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Access to mobility: a basic social service

Project Assessment Methods in France

The French method used for the assessment of road projects may be summarized as follows:

The basis for road project assessment is Cost Benefit Analysis (CBA) using monetized effects.

To this analysis are added, if relevant, the following main non-monetized effects:

- accessibility
- employment (during the construction period and afterwards)
- economic induced effects (on the business sector)
- consistency between the project and local decision makers' strategies
- and also… any other effect that may influence choices (cost/efficiency approach)

If relevant, a financial appraisal must be undertaken (toll motorway involving public-private partnership)

In fact, the French project assessment process is a mixed assessment process between pure CBA and multicriteria analysis, the mix depending on the stage of the studies and the characteristics of the project.

- Project assessment is overlapped into an administrative and political decision-making process in which environmental assessment follows its own parallel rules.
- Socio-economic assessment does not dictate choice but aims to throw light on it.

In order to be understood by the different stakeholders in a project, relevant effects have to be explained both in monetary valued terms and in quantitative (or even qualitative) terms.

The different tools used throughout the road project development process

	Upstream level (planning surveys)	*First step of choosing an alignment*	*Last step of choosing an alignment*
CBA	Choice indicator: • insurmountable impediment if balance < 0 • otherwise contributes to choice	Choice indicator	Assessment of proposed compromises
Financial analysis	To get an initial idea	To get a more precise idea	Toll possibility: choice indicator No toll possibility: for the record
Non monetarized economic effects	Accessibility	Accessibility if contrasted options	Employment + consistency with local development strategies
Environmental assessment	Strategic Environmental Assessment(S.E.A)	Preliminary environmental surveys (preparing E.I.A) liable to cause some options to be abandoned	Environmental Impact Assessment (E.I.A)

Objectives and scope of French assessment methods

Two recurrent questions must be answered throughout a project's life:

- what compromise can be reached between the socio-economic balance of advantages/disadvantages to the community and financial feasibility made possible by tolling?
- what financial limits must be accepted to make the project more socially and environmentally friendly?

Two main stages can be differentiated in the implementation of a socio-economic assessment:

– Upstream level: before designing the alignment

Assessment focuses on the relevance of a road project, which is formulated in three key-questions:

- Is there a need and what is its nature?
- Can a road investment project meet this need?
- Within what time scale must project implementation begin?

– Downstream level: alignment design stage:

The aim of the assessment is to provide elements of choice that throw light on road project alignment and design options, by answering the questions:

- What road object is to be built, when, and with which alignment options?
- Is the project still relevant?

Why project assessment is performed in France?

Project assessment aims to make the relevance of public choices explicit – which is a legal obligation in France – by establishing a comparative balance between what is likely to happen without the project, **which does not mean nothing should be done**, and what the situation will be with the project. A comparative balance means viewing costs in relation to benefits (advantages) discounted throughout the project life.

General principles

Monetized costs and benefits included in socio-economic analysis

All the parameters included in project assessment methodologies are listed hereafter.

Advantages and disadvantages

- travel time savings
- vehicle operating costs (including fuel consumption)
- accident costs
- driving comfort (divided carriageway, grade separated junctions, no roadside residents' access, etc), including trip reliability
- noise in built-up areas
- regional and local air pollution
- global air pollution – i.e. greenhouse gases (CO2)
- tolls (perceived by the concessionaire)
- variation of net receipts of operators of alternative modes

Costs

- investigation and design costs
- land costs
- construction costs (including major repairs)
- yearly maintenance costs
- yearly operational costs
- residual value (of infrastructure)

The first five categories of costs, once discounted and added, give the "total cost". This indicator has been required since 1982 by the French "Loi d'Orientation des Transports Intérieurs" (Inland Transport Act). Its use is recommended by international authorities.

CBA is performed only with monetary values.

What is a discounted balance?

It is the sum of different annual flows, yearly advantages minus yearly costs, that are discounted over the project life.

This balance is established for each economic agent involved: road users, public authorities, concessionaire, other road operators or other mode operators, frontage residents.

Some receipts are expenses for other agents: tolls, variations of fiscal receipts, such as fuel tax, VAT or other taxes. These are transfers which cancel out when the summation is extended to the whole community.

What is this discounted balance used for?

It is the main indicator of the benefit of a project to the community, allowing comparison among road improvement scenarios and thus enabling proposals to be made to the decision makers.

- **From a theoretical point of view**, the best scenario is the one that maximizes the collective benefit.
- **From a practical point of view**, including significant non-monetized effects or financial feasibility, the choice will be made among scenarios whose collective benefit is positive.

Which other indicators of the socio-economic rate of return reflect a project's benefit to the community?

Optimum opening date: At this date the collective discounted benefit is maximum.
The first-year rate of return must not be used as an indicator for project choice.
Socioeconomic internal rate of return: This is the value of the discount rate that cancels out the discounted collective benefit. When this value is equal to or greater than the State discount rate, the project becomes beneficial to the community. This criterion can be used to assess the expediency of a project. It also indicates the risk associated with the project.
This criterion cannot be used to rank independent projects (which are not mutually exclusive).

Choice indicators under public budget constraint

In such a case, not all positive benefit projects can be undertaken. One way to take into account the budget constraint is to calculate the collective discounted benefit per invested € for each project:
This indicator enables independent projects to be ranked in a programme according to decreasing ratios until programme funds are exhausted.

How to establish a multi annual programme

Retain positive collective benefit projects.
Schedule them at their optimum opening date.
For a particular year, rank them by decreasing discounted benefit per invested € until programme funds are exhausted.
Postpone remaining projects until the following year. However, this approach clearly enables an informed decision but the final choice is mainly a political one.

Non-monetized effects completing the collective balance

- congestion (distinct from travel time-saving values), description of present situation, projected trends
- access to community services and to employment, calculation of accessibility indicators
- impact on employment in road industry (during road construction and afterwards) and other sectors
- induced economic effects on companies outside the transport sector
- consistency with local decision makers' investment and equipment strategies

Treatment of uncertainty and risk

Several traffic growth assumptions are used, which result from the combination of transport policy scenarios and economic growth scenarios.
Sensitivity tests can also be performed (e.g.: + 10% of construction cost, - 10% of traffic level), switching values also can be used (i.e.: value of a parameter which cancels out an indicator).

Financial assessment, why make such an assessment?

Motorways greatly improve traffic conditions compared to ordinary roads (time saving, enhanced safety, trip reliability, etc), and therefore the assessment of the road user (LV and HGV) is very positive. This gives reason to think that users' willingness to pay for a better service can be equally positive.
Finance restraint may cause a toll free project to be implemented progressively over the longer term to the detriment of the economic benefit of the community as a whole. Public budget equilibrium can also make payment by users preferable to payment by taxpayers.

- Toll solutions are generally considered to be conducive to higher feasibility than the toll free solutions
- But tolls reduce economic profitability because of the crowding out effect that may dissuade some users from using the toll infrastructure. The benefit to the user thus declines and consequently so does collective benefit.

Respective functions of economic and financial assessments

	Economic Assessment	***Financial Assessment***
Definition	Mainly non market data (time, comfort, safety, nuisances)	Financial flows (in terms of expenses and receipts)
Function	Represents the benefit for the community	Represents the financial benefit for the conceding authority and for the concessionaire
Currency unit	Constant	Current
Discount rate	Rate of the "Commissariat Général du Plan" (currently 8%)	Relevant interest rate (i.e. long-term loan rate)

When a decision it taken to build a toll highway in France, the construction and operation is entrusted to a concessionaire, which raises the funds and collects tolls from users. To this end, the viability of toll solutions must be tested. This can be done by using simplified financial models (like the one mentioned in the World Bank tool kit dedicated to public private partnership).

A toll motorway produces toll receipts to meet infrastructure operation and maintenance costs, such as staff expenses, taxes from infrastructure operation, maintenance expenses, renewal of fixed assets, current expenses. The difference between receipts and operating expenditure is used to repay equity and loans, pay financial costs and corporate tax and, if there is some cash in hand, to remunerate the shareholders. Several major financial indicators have to be calculated: Net Present Value, Internal Rate of Return (on equity), and debt service ratios. It is often not possible to achieve financial equilibrium without a public grant.

- The role of a public grant, if needed, is to reduce the investment cost which must be financed by tolls so as to make funding acceptable both to the concessionaire (maximize financial return at the lowest risk) and to the public authorities (minimize the public grant while also minimizing the crowding out effect).

Guiding principles to achieve a compromise between socio-economic and financial profitability:

- Always calculate the discounted benefit which must at least be positive
- Choose the most realistic comparisons: when the greater (deemed) cost and the crowding out effect of a toll solution are offset by gains in feasibility, financial and community benefits are not incompatible, because economic profitability for the community is higher with a toll project than with a toll free project.

Conclusions

The role of socio-economic analysis in the decision-making process can be summarized as follows:

Upstream level: before designing the alignment of a project
For strategic purposes such as defining French planning documents, a socio-economic assessment is a very helpful tool that enables us to identify needs and how they can be met.

Downstream level: designing and choosing the alignment
Several stages are needed, which are increasingly focused towards political and environmental acceptability. This means that the value of a socio-economic assessment gradually declines. The main purpose of an economic assessment is then to make sure that the project is still economically profitable for the community at large.

- Although a socio-economic assessment does not dictate the choice of major projects, which is in essence a political one, it sets main terms of reference that allow trade-offs to be made in full knowledge of the facts
- For major interurban projects, there is a link between financial profitability and economic profitability because these projects may be toll highways, and it is a fact that projects accomplished through tolling tend to be economically sound.

Important changes were introduced to socio-economic assessment methods at the beginning of 2002 (following those made at the end of 1998), such as using the shipper's cargo value, using a standardized value between modes for LV time valuation, hedonic pricing (depreciation of real estate) + damage to human health (beyond a threshold of 70 db) for noise valuation, and taking into account much higher accident costs (increase in costs of fatalities to 1,000,000 €).