

Environmental impact assessment and transport facilities

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INTRODUCTION

Since four or five years the context of transport policies has been evolving very profoundly in developed countries.

Firstly, *uncertainty about the future of the general economic situation* leads to long-term options being kept open and to operation within a shorter horizon for analysis and action. This leads to the difficult question of inserting heavy investment choices into more adaptive processes of decision and transport planning.

Secondly, the diversification of both individual and collective values and the *uncertainty concerning the future value changes*, coupled with the more active role that individuals and groups of citizens are taking in decision-making processes, lead to questions of *arbitrage among the interests of various groups, between local and national interests and questions of solidarity between generations*. These questions are at the heart of environmental and quality of life concerns.

The irreversible character and the role played by major transport infrastructure in spatial and economic development seem a priori hard to integrate within this double context of uncertainty about the economic future and trends in social values. But studies of environmental impact assessments of major transport infrastructures testify to a new effort to respond to this dilemma inherent in major transport facilities namely to reconcile irreversibility and changing needs.

We will attempt now to evaluate the environmental impact assessments and more precisely on one hand the methods and on the other hand the processes of environmental impact assessment presently used. We shall stress the *impact of infrastructures*. However, it must be underlined that environmental impact assessment apply also to transport "products" such as supersonic planes, VSTOL, electric cars, oil tankers, etc. and that these latter environmental impact assessments can have important international implications, in particular if they are used as non-tariff barriers to trade.

EVALUATION OF METHODS OF ENVIRONMENTAL IMPACT ASSESSMENTS

The methods of evaluation used within environmental impact assessment are not by nature fundamentally different from the analysis of other impacts. We can distinguish in particular:

- i) the expert meeting, or more broadly the use of informed judgement;
- ii) the analysis of cost-damages and cost-benefits;
- iii) the analysis using multiple objectives (multiple criteria); and
- iv) the analysis of technology assessment.

On the basis of this experience, it is possible to draw the following lessons.

1. Environmental impact assessment contributed to the analysis of the impacts either in quantitative and non-monetary terms, or in qualitative terms. It is however clear that a monetary analysis of damages concerning the environment can constitute a useful complement. In particular one can ask whether such analysis of damages should only follow the decisions of courts about the compensation to be accorded to victims (as it has been the case for safety) or whether they could not come before court decisions and provide the foundation of such decisions. For instance the British Land Compensation Act of 1973 obliges the dwellings exposed to level of noise exceeding 68 dBA (expressed in L_{10}) on exterior walls to be sound proofed at 100% level, as well as making obligatory compensation for a loss of property value due to noise or pollution. The additional cost of freeways due to this concern is usually estimated at 10 to 15%. It is important that research be made in this field to provide better foundations for the compensation decisions.

2. Environmental impact assessments contributed to widening the set of choice criteria and therefore to reducing the importance of cost-benefit analysis and cost damage analysis and to making more explicit and in a more disaggregated way the necessary choices among criteria. By increasing the heterogeneity of the set of criteria, *evaluation and assessment is no longer the selection of the best alternative but information to be fed into a wider decision process*.

Thus, it becomes possible to present in a better way the effects on different groups, and to improve analysis of the conflicts among criteria. Evaluation is thus conceived as a tool for decisionmaking and not as the decision itself. This is a necessary condition for any technical study in a democratic process, if we want these studies to have credibility for decision takers, for professionals and for citizens in general.

3. These environmental impact assessments can however be improved. First, they often deal with a *spectrum of alternatives* which has not enough contrast. For instance, not only alternatives about the characteristics of a certain infrastructure, but also about its location as well as alternatives using other modes including the solution of not doing anything, should be part of the scope of such studies.

4. Second, environmental impact assessment should also consider a wider *spectrum of criteria*:

- (i) Indeed the environment does not equate annoyance or pollution. It is also *quality of life*. In this wider sense the impact of transport facilities on the environment *can be positive* and is not solely negative. As we can all see in the Netherlands, the environment is already transformed by man, and is already integrated in his culture. The negative character of the word "impact" is

in that sense to be regretted; any new transformation is not necessarily negative.

(ii) Impact assessments must consider the *various aspects of the project*: the impacts of its construction, of its physical existence, of its use, as well as its indirect effects.

(iii) The analysed impacts must be local as well as regional, national, and international.

5. It is thirdly important to distinguish clearly between a descriptive analysis of impacts and a normative analysis of impacts. In that sense, it is appropriate to avoid the confusion between factual information and personal views.

6. Moreover, the foundations of the technical analysis of the effects on the environment have often to be handled with caution for two reasons: on the one hand, knowledge is not sufficient in this area; and *research is needed*; on the other hand, the *dissemination* of available knowledge is not sufficient either - for instance we know a reasonable amount about the question of noise, but this knowledge is not sufficiently widespread. It is *information and training* in the professional milieu and of the public which are called for here.

EVALUATION OF PROCEDURES OF ENVIRONMENTAL IMPACT ASSESSMENT PRESENTLY IN USE

The appropriate insertion of impact studies into decision processes is necessary for impact studies to have a *concrete effect*, in other terms *for impact studies to have an impact*.

The Major Types of Procedures

The United States law on the national environmental policy introduced in 1969 the requirement of an *environmental impact statement* for any Federal action having an effect on the quality of man's environment. The *creation of a specific procedure for environmental impact assessment* was an innovation. Similar types of procedures have later been defined in a number of states of the United States (sometimes for public as well as private projects) and in other countries such as Canada, Australia, France. A law is in preparation in Japan. The experience of these countries - United States, Canada, Australia (the implementation ordinances are not yet available for the French law of 1976) provide the basis for a first review of the advantages as well as the limits of this procedure.

It is important to distinguish the approach of the United States from a second approach exemplified by the choice made by the Department of the Environment in United Kingdom, which considers that the *assessment of environmental impacts must be inserted explicitly within existing planning mechanisms* and thus *do not require any specific procedure*.

Finally, a third approach considers that the usual planning mechanisms are sufficient to treat environmental concerns. There is no need to establish either a *specific procedure* or an explicit mechanism. Such an approach can be justified in countries where the environmental "consciousness" is traditionally high and where land-use planning is already rigorous. . . or on the contrary in countries where such environmental concerns are considered secondary.

Lessons to be learned from Environmental Impact Statements

The experience acquired from environmental impact statements allows us to draw a certain number of conclusions, firstly negative ones.

1. It seems that such environmental impact statements may imply additional *costs and additional delays* for the implementation of projects. However, such a

judgment must be qualified to take into account opportunity costs and delays (by comparing to a situation without environmental impact statements). The example of sections of motorways missing in larger networks such as the "embarcadero" freeway in San Francisco, or the example of the Narita airport (Tokyo) are significant in that respect. This new international airport of Tokyo was originally planned to open in 1971 and is not yet open to traffic because of the opposition of local populations (particularly of farmers) and the cost of a day's delay in the opening is currently estimated at 60,000 dollars.

2. The creation of an additional procedure may appear as a heavy bureaucratic requirement, particularly if problems arise such as coordination with other existing procedures, or, let us say, of harmonisation of the actions of different administrations. In the United States context, the importance of the courts often leads to more emphasis on the satisfaction of court's procedural requirements and less analysis of the environmental concerns themselves.

3. The effect of environmental impact statements on the definition and the implementation of the project can be nil if the statement comes too late and if it is done by a group without power over the orientation of the project. On the contrary the effect can be to simply stop the project in the case where the study is useless, or situation of conflict develops sometimes with the arbitrage of courts as this may happen in the United States context. However, these impact statements have three major positive effects of *education*, of *prevention* and of *concertation*.

4. The impact statements by contributing to the integration of environmental concerns have a *pedagogic effect on the public* (through participation in decision processes), on the *administrations* which propose and/or control the project and the *consulting firms* (which usually do the impact statements and sometimes allocate to these studies an important part of their activities).

5. As far as they have an effect on the content of the project the impact statements have a *major preventive role*. It is sometimes better to modify the route in advance than to create ex-post under local pressure an expensive barrier against noise. This *preventive* aspect is essential since the environmental policies, like health policies, cannot restrict themselves to being mainly curative as this would imply much higher costs and lower efficiency.

6. The Environmental impact statements have finally an effect on the decisionmaking process by establishing a consultation mechanism among administrations, politicians and the various publics. It makes explicit the necessity of a political mechanism to integrate the concerns of different groups. It seems that such instruments could be viewed as contributing in a positive way to the search for a consensus and for the solution of conflicts through dialogue rather than through arbitrage. They can, if they are efficient, become precious tools to improve *local democracy* and to lead everyone to take more into account other people's concerns.

Environmental impact assessment of transport facilities are still too recent to allow a definite judgement. They are a good example of the need for both qualitative and quantitative research, both on methods and on decision processes. If they can contribute to a better understanding between people, if they can lead to a satisfactory balance between local interests and collective interests, impact assessments will surely be a useful tool since preventive analysis and action will always be preferable to costly curative solutions.

REFERENCES

- OECD (1973): "Environmental Implications of Options in Urban Mobility", Paris
- OECD (1974): **Recommendation of the Council on the Analysis of the Environmental Consequences of Significant Public and Private Projects**, C(74)216, Paris
- OECD (1974): "Environmental Damage Costs", Environment Directorate, Paris
- OECD (1975): "Airports and the Environment", Environment Directorate, Paris
- OECD (1976): "Analysis of the Environmental Consequences of Significant Public and Private Projects"

- (ENV/URB/76.7/3.2), Environment Directorate, Paris
- OECD (1976): "Evaluation of Traffic Policies for the Improvement of the Urban Environment", Environment Directorate, Paris
- OECD (1976): "Social Cost of Noise", Environment Directorate, Paris

FOOTNOTE

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