



COST350
Integrated Assessment of
Environmental Impact of Traffic and
Transport Infrastructure
- A Strategic Approach

Part A
Executive Summary

COST350 was involved with the Integrated Assessment of Environmental Impacts of Traffic and Transport Infrastructure, taking a strategic approach. The final report develops an operational methodology and key aspects in support of Strategic Environmental Assessment (SEA). Target groups are the decision makers involved with the planning of transport infrastructure. The main elements are:

- Transport infrastructure planning situations and planning options.
- Impact and indicator structure.
- Impact assessment and impact aggregation methods.
- Transport planning option parameters and assessment methods including monitoring.

The key aspects, which are described in the final report, have been defined as follows:

- Identification and description of infrastructure planning situations and options with case studies.
- Identification and definition of environmental impacts and indicators and development of impact assessment methods.
- Specification of transport planning option parameters and development of transport parameter assessment methods.
- Aggregation of impacts/indicators and development of integration methods.
- Synthesis of COST350 methodology and specification of research requirements.

The results and recommendations are related to four geographical levels (national, regional, local and corridor level). Based on these levels an evaluation was made on SEA compliance of case studies with the EU-Directive and a synthesis of present approaches and lessons learned.

In all levels two routes are possible to be followed in a SEA approach:

1. An EIA-oriented approach. This means to use the current available transport data and the transport models to give the input data to the environmental models. This methodology is very similar to the practice followed in the surveyed countries where the same data are collected, supply and demand models are used and the same output data are given.
2. A more strategy-oriented approach, where the intensive approach of the point 1 above could be overcome thanks to the strategic approach that should characterise the SEA. This implies that we should give indications how the current approach (more EIA oriented) could be modified focusing on the SEA of transport planning selecting or defining new data and indicators useful to individuate the trends of the effects due to the transport planning.

To define which transport indicators are suitable to evaluate the effects of the transport plans and programmes it is fundamental to individuate some main criteria helping in the choice of the most appropriate indicators. The indicators proposed should be simply computable and should allow the definition of the trends due to the transport planning and policies adopted. In this way it is possible to compare the indicators calculated each year and monitor the effects of the plan. The proposed indicators are reported hereafter:

1. Accessibility
2. Level of Service (LOS)
3. Rate (%) cycle paths surface/roads surface
4. Rate (%) reserved roadway surface/plan area surface
5. Rate (%) surface for public transport / reserved roadway surface
6. Network extension (km) of public transport lines
7. Rate (%) number of interchange parking places/parking places
8. Roads Length (km) inside ecologically rich areas (Natura 2000, National Parks, etc.)
9. Changes of the land use value
10. Proximity (m) of transport infrastructures to the ecologically, cultural, social, and landscape rich areas

11. Percentage of people living in the areas along the infrastructures (250 m per each side) in respect to the population living in the plan area
12. Rate of area dedicated to interventions focused to reduce the transport demand (e.g. pricing policies, zone 30, etc.) /plan area surface.

Further on the approach proceeds from a macro to a more micro approach going into a major detail and focusing mainly on the environmental indicators. In order to achieve this, the first effort was dedicated into the analysis of the DPSIR-Scheme, where the concepts of the application of DPSIR in SEA and a more thorough approach of all the single aspects are described:

- Driving Force,
- Pressure,
- State,
- Impact,
- Response.

Secondly, all the aims and targets that must be taken into account as far as the environmental protection is concerned were elaborated. They include the following:

- Tackling climate change;
- Protecting nature and bio-diversity;
- Environment and Health (Water protection, Soils protection, Air quality, Protection against noise);
- Sustainable use of natural resources and management of wastes.

Based on the above criteria, sixteen indicators were selected as follows:

- Land uptake
- Fragmentation of habitats
- Visual disturbance
- Consumption of non-renewable raw materials and recycling of waste in construction
- Concentration of pollutants in soil & surface water
- Use of fossil fuels/renewable energy
- Disturbance from noise
- Sensitive pollution
- Climate change
- Acidification
- Photochemical pollution
- Toxicity and ecotoxicity
- Eutrophication
- Release of dangerous goods due to accidents
- Accidents
- Hydraulic risks

The report explores in the next step the themes of impact scoring (significance) and aggregation in the context of integrated assessment. A review of relevant guidance documents and methods was carried out and examples of the best practice are explored and highlighted. The section also seeks to achieve a common understanding on the issues analysed and to optimise use of the existing research. The report brings together existing available guidance on “impact significance” across the member states participating in the COST initiative. A variety of techniques exist, such as those that employ GIS techniques to judge impact, and others that are based upon expert judgements. Some techniques are closed to external examination being an equation within a model, where as others are more transparent with scores being critically examined by external organisations.

The section on aggregation reviews available methods for the joint consideration / aggregation of socio-economic and environmental impacts of Plans and Programmes and related policies and objectives in the transport sector. Short of a single index, which reflects this overall impact,

aggregation may be conducted at lower levels, in a manner that enables the combination of basic indicators into indices, which, in turn, may be aggregated at an even higher level. The section lists possible aggregation methods based on EU recommendations.

Finally, some conclusions are reached through analysis and review of practical experiences on aggregation and monitoring conducted in Europe and overall recommendations to readers are put forward.