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METHODOLOGIES FOR PROJECT APPRAISAL IN THE NEW INDEPENDENT STATES

Transmitted by the Russian Federation

Note: The Working Party on Transport Trends and Economics, during its thirteenth session considered, inter alia, questions related to methodologies for project appraisal in the New Independent States. In this connection, the Working Party appreciated the presentation of the representative of the Russian Federation on the matter and agreed on the need to facilitate further discussion on items such as:

- The practical way to develop more concern about the need for a coherent Strategic Environment Assessment (SEA) framework in NIS countries, for example through the organization of workshops, etc.
- The importance to fully consider "non-transport" benefits when assessing projects in transition economies.
- The major difficulties faced to undertake transport and economic forecasting. (TRANS/WP.5/28, paras.21-24)

The Working Party was also of the opinion that the development concerning (i) Strategic Environmental Assessment (SEA), (ii) Cost-Benefit Analysis and (iii) Traffic forecast, which were under study within the European Union should be taken into account in a further analysis.

At the request of the Working Party, Mr. Arsenov, the representative of the Russian Federation produced an updated version of his report on methodologies for project appraisal in the New Independent States (which was submitted to the thirteenth session of the Working Party in document TRANS/WP.5/2000/6) taking into account the additional information on strategic environmental assessment, cost-benefit analysis and traffic forecasts made available by the European Commission (TRANS/WP.5/28, paras.21-24).

The updated version of the report received from the Russian Federation addressing the main aspects of a strategic environmental assessment and the TINA assessment methodology is reproduced below.

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1. STRATEGIC ENVIRONMENTAL ASSESSMENT

Strategic assessment of transport-infrastructure plans in the context of the goals of Russian transport policy

Priorities connected with the integrated mitigation of adverse environmental impacts are beginning to play a significant role in the determination of prospects for the development of the Russian Federation's transport system.

In Russia, transport accounts for 45% of total atmospheric emissions of pollutants, around 10% of emissions of greenhouse gases, 2% of industrial waste, around 3% of the discharge of pollutants with waste water and no more than 5% of consumption of ozone depleters. In places, it accounts for 85-95% of noise impact.

Legislative and regulatory instruments in the Russian Federation establish the mandatory nature of an environmental impact assessment (EIA) for major specific projects, including transport projects, and of an expert environmental appraisal of these projects.

The Russian Federation has virtually no experience of strategic environmental plans for assessing the development of transport infrastructure. Assessment of the environmental damage resulting from operation of the Russian transport system began only in 1999, using the methodology employed in the European Union. The finding was that environmental damage from the transport industry in 1999 amounted to 6.3 billion dollars, or approximately 1.5% of Russia's gross national product.

The need for assessing the environmental impact of developments in Russian transport infrastructure is dictated by the considerable adverse environmental impact of transport systems and the possibility of minimizing that impact during the preparation of transport infrastructure development plans and programmes. In this connection, the introduction and use in the Russian Federation of a strategic environmental assessment (SEA) methodology applicable to programmes and plans for the development of transport networks and systems is a matter of immediate concern. The European Commission's Manual on Strategic Environmental Assessment of Transport Infrastructure Plans is, in our view, entirely suitable for the Russian Federation both as regards the concepts and methodological approaches and as regards the use of general indicators of the environmental impact of transport infrastructure.

The Manual and the associated methodology could readily be used in work on environmental issues by government organs for the management of the transport industry. In addition, aspects of the Manual could be incorporated in the Programme for the management of environmental protection in the Russian transport industry and in regulations on methodology for environmental action drawn up under that Programme.

The Manual could, further, be used in drawing up future national plans of action to protect the environment.

The draft questionnaire on SEA in CIS countries will give an idea of countries' current practice and priorities regarding environmental assessment of transport-system development plans and no additions to it are needed.

It should be noted that, for the Russian Ministry of Transport, environmental issues have only recently been added to the list of priorities to be taken into account when drawing up transport programmes. The Ministry's work programme calls for the completion in 2001 of the drafting of "Methodological recommendations for strategic environmental impact assessment of major transport infrastructure projects". This document will be based on the latest results of work in this area by organs of ECMT and OECD as well as on the state of the art in countries other than Russia. The Ministry continues to have some difficulty in providing substantive answers to the questionnaire from the European Commission.

2. TINA'S PROJECT ASSESSMENT METHODOLOGY

Socio-economic cost benefit analysis in the context of projects for developing a trans-European transport network

(Assessment of TINA recommendations and proposals for their refinement)

The present paper develops and updates the information on the assessment of TINA recommendations submitted by the Russian Federation in September 2000.

As in the earlier submission, the TINA recommendations are assessed relative to the list of questions contained in the socio-economic cost-benefit analysis questionnaire for selecting projects for developing a trans-European transport network that was drawn up by the drafters of the recommendations.

The present paper begins with an overall assessment of the approaches underlying the elaboration of the TINA recommendations and goes on to comment on the sections and questions in the questionnaire. The TINA recommendations are compared with the practice in the Russian Federation, which is largely similar to the practice in the other CIS countries as they applied until the break-up of the Soviet Union a common methodology that they have, on the whole, maintained.

2.1. Assessment of the basic provisions

On the whole, the TINA approach and recommendations concerning socio-economic cost-benefit analysis in connection with the development of an international transport network reflect the practice in this sphere and are adequate for the intended purpose.

They rightly place first the socio-economic value of projects, followed by assessment of their viability and of the feasibility of implementing them.

The general structure of the project-appraisal process and the principles and procedure for the pre-screening of projects seem appropriate.

In terms of their basic approach, their general and particular schemas of analysis and the set of factors they examine, the recommendations have a lot in common with the methodological guidelines for cost-benefit analysis that are used in the Russian Federation and other CIS countries.

Decisions concerning the development of the transport infrastructure in Russia have always been taken on the basis of feasibility studies and comparisons of the principal possible engineering solutions, including the building of new transport facilities and upgrading of existing ones. Investment efficiency has, as a rule, been assessed by comparing the transport-network performance obtainable by implementing a project with the performance of the network in its current state (what is termed in the TINA context the do-minimum scenario). The studies have been made relative to the foreseeable network operating conditions and for entire network sectors or routes at a time, thereby enabling account to be taken of the interaction between network segments (for individual and multiple modes of transport alike) and traffic to be redistributed over the segments in accordance with changes in their standard.

The benefits of developing Russia's transport infrastructure have been the subject of numerous studies of both national and international importance. Methodological guidelines exist for performing such studies for all modes of transport; they state the procedure for making the calculations and the values of the various necessary standards.

With the country's transition to a market economy, the Methodological Instructions for Assessing the Economic Effectiveness of Investment Projects (Second Version) and for Selecting Such Projects for Implementation, Bearing in Mind International Experience and the Requirements of International Financial Organizations became part of Russian law earlier this year. This means that the rules regarding the assessment of investment projects are now much closer to those in use in Europe.

The differences between the TINA recommendations that we have studied and Russian practice mostly have to do with approaches to the definition of the individual components of projects' effect (benefits) and with terminology.

However, it is recommended in the case of TINA that a cost-benefit analysis be made only of those elements which can be valued in monetary terms. Environmental, policy and other impacts are to be taken into account at the decision-making stage and by the decision-makers, which hardly seems right.

The list of costs and benefits expressible in monetary terms includes investment costs, maintenance and operating costs and user benefits. The latter are defined on the basis of operating costs and thus do not expand the sphere of the appraisal.

In the Russian Federation, the process of screening investment projects is also based on comparison of the projects by investment cost and recurrent costs. In addition, account is taken of the "non-transport effect", meaning the benefits obtainable from project implementation in the sectors of production served by transport and in the social sphere, together with the savings in the cost of carrying passengers and freight. It is recommended that these elements too should be expressed in monetary terms or, if that is not possible, in qualitative terms.

The overall effect is determined by summing the results for all the elements mentioned.

As in the TINA recommendations, investment projects to be analysed in depth are pre-screened to determine their competitiveness. The scenarios taken into account in this respect include keeping transport facilities in their existing state, or what is called in TINA terminology the "do-minimum scenario".

Among the things assessed by comparison with this scenario is, above all, the efficiency of investment projects.

The framework proposed for appraising projects is, by and large, entirely acceptable. However, in Russia the efficiency of projects is not merely a matter of the results of cost-benefit analysis in the sphere of transport; it is a wider concept. Project efficiency is determined in the light of all the consequences beyond the bounds of the transport system, including the economic, environmental, social and policy impacts, even if they cannot always be expressed in monetary terms.

2.2. Purpose and objectives of socio-economic cost-benefit analysis

In the TINA recommendations, socio-economic cost-benefit analysis is proposed for investment projects that will in the future be considered for implementation within the envelope for funding by international financial institutions up to 2015 of the development of international transport infrastructure: railways, roads, airports, seaports, river ports and terminals. The purpose of the analysis is to identify the most socio-economically and financially viable of the projects that States submit to international financial institutions and organizations.

However, it follows from their title (and from the summary of the Working Party's report) that the recommendations are, for some reason, intended to apply only to countries that are candidates for accession to the European [Union], whereas it would be better to envisage their use not only in those countries, but also in any other countries through which there run international transport corridors forming the basis of an international transport network.

The Russian Federation submitted a provisional list of projects of this kind covering the Russian sections of international transport corridors to the first Euro-Asian Conference on Transport (St Petersburg, 1998). Work is in hand on refining the list and features of the projects it contains.

The technical specifications for the facilities to be included in such projects are taken from the relevant Russian standards. Where necessary, account is taken of European standards.

The list was compiled after assessing a variety of scenarios, including schemas for rehabilitating existing facilities and for keeping them in working order. Naturally, the appraisals made at that stage of work were very approximate and were not based on any uniform base information regarding expected volume or composition of traffic flows, modal split, etc.

2.3. Data needs and availability

The base data for making an analysis are: the parameters that describe the state of the transport network (distance between nodes; standard of equipment of sections and nodes, which determines their capacity; it is trip cost and quality indicators); and the freight and passenger traffic loads on the network in the existing and projected conditions.

It is generally not difficult to obtain data about the existing state of, and loads on the transport network. The network's projected state will depend on the nature of the investment project in question.

However, as the TINA documentation rightly says, project appraisal is almost completely dependent on the quality of the base data concerning freight and passenger flows and the factors that govern traffic growth, as well as on changes in the overall economic situation, with their impact on project efficiency. It is primarily from this data that it can be determined whether a project is viable and whether it is technically feasible within the requisite timeframe.

The Russian Federation, like other countries, has a well-developed system for calculating freight and passenger flows over its transport network on the basis of grids (matrices) of the connections between the network and nodes. For forecasting, use is made of statistics and forecasts for factors that affect demand for transport services, as well as of the relationship between those factors and transport demand. A variety of computerized calculation and modelling techniques have been developed.

The main reasons for difficulty in forecasting freight and passenger flows are that too little is known about a fifth number of important relationships that affect transport volume (above all, the relationship between trip cost and conditions and the demand for passenger or freight transport) and that data about the prospects for a country's social and economic development and the expansion of its foreign ties is sometimes unreliable or non-existent.

To mitigate the adverse effects of these shortcomings, calculations are made for a variety of traffic-growth scenarios. In other words, transport demand is not determined as a unique value, but as a value that fluctuates within a certain range.

Obviously, when international routes are concerned, it is important that all the countries involved employ uniform, mutually agreed scenarios in determining the growth of international traffic along them. Each country can independently determine its domestic traffic using its own source data and methodology.

2.4. The process and parameters of cost-benefit analysis

Questions relating to the methodology for analysing and comparing engineering choices have always been given close attention in the Russian Federation. As stated above, in addition to the standard Methodological Instructions for assessing capital-investment efficiency, there exist for all modes of transport methodological guidelines establishing the procedure for making

calculations, the boundaries of the calculation (appraisal) period, the discount rates and other necessary norms. The following responses can be given to the questions raised concerning the values of the appraisal period, the discount rate and the cost structure.

In practice, the Russian Federation recommends that cost-benefit analysis and comparison be carried out relative either to a reference year identified in the methodological instructions (for facilities with a long service life, this is usually the tenth year of operation) or to the total cost for the appraisal period of 20-25 years.

There is no point in making an analysis for a longer period: firstly, because costs at a remote time horizon are low, and secondly, because data for more than 20-25 years ahead are difficult to obtain and unreliable. For these reasons, extension of the appraisal period to 30 years, as recommended for TINA, would not make appraisals any more trustworthy. It would be more useful to include in the calculations the residual value of fixed assets after a more limited period.

The discount rate used in the Russian Federation during the final years of the planned economy was 12%.

There are, of course, many factors that determine what constitutes an appropriate discount rate. They include the total amount of capital earmarked for use during the period under consideration. That being so, the discount rate to be recommended for use in analysis should be one that meets the requirements of international financial organizations. Calculations should, for example, be made at a variety of discount rates within a range agreed with such organizations.

The investment cost structure recommended in the TINA documentation seems acceptable.

However, cost-benefit analysis for the kind of projects now being discussed should cover not only investment for project implementation (including design work and the holding of competitive auctions for construction contracts), but also the costs of procuring the vehicles needed to carry the projected amount of traffic. Such costs, like the other components of the total expenditure, should be determined both for existing and for forecast conditions.

The Russian Federation includes in recurrent (annual) costs for the carriage of freight and passengers the cost of maintaining and repairing the vehicles used and the maintenance and repair of facilities themselves, together with expenditure directly on the performance of the journeys, comprising the cost of fuel, energy and other consumables, the vehicle depreciation costs, wages and materials handling costs.

The methods that have been devised for determining recurrent (annual) costs give quite accurate results. The soundest results are obtained by using the system of indicators based on the principle of the division of the costs into those connected with fuel and energy consumption ("energy costs") and those connected with the expenditure of time ("time costs"). With this system, allowance can be made for all the particularities of infrastructure conditions, vehicles used, operating schedules and other relevant factors.

In practice, it is more convenient to use other methods based on standard costs per unit of distance travelled by vehicles or per unit of carriage (ton-kilometre, passenger-km) in a variety of conditions.

Such methods and standards have been developed for all modes of transport and are widely employed in feasibility studies. They are similar to the methods mentioned in the TINA documentation.

The third element taken into account in project cost-benefit analysis in the Russian Federation is the "non-transport effect" mentioned above. It reflects the various positive effects that improving transport links has in the production, social and other spheres and encompasses a larger set of factors than the concept of "user benefit" recommended as a component of analysis in the TINA documentation.

The main factors taken into account in the non-transport effect are connected with the reductions in trip cost and duration that result from the improvement of a transport link. Reducing trip cost and duration promotes production growth and population mobility (and consequently also increases volumes of passenger and freight traffic and passenger turnover and freight turnover) and helps to cut economic-development and social-welfare costs and the losses associated with the time passengers and goods spend en route, lessen the environmental impact of transport and improve living conditions.

Not all of these benefits of implementing investment projects can be assessed in monetary terms, but the objective is to take them into account as fully as possible in decision-making.

The nature of the non-transport effect to be examined depends heavily on the nature of the journeys to be effected over transport links and on those links' place in the national transport infrastructure.

It would clearly be advisable to study the non-transport effect of improvements (reductions in trip time and cost, broadening of scope) in international traffic.

To confine oneself to assessing "user benefit" is to reduce the efficiency of transport projects.

The principles for the sound design of transport networks require that measures to improve networks should, as a rule, be chosen and examined not in isolation but in conjunction with one another, in the context of schemes for the development of network sections and routes that consider not only the nature of the measures, but the order in which they should be carried out. That remark is entirely applicable to investment projects and particularly important in the case of sections and routes of trunk networks (including international links). It is precisely this need for a combined approach that determines what geographical areas and what modes of transport must be taken into account in project analysis.

Guidelines on appraising the efficiency of investment projects should, therefore, address the issues of interaction between the partners along routes and of the elaboration of sufficiently long-term schemes for the development of routes where such interaction is of relevance.

2.5. General assessment of the recommendations

The TINA recommendations for assessing projects for the development of a trans-European transport network set out basic approaches to, and contain specific guidelines for all parts of the assessment, ranging from the overall framework to each of its components. They make possible a comprehensive examination of the advantages and disadvantages of investment projects and we have no fundamental objections concerning them.

The list of information to be supplied on completion of the analysis is justified and is, on the whole, adequate for decision-making.

However, a number of recommendations concerning the calculation procedure and, in particular, the numerical values for some calculation parameters require further discussion and adjustment. This has already been pointed out above.

We also feel that some questions are unnecessarily complicated and that the search for simpler solutions should continue. This applies in particular to: the importance to be given to the uncertainty factor; the recommended set of policies for which analysis should be carried out; the determination of the benefits from reduction of the time passengers and freight are en route, and a number of other points.

The recommendations do not pay much attention to the interdependence between links in a transport network. Consequently, they do not pay much attention either to the effect that projects carried out at different points on the routes may have on one another.

It would also be useful to include, if not a methodology for, at least basic approaches to determining the influence of the cost, speed and convenience of a transport link on the development of transport and economic ties and on the social sphere. That is extremely important for taking final decisions on major investment projects.