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Motorway Infrastructure Environmental Assessment: Problems and Challenges in Central and Eastern Europe

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MOTORWAY INFRASTRUCTURE ENVIRONMENTAL ASSESSMENT: PROBLEMS & CHALLENGES IN CENTRAL AND EASTERN EUROPE

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In late seventies and in eighties, environmental situation in most of the countries of Central and Eastern Europe and especially in their industrial regions began to reach such alarming negative proportions that even the maintenance of economic life and social fabric required some measures in order to try to stop or at least slow down the environmental deterioration. In the individual countries, laws and regulations aiming at limiting negative environmental impacts in various spheres of economy were issued, frequently very strict and in some cases comparable with the corresponding standards in Western Europe. Their practical implementation, however, brought limited and in many cases almost no results due partly to shortage of funds, ineffective bureaucracy, low punishments and lots of exceptions.

In the road sphere, the practical steps taken with regard to environment were until 1989 practically aimed at the protection of agricultural land, noise protection, drinking water protection zones and at attempts to decrease the excessive use of chemicals in winter maintenance only. Very strict laws protecting the agricultural land pushed designers to place new roads and motorways where possible on other types of land, in many cases to forests. Protection against the traffic noise was practically limited to constructing noise barriers, in most cases heavy, energy-consuming and ugly. Noise protection measures at the source (vehicles), on the road itself (e.g. special pavement design) or at the facades of buildings were mostly impossible because of lack of special materials and/or technologies needed for these purposes. Attempts to limit the excessive use of chemical deicing agents were also only partly successful because of unreliable local weather forecasting, poor and obsolete equipment and insufficient control. With exception of noise protection, the respective environmental legislation was either vague or missing and the elaboration of specific environmental studies or submission of environmental impact statements was not customary even for large motorway projects.

The last decade have confronted the Governments and nations of the region with far reaching political, economic and social changes. The reorientation of production activities from heavy industries to consumer-oriented ones was shifting transport demand from rail to road, which tendency was further strenghtened by the increasing proportion of road transport generated by the private sector. In the passenger traffic, the newly acquired freedom of movement of population and easier access to the Central-Eastern part of Europe resulted in the considerable increase especially in East-West traffic, which put additional strain on generally underdeveloped road arteries. This growing road traffic demand sharply contrasted with the reduced abilities of the Governments and highway administrations to react accordingly by upgrading the road infrastructure and intensifying the maintenance, since public funds available were - especially in the first years of the economic transformation - in many countries considerably decreased.

Due to this contradiction, negative impacts of road traffic on surrounding environment became in many cases – especially in urban areas and border regions – more profound, disturbing and visible. These developments coincided with the growing awareness of the public to environmental issues. This process of increased public involvement was also accelerated by the influence of Western institutions and activists, which helped to activate domestic green movements.

Reflecting these facts and trends, countries of the region created the legislative basis for more efficient environmental protection also in the road sphere, consisting generally of new environmental laws and fundamentally revised regional (territorial) planning, building, public roads, agricultural, forest, water and land resources laws. These basic laws were in some cases supplemented by respective regulations dealing inter alia with noise and vibrations, air pollution, water pollution, principles of location of an investment, preparation of environmental documentation and reports, protection areas, participation of public during preparation and construction phases, etc. These regulations were issued mostly by the respective Ministries but also by Road Administrations in cases where guidelines of general character did not exist.

As a result of these legal and regulatory measures, the elaboration of Environmental Impact Assessment (EIA) is now compulsory for motorways and also for major road projects in the majority of Central and Eastern European countries. In some countries (e.g. Romania) this assessment has to be concluded by the submission of formal Environmental Impact Statement (EIS). On the other hand, in some cases there is no formal procedure prescribed how to elaborate EIA and the methodology used (different types of quantitative or qualitative assessments) as well as the stage of the planning process in which the EIA is carried out differ. In most cases, EIA refrains from evaluating environmental impacts on quantitative (monetary) basis, but uses qualitative or descriptive approach, supported sometimes by effect tables or matrices instead.

The costs of reported EIA range between 3-10% of design costs: in extreme cases (when EIA or environmental impact study was elaborated partly or fully by foreign consultants) it may reach even 20-25% of these costs. Such EIA´s have been elaborated for sections, earmarked for concessionary arrangements on the basis of international tenders, or where international financing institutions´ loans or European Union´s Phare co-financing were envisaged. These studies regularly comprize inter alia (i) executive summary, (ii) description of the scope and objectives of the project, (iii) legal and administrative framework within which the project is located, (iv) description of reasonable alternatives, (v) description of the existing environment, (vi) assessment of significant environmental impacts of the alternatives, (vii) description of mitigating measures, (viii) methodology of predicting and assessing environmental impacts used, (ix) identification of major gaps in data and uncertainties of prediction, (x) outline of the monitoring plan and (xi) results of public hearing meetings as well as appendices and graphical outputs.

Following above described changes, the traditional road planning principle i.e. satisfying traffic demand with optimal use of available funds has been supplemented by additional objectives such as harmonisation of the route with the surrounding environment, minimalisation of its negative impacts and public participation in the planning, design and construction phases. The approaches to securing public participation differ in each country and are also dependent on the scope of the project in question. In some countries of the area, e.g. in Poland, the measures to inform the public are taken already at the very beginning of the planning process, in some other ones (e.g. Czech Republic) in more advanced design stages i.e. the detailed project including the ecological chapter (annex) or EIS is made available to interested public. Also means of public information and participation vary considerably depending on the character of the project, local customs and possibilities. In most cases, displaying the documentation for public scrutiny in municipalities and public hearings are used, while distribution of informative materials, exhibitions, press releases and other mass media presentations, visits to construction sites, etc. are chosen rather exceptionally.

General difficulties of economic transition and in some Eastern European countries also specific problems connected with political instability, changing legislative scene, privatisation and restitution (returning to original private owners) of land as well as disputable competences of authorities on different levels (local, provincial, regional, central) considerably complicate and slow down the decision making process. In some cases delays were also caused by the fact that environmental impact assessment had begun rather late in the project cycle.

In cases of dispute, in most countries the Ministry of Environment is the supreme authority to take final decision. In practice, however, sometimes – especially where the weak central authority coincides with strong local pressure groups, intensive lobbying and not transparent legislation – it takes a long time to take such a decision and even much longer time to implement it. Typical in this respect are planned motorway bypasses or orbital roads near big cities, where the city has a general tendency to push the route out of its territory, while the neighbouring municipalities wish to move it back. This situation sometimes results in postponement of most urgent (or efficient) road schemes, which is of course undesirable from the point of view of the society as a whole.

As far as concrete measures to reduce nuisances are concerned, with respect to noise protection the preferred solution continues to be to provide protective structures at the road in the form of earth mounds, which are mostly cheap, simple to maintain and integrate easily with their environment. Sites of restricted width are typically provided with noise barriers of various types and designs. There is also good experience with noise reducing road pavements, mostly on motorways, which also domestic firms are now ready to produce.

Following foreign trends, especially in the Czech Republic, Hungary and Slovenia demand started to shift increasingly towards tunnels, underground sections, animal passages, landscaped bridges, etc., which also blend better with the landscape and reduce the segregation effect. Since they are expensive, road administrations in the majority of countries of the region are generally cautious in accepting them, having in mind the severe budgetary constraints. As regards road surface water drainage, efforts are being made to at least spread its effects by stretched out percolation in depressions or by water collection in sedimentation lagoons also outside the water catchment zones.

Insofar these measures intended to reduce nuisances caused by road operation and road traffic are concerned, there is always a problem of trade-off between the costs of different types of protective measures required or requested for and available funds. The costs of mitigation measures normally lie between 3-5% of construction costs, but in densely populated areas and sensitive locations they may reach much higher proportions; for example in the karstic region of Croatia they represented 15% of the overall investment. The specific problem of countries in transition in finding the right balance between the best possible or maximum protection and budgetary constraints, which almost always represents some form of compromise, is insufficient experience with this type of negotiations on both sides (public and/or environmentalists and road authority or investor), which is sometimes manifested especially by lack of tolerance. This can result in individual cases in very expensive (e.g. tunnel) solutions with minor additional mitigating effect compared i.e. with cut and/or noise barriers, while the huge sum of money representing the cost difference might be used for environmental protection of some other place with much greater efficiency or for another infrastructure project e.g. relieving the congested city centre, etc. Nevertheless, the trend in this respect seems to be generally positive, since all involved parties are learning gradually.

Road engineering measures themselves are not sufficient to reduce harmful effects of noise and air pollution caused by road traffic. They are supplemented also in Central and Eastern Europe by car improvements and road policing activities such as mandatory fitting of catalysators, introduction of unleaded fuel, more strict requirements and control of truck noise and soot emissions and channeling the transit traffic out of residential and downtown areas.

Despite all these efforts a lot remains still to be done in order to reach desirable environmental protection levels. In 1993, the PIARC Working Group C-14 together with Budapest Technical University in the framework of a survey in seven Central and Eastern European countries (Austria, the Czech Republic, Hungary, Poland, Romania, Slovakia and Turkey) tried to find out what were the problems which concerned them most as regards road building and environment and what in their opinion required the most urgent solution. In four out of five „transition" countries (Czech Republic, Hungary, Poland and Romania), still insufficient legislation and regulations were pointed out together with methodology for impact studies, improvements of decision making process, land use problems and lack of money.

Considerable attention to environmental issues related to planning, design, construction, maintenance and operation of motorways is also being paid in the framework of the TEM (Trans-European Motorway) project. Thus, inter alia. the studies on TEM traffic and construction noise control and on air pollution caused by traffic on TEM were elaborated, as well as the TEM draft standard for noise control. In November 1990, Seminar on Environmental Impact Assessment Techniques was organized in Rome, Italy. In the following years, Training Course on Ways of Communication with Public (5-7 May, 1992, Visegrad, Hungary), Round Table on Environmental Impact Assessment (19-21 October, 1993, Tihany, Hungary), OECD/TEM Workshop on Environmental Impact Evaluation of Road Infrastructure (7-10 October, 1995, Prague, the Czech Republic) and Meeting of AECOTEM and EIA Users Group (15-17 April, 1996, Balatonvilagos, Hungary) were held.

A major achievement in this field was the elaboration of the AECOTEM (TEM Aesthetic, Economic and Environmental Impact Assessment) Guidelines. They provide for an integrated assessment of the likely impacts of TEM construction and operation, taking into account environmental aspects, harmonious blending into the landscape, investment and operation costs, as well as the socio-economic consequences of proposed alternative designs among which the optimum has to be selected. On the other hand, the possibility to sum up and mutually compare these effects of very different nature is connected with the danger, involved in every mechanical procedure, that certain simplifications which are necessary as well as the general approach assigning to each type of impact one numerical value, may result in incorrect ideas about the complexity of the decision-making process. Moreover, this type of assessment requires a lot of input data, acquisition of which may sometimes be rather difficult and time-consuming. Therefore, the AECOTEM methodology is applicable only to major (mostly motorway) projects and the whole procedure represents merely a valuable aid, making the decision process clearer, simpler and more effective, but not replacing it.

Furthermore, in 1998, the Permanent Group of Experts on Environmental Impact Assessment was established in the framework of the TEM project, meeting once a year and providing the forum for exchange of views and experience between the experts of and also from outside the region. The last meeting of the Group took place in Prague on 22-24 March this year.

Taking into account the experience gained in the course of the existence of the TEM project as well as the state-of-the-art of the environmental issues in Central and Eastern Europe, listed below are the major problems to be addressed in the fields of environmental impact assessment and mitigation of nuisances related to roads and motorways. The Strategic Environmental Assessment of transport corridors should be introduced, making it possible to take into account the environmental aspects already at the strategic transport planning stage, when also alternative (transport mode) solutions can be considered. The environmental impact assessment itself should be carried out as early in the project preparation cycle as possible in order to avoid unnecessary additional costs and delays. Since one of the most difficult problems not having a clear-cut solution is the balance between (qualitative) environmental requirements and their (quantitative) economic consequences, further research and exchange of information and experience in this respect is highly desirable. More attention should also be paid to the reduction of environmental impacts in

the construction phase; environmental section, including the environmental protection statement should be introduced as an integral part of every tender document and efforts be made to engage more closely local population in this phase as well.

Procedures with regard to public participation and information should be improved and futher developed; experience gained in this respect should be made available to other interested parties both within and outside the countries of the region. It is also highly desirable to introduce post construction monitoring and audit of environmental action plans including proper ways of information about their results. Regular environmental training should be provided to all road personnel dealing with environmental issues as well as to respective staff of local and regional administrations.

Finally, information and experience exchange as well as technology transfer to Central and Eastern European countries related to environmental protection and SEIA and EIA implementation, carried out through various channels (international organisations, banks, health agencies, etc.) should be intensified, to which efforts the TEM project is ready to contribute. In this respect, this Conference may represent an important step in the right direction.