 km of state roads are motorways; by 2010 additional 270 km of motorways are to be built. The number of registered motor vehicles in Slovenia is 950.000, which represents 2.3 inhabitants per one car.

Slovenia attained its independence in 1991 after the collapse of Yugoslavia. At that time its number of inhabitants per one vehicle was 3.3. Its transport policy was subordinated to the needs of the federal / Yugoslav state. The development of its road network lagged behind with regard to its spatial conditions and economic and traffic needs of Slovenia. After the national independence of Slovenia in 1991, the Transport Agreement was the first international agreement, which Slovenia signed with the European Union. On the basis of this Agreement Slovenia bound itself to develop its road network in a way enabling free, unhindered and non-selective transport through it in the directions of the European Transport Corridors No 5 and 10. These are the main transport routes for Slovenia as well, namely, the north-south and the east-west direction. They connect the main economic and population centres. Currently, approximately 70% of all Slovenia's motor-vehicle traffic have been running in the direction of the Trans-European Corridors No. 5 and 10. 15% of the traffic are foreign vehicles, i.e. transit traffic, while the rest is domestic traffic.

Considering the fact that Slovenia is crossed by the Trans-European Corridors No. 5 and 10, the Slovenian national space plays an important role also in the international and European framework. Slovenia is also a maritime country. Its geographic situation and offer of services make the Port of Koper an important transport connection of Central Europe with the world. The Slovenian road traffic loads are approximately 19,000 AADT on motorways, 6,800 on major roads and 1,900 on regional roads. The Slovenian roads take up over 90% of passenger traffic and 80 % of freight traffic. The majority of traffic is recorded in and around bigger cities and in the directions of the Trans-European Transport Corridors No. 5 and 10. Traffic jams and congestions occur during rush-hours, especially during daily, weekly or seasonal traffic peaks. In other directions and on regional roads, the levels and quantities of traffic are not critical; however, the traffic with regard the quantity is hindered due to relatively bad and worn-out road network. The worn-out road network and increased traffic loads have reduced the operative speed to under 60 km/h.

3. MOTORWAY PROGRAMME

In 1993 a motorway construction programme was prepared. Until that year 208 km of motorways were constructed, and the programme envisaged the construction of additional 520 km so that the complete motorway network would comprise 720 km of motorways.

Several basic conditions had to be fulfilled in order to realise such an important and demanding programme in a proper time, namely:

- a) to prepare a good-quality programme,
- b) to provide a political support,
- c) to organise the project, road sector and road trade,
- d) to provide stable and sufficient sources of financing,
- e) to provide the necessary legislation

3.1. The Motorway Construction Programme

The original motorway construction programme envisaged the construction of additional 320 km of motorways by 2000. The objectives set in the programme together with the additional motorway construction should improve:

– the interior connectedness of the country:

From the spatial viewpoint, the programme was designed in such a way that the motorways would connect all major economic centres and besides that, the motorway network would be accessible for everyone at a distance of 50 km at the maximum. However, the original programme envisaged only the east-west connection; the north-south connection was not included at all, mainly for the reason that the crisis in the former Yugoslavia reached its culmination at that time and international traffic flows towards the south came almost to a standstill.

- the connections with a wider international economic area, particularly with the neighbouring countries;
- traffic safety (traffic safety on motorways was 3.5 times better on motorways than on the rest of the road network);
- the endeavours for a reduction of adverse impacts of traffic on the environment;
- increase the economic efficiency;
- the economic impetus, which was necessary after the crisis caused by the collapse of the former Yugoslavia.

The value of the 1995 programme, adopted by the National Assembly, amounted to \$ 2.4 mrd.

3.2. Political support

The concept of the programme was met with a wide political support, especially after the public opinion research had shown a great support of the public for the construction of roads, particularly motorways. The question posed frequently was, if the accelerated construction of the motorway network would not hold back the necessary investments into the maintenance and modernisation of the rest of the road network, which was considered to be intolerable. These questions were posed mainly by the representatives of the areas, where the construction of motorways was not envisaged. The political support was proven also in the adoption of the programme by the National Assembly (Parliament) and in introducing the necessary legislation.

The Slovenian economy greeted the programme with delight, for it promised a new impetus and increased employment opportunities.

3.3. Organisation of the project, road sector and road trade

The Ministry of Transport and Communications was entrusted with organising the programme. The Ministry included a road administration body, called at that time the Republiška uprava za ceste (Republic Road Administration). It was established that such a complex project can not be performed inside the body due to the budgetary mode of financing, numerous tasks and duties, which this body has to fulfil, as well as due to various procedural difficulties, which a state administration body can encounter in realising such a project. It was decided that the project should be financed outside the budget. Thus a special joint stock company was founded: DARS, Družba za izgradnjo avtocest v Republiki Sloveniji) (Company for Motorways Construction in the Republic of Slovenia), being entirely under ownership of the Republic of Slovenia. The main tasks of the company are the organisation of the preparation and construction of motorways in the Republic of Slovenia, maintenance of motorways and financial engineering for the needs of motorways.

The Road Administration underwent restructuring and the new body, called Direkcija Republike Slovenije za ceste (the Directorate for Roads of the Republic of Slovenia), took over the responsibilities for major and regional roads in the Republic of Slovenia, as well as for the performance of organisational and technical tasks concerning the development, construction and maintenance of these roads.

A part of the Administration split off and merged in a new company called Cestni inženiring (Road Engineering). Another new company was DDC, which was responsible for engineering and technical consulting in construction of motorways as well as in construction and maintenance of state roads. Currently, the company is under state ownership, but it acquires business in the market. The company is intended to be privatised and the State intends to retreat gradually from the ownership of the company. DDC performs the majority of engineering work, however, new competitive companies are emerging and taking over the works.

3.4. Assurance of financing

To assure a stable long-term financing of the motorway programme, separated from the budget and the procedures subjected to it, a special source of financing was introduced, the so-called "petrol tolar". According to the original law, the petrol tolar was a special part of the tax on fuels and amounted to 16 % of the value of the total sales tax on fuels. Besides the petrol tolar, the main sources of financing the construction and maintenance of motorways are loans and tolls. All Slovenian motorways are toll roads. The toll road system is partly closed and partly open. The incoming payments from tolls represent the only source of financing for motorway maintenance and the greatest source of funds used for repayment of loans, which are a very important source of financing during construction and which represent up to 1/3 of the necessary funds.

3.5. Legislation, technical regulations and standards

The DARS Act provided the necessary legal basis for the organisation and performance of the programme, while the Petrol Tolar Act assured the necessary financial sources. In 1997 the Republic of Slovenia passed a new law on public roads. This law formed a legal basis for further development in the road area and it enabled the achievement of the objectives, defined in the transport policy framework:

- to improve the connectedness of Slovenia in its interior and in the international area;
- to construct additional infrastructure, which will enable appropriate economic development,
- to improve traffic safety and bring it closer to the levels of the developed European countries;
- to reduce the adverse environmental impacts due to traffic particularly through the construction of up-to-date roads and a selection of solutions, which will be acceptable for the environment, inhabitants and users;
- to improve the shares of other transport means, above all the railway, public transport and bicycles;
- to stop the trend of the deterioration of the road network by including private capital into the development and maintenance of roads;
- to increase the efficiency of the administration and management of roads by up-todate technical, organisational and managerial solutions.
- The Public Roads Act is entirely co-ordinated with the European Union legislation, while all technical solutions have not been adopted yet.

No regulations on public road designing have been adopted yet, however, they are under final preparation. They shall enable the implementation of new knowledge and technologies in construction and maintenance of roads. The Slovenian road and transport experts have been updating technical standards and guidelines, necessary for an efficient realisation of the programmes, development and maintenance of the roads, for quite a long time.

4. MOTORWAY PROGRAMME PERFORMANCE AND CURRENT EXPERIENCE

4.1. Programme

In 1998 an adjustment of the National Motorway Construction Programme in the Republic of Slovenia was prepared and adopted. The motorway construction in the south-north direction with a total length of 145 km and the rehabilitation of some most critical road sections in the rest of the network were additionally included in the programme. Neither from the viewpoint of traffic nor space, nor development, it is acceptable that the accelerated construction of motorways would be accompanied by lagging behind the development of the rest of the state road network. The motorway construction programme was thus extended to 520 km of new motorways; together with the motorways completed by 1993, it encompasses 720 km of motorways. Thus the new programme value has reached the amount of \$ 4.4 mrd. The new tme limit for the programme completion is 2004. With regard to the fact that the extent of the motorway construction was considerably increased, additional financing had to be provided. The Government and the Parliament adopted an amendment to the Petrol Tolar Act and increased the petrol sales tax level from 16 % to 20 %.

The motorway programme involved the work of over 1000 experts in various areas. Besides DARS, the programme included also the Ministry of Transport, Ministry of the Environment and Spatial Planning, Ministry of Finance, Ministry of Culture, Ministry of Agriculture and others.

The programme determines also the construction priorities. The highest priority is assigned to the sections in the 5th and 10th Transport Corridor, which have the heaviest traffic loads and the highest rate of return. Thus a higher priority is given to the construction of the roads in the east-west direction, including the connection to the Port of Koper. This is the Slovenian strategic economic priority. The preparation of the project documentation and the integration of the road alignment into the space have no special priority; they are performed with an equal priority for all sections, particularly for the reason of long-lasting procedures and unpredictability of their completion.

4.2. Experiences and basic problems

4.2.1. Integration of the road alignment into the space

The technical preparation of the programme implementation required a special operational programme. The responsibilities for the determination of the road alignment and the preparation of the necessary documentation (Location Plan), as well as for the acquirement of the necessary permits, was taken over by the Ministry of the Environment and Spatial Planning, i.e. its Spatial Planning Office. It was expected that the procedure of the preparation of the location plan and the acquirement of permits would last 2 years.

It is required that minimum tree comparable alternatives shall be examined for each particular section within the procedure of the location plan preparation. The comparison shall be carried out from the viewpoint of traffic, environmental impacts, traffic safety, economic effects, costs and other things, important in the case dealt with. The most appropriate alignment shall be selected. The local communities in the areas crossed by the motorway alignment must be agreed on the selection and the local community assembly shall confirm the selection (the Municipality Council Decision).

Then the Ministry of the Environment and Spatial Planning proposed to the Government, i.e. the National Assembly, to adopt the Location Plan. In principle the National Assembly may adopt a Location Plan without its confirmation by the local communities; however, such a manner has been shown as unacceptable in practice, for this would mean that the state authorities would ignore local communities. It happens frequently that the objectives and interests of local communities differ from those of the State and solutions of particular problems are often viewed from different angles. This is found often in the case of traffic efficiency of a selected alignment, economic and financial issues, protection of populated areas, road toll systems etc. The principle assumed was that the selected solutions should meet the requirements of the programme as well as the needs and objectives of local communities. Such an approach results in longer procedures necessary for the acquirement of the necessary documentation, and sometimes also in more expensive solutions. On the other hand the road trade, as well as the environment-protection and construction trades, and several other trades have obtained rich experiences in finding new solutions, technologies and procedures.

In obtaining permits, the approvals given by other state authorities, responsible for the protection of the cultural, natural and technical heritage, play an important role. The costs of acquiring the approvals amount up to 1 % of the total cost of construction. In addition to this, the approvals must be obtained also for the protection and safeguarding of waters, the restructuring of other existing infrastructures (e.g. roads, electric power supply, railway lines etc.). The adoption of the Location Plan is followed by the preparation of the technical documentation and the acquirement of the Construction Permit – the Uniform Construction Permit. Prior to the acquirement of the Permit DARS has to acquire land plots, on which the motorway will be built. The expected duration of the procedure necessary for the acquirement of the permits is 2 years; in several cases the procedures were extended over 5 and more years.

4.2.2. Land acquisition

The acquisition of land plots, which are mainly in private ownership, is possible by buying them or by expropriation. A great majority of the land plots were bought, however, some of them had to be obtained by means of expropriation. The law, which enables the expropriation for the purposes of motorway construction, was passed in 1998. The law was proposed, because some owners refused to sell the necessary land plots and substantial delays in construction had been recorded. After the passing of the law the purchases of the land plots were made easier, so the investor uses the expropriation procedure only in extreme cases, when all negotiation possibilities have been depleted. The land purchase, let alone the expropriation, are complex and long-lasting procedures, which often require extensions of the planned time limits for the construction preparations.

4.2.3. Environmental requirements

The programme includes various important areas; the co-ordination of the solutions made for each of them often requires a lot of effort and time. Specific programmes are prepared for each of the areas and their standpoints shall be adjusted to the motorway construction programme. This requires an interdisciplinary approach, for no area shall be neglected and every effort shall be made to enable a higher quality of living and working environment. This often results in the costs, which are higher than it was planned. The construction costs represent 68% of all costs, while the rest is intended for other purposes (work of experts, archeological excavations, water stream control, noise protection, improvement of traffic safety measures and traffic systems, indemnities, purchases and designing).

4.3. Operational programme implementation

The management of the programme operational implementation is entrusted to the Engineer. This company carries out the open tendering procedures for the award of contracts for the works: the selection is made by the investor, i.e. DARS; the Engineer exercises control over the performance of the works. The procedures required for the award of the contracts are subjected to the Public Procurement Act and a constant control of the state inspection authorities. The programme is financed also by means of loans, therefore the control is partly exercised also by the financial institutions, which have not had any significant critical remarks until now.

The construction industry market is well developed in Slovenia; there is a sufficient number of quality construction companies, using modern technologies in the construction of roads, bridges, tunnels and other structures. Likewise, some international construction firms are present in this field, coming mainly from Italy and Austria. The share of the works taken over by foreign contractors is about 8 %. The engineering companies as well as the construction companies are appropriately equipped, they master new technologies and possess adequate personnel; thus the capacities necessary for the envisaged dynamics are sufficient.

At present some extremely problematic structures, bridges and tunnels, are being built in the most difficult geological conditions. The most modern technologies are used successfully.

4.4. The effects of the construction recorded in traffic and economy

The effects of the sections built by now have not been evaluated yet in the field of traffic. The fact that traffic and motorization in Slovenia have been constantly increasing (the motorization has reached a rate of 2.3 inhabitants per car) at an annual growth rate of approximately 3 %, shows that it would be impossible to assure an adequate level of service in inland and transit traffic, if the motorway sections, (built by now and to be built in the future), were not built or would not be built in the future to complete the motorway network. The living conditions in places and settlements, where the traffic burden has been taken over by the motorways, have been considerably improved.

The programme has been realised to the extent of a little over 40 % by now, and about 48% of the envisaged resources have been used. This proves that the programme has not been developing in the framework of the envisaged resources. A minor part of the deviation from the plan is the result of higher prices of construction services, while the major part is due to additional requirements, especially the aforementioned requirements of local communities, as well as the environment, culture and natural heritage protection. However, from the macroeconomic viewpoint, the programme shows considerable positive results, for it represents an important contribution to the revitalisation and successfulness of the Slovenian economy after its national independence and a factor of successful economic transition of Slovenia. Besides, a lot of rich and useful experiences were gained.

4.5. Anticipations of a further development of the motorway construction project

The recent reports show that it will not be possible to realise the entire programme by 2004. However, the part of the construction project, considered to bear the heaviest traffic loads, will be completed, and the motorway will connect the main economic centres: Maribor, Celje, Ljubljana and Koper. The problems arising in acquiring construction permits, in increasing costs, in higher prices of land plots to be purchased and in longer land acquisition procedures, as well as delays in financing and new demands for an extension of the programme, require a reconsideration and correction of the programme. It is realistic to expect that the programme will be completed by 2010, which would still assure an adequate quality of transport connections in Slovenia. The newly estimated value of the programme is \$ 5.8 mrd. Slovenia will not be able to provide all the necessary funds by itself in the period up to 2010, therefore a programme of private co-financing is being prepared. The project is still in the preparation phase and no adequate assumptions have been determined yet.

5. MAJOR AND REGIONAL ROADS

5.1. The main characteristics of the major and regional road network

Slovenia's road network is relatively dense and branched-out. All the secondary urban centres are connected by the motorway system and by roads between themselves, and all municipalities are connected to the state road network. Besides its connecting function, the road network has also an important development function. There is a constant debate in the political circles, referring to what is more important: a good connectedness of the places, which have been generating considerable volumes of traffic, or an accelerated development of the network in the regions, where the economic development has been lagging behind, and where new economic initiatives are necessary.

This relatively extensive and dense road network has not been rehabilitated soon enough to serve the new transport demands and thus its general deterioration can not be prevented. The reason for that lies mainly in insufficient resources invested into the road maintenance and rehabilitation. The development and maintenance of the major and regional road network is financed out of the state budget, which has been, until recently, formed and adopted for one year only, i.e. for the current year. In 2002 the state budget was prepared for two years for the first time. The Directorate of the Republic of Slovenia for Roads has prepared medium- and long-term programmes, however, their realisation depends on the adopted budget, which is usually considerably lower than the technically substantiated needs.

5.2. Organisational changes in the road management

Until Slovenia's national independence and the beginning of the transition period of its economy, the maintenance and rehabilitation of roads were performed on the basis of road programmes by special road companies, which were in social ownership. After 1993 the privatisation of the social property started and the owners of the road companies were determined. A part of them remained in the state ownership, while the other part was distributed among several funds and other owners according to a special law and formula. After 2001 the State gave up also the rest of the ownership of these companies, which are now entirely privately owned and independent of the State. According to the Public Procurement Act all maintenance works have to be awarded on the basis of competitive tenders, which was not obligatory for maintenance works in the past. Thus the maintenance of roads in Slovenia, except motorways, is performed now on the basis of contracts closed with private companies.

5.3. Major and regional road development programmes

25 % of the state roads are in very poor condition and the percentage is even increasing. The road structures are likewise not rehabilitated soon enough and a number of them do not meet the present demands. The local communities have been calling attention to the problems of traffic jams in settlements, inadequate traffic safety conditions in settlements and a deficient traffic regulation system.

The Directorate for Roads has prepared a programme of the road network development in the next 10 years, in which the up-to-date development demands, keeping-up of the existing network, good quality maintenance, user demands, traffic safety assurance and protection of the living and natural environment are taken into consideration.

The solution to the problems is expected to be an accelerated financing of the development programmes. Their realisation is envisaged through a partial inclusion of private capital and the establishment of a public-private partnership. The project has been ratified by the Government and technical preparations are underway for carrying out a competitive tender, through which it will be possible to ascertain the interests of the privates sector, on the basis of which a pilot project could be launched. The project will be supported also by international financial institutions, for it is estimated to be a good model especially for the countries in their transition period, which do not have sufficient funds at their disposal in the short run, in order to maintain their road networks at an adequate quality level. The inclusion of the public-private partnership is expected to contribute also to the introduction of new technologies and procedures and to enable the development of the market and competition in the area of road maintenance and rehabilitation.

6. THE ROLE AND FUNCTION OF ROAD AND TRAFFIC EXPERTS

The organisations associating road and traffic experts in Slovenia are as follows:

- a. Družba za raziskave v cestni in prometni stroki DRC (Road and Traffic Research Company)
- b. Nacionalni komite PIARC Slovenija (PIARC Slovenia National Committee)
- c. Inženirska zbornica Slovenije (Engineers' Chamber of Slovenia)
- d. Other associations: Društvo asfalterjev Slovenije (Asphalting Companies Association of Slovenia), Društvo za ceste (Road Association), Društvo za podzemne in geotehnicne konstrukcije (Association for Underground and Geotechnical Structures).

DRC (Road and Traffic Research Company) has been functioning for 12 years. It is organised regionally and centrally. It organises conferences, seminars and debates in various road and traffic fields. Every second year it organises a well- established road congress, and in the years between, the known Roadmen Days. From the viewpoint of international relationships it is connected mainly with IRF. It issues technical publications, articles, studies and researches, prepared by its members. It is a non-profit technical company, based on the voluntary work of its members.

PIARC Slovenia has been functioning since 1995. Since 1999 its work has been organised in the framework of the National Committee, comprising the Executive Board and five technical Committees. Its function is international co-operation and participation in the PIARC Technical Committees. 10 experts are actively included directly into the work of the PIARC Technical Committees and other bodies, and additional 7 experts function as associated members. The objectives are intensive international connections on technical levels, exchange of knowledge, experiences and information. The Slovenia National Committee includes 32 members, representing engineering and construction companies, engineers, investors, maintenance companies and state administration bodies. In the past the PIARC Slovenia National Committee organised an echoing public debate, intended for the technical public, on the integration of the private sector into road maintenance and rehabilitation programmes. The debate was intended for the promotion and support of the public-private partnership project. DRC and PAIRC connect with each other on the national and international level and prepare joint actions and programmes.

Inženirska zbornica (Engineers' Chamber of Slovenia) is predominantly a professional organisation, including experts as individuals, in order to enable them to realise their interests and individual demands in the field of road industry.

All the organisations and their members follow the performance of the most important road and traffic projects and programmes in Slovenia and participate in them thus contributing decisively to their success.

7. CONCLUSION

After its national independence Slovenia started to restructure its transport and road sector. It is involved in a series of projects, intended to ensure better connectedness and accessibility of all parts of the country, to encourage the economic development, to improve traffic safety and to reduce the adverse traffic impacts on the natural, living and working environment. New financial sources will have to be provided in order to complete the projects faster and in appropriate time. Therefore a project on the integration of private sector into the projects concerning the development and maintenance of state roads in Slovenia is being prepared. This is expected to assure the necessary investment dynamics and positive effects of the private sector in the public infrastructure area.