EVATREN
IMPROVED DECISION-AID METHODS AND TOOLS TO SUPPORT EVALUATION OF INVESTMENT FOR TRANSPORT AND ENERGY NETWORKS IN EUROPE

SIXTH FRAMEWORK PROGRAMME
PRIORITY 8.1 Policy-oriented research

Deliverable 4.2

Report on the findings and outcomes of final workshop

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I - INTRODUCTION

The objective of the final workshop was to validate the ex post recommendations of EVA TREN project reported in the deliverable of WP3, and to deepen the interrelations between national and European decision processes for implementation of TEN T projects and policies. Transport and energy projects were considered. The experts invited to the workshop have been selected according to their experience in national evaluation processes and in evaluation made by international organisations such as EU, EIB, World Bank.

Representatives from the TEN T Agency and European Railways Agency also attended the workshop to report about their activity in the domain of evaluation of European projects.

The workshop was structured in three parts:

- A presentation of main results of EVA TREN based on case studies and including possible recommendations for ex post European evaluation
- A panel discussion with experts with predefined and open questions so that participants could prepare contributions
- A synthesis discussion with all participants in order to review major points of guidelines which will be integrated in the last D5 deliverable of EVA TREN.

For the reporting on ex post evaluation of the case studies a common grid has been defined with 10 different items.

In the WP1 these case studies have been considered in their national context of evaluation, and reviewed in WP2 in a European perspective.

The main conclusions have been synthesised in the presentation of Silvia Mafii:

The presentation of possible recommendations to be discussed was made by Christian Reynaud and has been structured in four parts as follows:

1. Methodological aspect for ex post/ex ante evolution
   - Data collection and harmonisation of data
   - Use of common demand projections and tools
   - Improvement of cost estimations
   - Risk and financial analyses.

2. The assessment of the impact of European policy measures
   - Measure of impact of policy measures
   - Definition of Reference scenarios.
3. The redistribution effects and participation of different types of stakeholders in the decision process

- The construction of stakeholder evaluation matrix for cost and benefit
- Social acceptability and introduction of EIA at different steps

4. First suggestions for implementation of an Evaluation Support Unit

- Harmonisation of procedures and data
- Scientific role
- Capitalisation of information and scenario
- Transparency.

The texts of these two presentations are reported in the annex including some additional written contributions of experts.

The issues discussed in the two panels were split in: the “project related issues” and the “policy issues”.

Questions have been prepared before the workshop and formulated as follows:

1st Discussion on project-related issues

Issue 1: Technical aspects of evaluation (data, models, and methods)

- Data collection and harmonisation: need for European database?
- Traffic forecasts (in particular international traffic): need for a European baseline scenario?
- Financial and risk analysis: commitment for both analyses at national/European level?
- Common tools/models: how can common models support better ex-ante evaluation also on a national level (TRANSTOOLS, TEN STAC, etc.)

Issue 2: The integration of the various stakeholders in the process: national, European, public, private

- How to mobilise stakeholders?
- When is the most efficient point in time when Stakeholders should be integrated – first ideas, project planning, project assessment, project implementation?
- Need to calculate the distribution of costs and benefits between stakeholders instead of “only” calculating aggregated values?
- Need to formulate output indicators for different families of stakeholders which have to be calculated for every project?

2nd Discussion on policy aspects

Issue 3: The integration of policy objectives in the evaluation process

- Quantification of scenarios: Need for common (baseline) scenarios concerning socio-economic and transport developments?
• Context Analysis: is there a need for considering/measuring interdependencies between projects?
• How do changes in policy objectives influence the long-term success of infrastructure projects? Do we need to appraise such unknown changes (sensitivity analysis, ...)?

**Issue 4: The implementation of a supporting unit**
• How should a supporting unit be designed (responsibility, competency, liability,...)?
• Where should it be located (DG TREN, ...)?
• In which phase of the project can a supporting unit be most efficient (evaluation, project design, stakeholders involvement, project management)?
• Who should participate at the supporting unit (DGs, national representatives, scientists, stakeholders, ...)?
• Which tasks can be adopted by the supporting unit?

The first panel was chaired by Werner Rothengatter (IWW) and the second by Marco Ponti (TRT, Politecnico di Milano).

During the workshop the discussions have been very intense with many contributions. The reporting of the workshop in D.4.2 will not be just the minutes of the workshop which will reduce the content of the discussions some of them based on written documents produced in annex.

Therefore the reporting will follow the main lines of the discussions adding, when relevant, additional information available in the documentation produced for the workshop. Although a structure for discussions was diffused to partners before the workshop it has not been always possible to follow very strictly this structure: some important points might have been stressed at different times of the workshop, and it was sometimes difficult to reorganise according to initial structure of discussion all the contributions made.

In the second day of the workshop focus was put on energy ex post evaluation taking as reference the same grid of analysis than for ex post evaluation of transport projects in order to point out similarities and differences between both approaches.

During this second day important written contributions were made by Mr Rossat and Mr Christidis from JRC who tried to answer the same questions as the ones raised in the transport oriented panels.
II - PROJECT RELATED ISSUES

The first topic discussed was related to technical aspects of evaluation including collection of data, modelling and methods.

1. Technical aspects of evaluation: data, models and methods

The data collection was seen as a major critical problem of evaluation which creates important differences in results of evaluations.

In many evaluations of projects the collection of data work starts from scratch and represents more than 50% of the work.

In general national data will be considered of better quality but still differ considerably from one country to another. Some strategic information does not exist as it is for example, the case for inland transport of maritime containers.

The reality is that access to data is more and more difficult because of commercial confidentiality and models are more complex and less transparent, because of increasing number of interactions which are supposed to be introduced.

Furthermore the transport nomenclature NST is too old and does not reflect properly the economic activity and the traffic generation by economic sectors. Therefore the list of data required is still very long concerning O/D traffics, and prices. There should be more stringent obligation for international transport data, which is a fast growing component of transport.

However a good encouraging experience is the CAFT survey for transalpine and tranpyrenean traffics. More surveys and better coordination of surveys are required for freight flows, for mobility of passengers and for behaviour of transport users.

Two ideas were suggested in order to improve data collection:

- to create a core “source of data”, which will be a common reference for more detailed data collection and will structure transport database
- to stimulate a “need” for data, such as performances data which would motivate major private companies and ports, for benchmarking their own performances.

The core “source of data” can concentrate on following points:

(1) To provide a reference database for international traffic, in particular for freight\(^1\) and passengers

\(^1\) technical aspect can be discussed using existing database and can be solved (ETIS, NEW OPERA…)

International freight is representing a more important share of freight transport on national territories than international passenger transport, which makes this recommendation particularly important for freight.

Nowadays such information is limited after elimination of border within EU. Efforts have been limited to surveys across Alps and Pyrenees and transport information in intra EU level is even deteriorated with new complex transport chains routes and commercial confidentiality.

Some data exist for international passengers (air, rail) and could be usefully consolidated in such database (cf. ETIS experience).

Such base will be used at EU and national levels where international traffic information is often lacking although it becomes more and more important as recalled earlier, and reaches an average close or above 50%, in many countries, of interregional transport (excluding intra regional transport).

(2) To provide socio economic reference database for a base year (current or recent year), including, in particular, intra EU and extra EU trade in euros and tons.

The example to be followed in this domain is the DG TREN energy forecasts document. This document provides socio economic reference projections per country and economic sectors which could be used for transport: in practice this is the case, and such reference can be completed with more information about intra EU and extra EU trade from COMEXT.

Case studies have shown how it is indeed difficult to trace back the underlying socio economic, reference hypotheses. This is also the case for many EU projects. And these hypotheses, which are external variables to transport sector, have an important impact on expected outputs.

(3) to provide GIS network reference

ESPON research programme of EUROSTAT has made progresses in this direction, but results are not of easy use for transport simulations.

GIS information is a domain where important improvements have taken place and should be better used for transport modelling at a time when transport information is regressing in many domains and for O/D flows in particular.

Reliable network attributes such as speed, density, and eventually capacity stemming from physical characteristics, are essential for evaluation of transport needs. Such attributes are rarely checked in the network description and generate differences in evaluation results and appraisal of needs.
However, strategic aspects of transport will always be difficult to measure such as capacity of a network, although network capacity analyses have considerably improved with GIS databases.

In any case there is a direct interrelation between the availability of data and modelling.

Different attempts have already been made at EU and national levels in order to set common modelling tools.

- End of eighties, four national institutes (TRRL, NEA, INRETS, DLR from UK, Netherlands, France and Germany) started to work on a European framework of traffic estimations for HST projects.
- Beginning of nineties, the conviction was that commercial software could find a solution for evaluation of TEN-T projects
- Mid nineties the IV PCRD launched on ambitious programme of data consolidation and modelling but these different initiatives just fall short to converge.
- Recent initiatives developed with ETIS for database, TRANSTOOL for modelling (and HEATCO for evaluation) integrating part of former researches results.
  
The idea is again not only to provide common database and tools but also to have them with free access and large diffusion.

It is still too early to say if this new initiative will be successful but the reality is that such tools have not yet been used at national level in the case studies of EVA TREN which are projects of European relevance..
In TEN STAC, all major TEN-T projects have been evaluated with the same methodology and results were provided to the High Level Group of national representatives for revision of TEN T guidelines in 2004: but these evaluations have rarely been quoted after, as references at national or European level.

Five years after European modelling tools have been used for assessment of the White Paper (ASSESS report), but, again, the use of the results has been limited to the final report of the White Paper assessment.

### 2. New dimension in modelling

Results of evaluation are very much dependent upon the type of model used and the recommendations for database must be directly related to recommendations for modelling.

Today the classical modal structure is a 4 steps model which is not very well adapted to development of intermodal solutions and co-modality approach: it becomes impossible to calibrate, and does not really help for solutions which are the solutions of interest for policy makers.

At the level of generation of traffic a segmentation of the market is requested. There is not “one” market transport but different demands requirements and types of services supplied.

- leisure trips for long and short distances of transport, for long or short journey time as pointed out in Channel case study
- respective volumes of regional, national, intra-EU or extra-EU trade.

The segmentation needs not to be very detailed but must be relevant\(^1\). Therefore for modelling three main types of improvement can be proposed in direct relation with relevance of evaluation process ex ante and ex post:

- Introduction of a basic segmentation of market for demand/supply confrontation

This is necessary for a better understanding of competition between transport modes including intermodal solutions.

- Introduction of services performances and in particular for intermodal services, terminal to terminal which could be reduced to transport time and cost.

The final output of transport investment or transport measure is, in fact, the improvement of services. If the “service” is put back in the centre of the problematic, then, the context analysis will improve, and, in particular, as far as competition between modes is concerned.

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\(^1\) This is not the case when referring to 1 digit NST for freight as it is the case in most models.
For competition between routes improvements are also possible at the level of the assignment stage of the modelling process using GIS tools and databases mentioned before.

- Improve the assignment procedure in order to better identify transport routes on intermodal “European network”\(^2\).

In such assignment all modes and intermodal solutions can be considered at the same time using as reference the “transeuropean intermodal network” made up of links and nodes including intermodal terminals.

In this context the “assignment step” becomes essential to understand the contribution of modes (co modality) in the transport solution and can be substituted to the “modal split step”.

But participants also agreed that traffic induced by a new project will remain difficult to model. It is probably more important in developing countries than in advanced economies. In developed countries the problem is more how to avoid congestion. In the case of HST induced demand is often as important as modal shift.

There is a need for common tools, and TRANS TOOLS reflects such demand.

But it is difficult to have only one model when the system is complex, algorithms must be very transparent for possible cross-check: competition also exists between models for technical reasons. The common tools should rather be a kind of “platform” which, in turn, raises the problem of its maintenance.

A second major issue of the first panel was the integration of various stakeholders in the evaluation process, national, European, public and private representatives.

### 2. The integration of various stakeholders

The involvement of stakeholders appeared necessary for many experts in particular when they can contribute to the financing of the projects. But all stakeholders will not become “shareholders” and some experts objected that involvement of stakeholders might become very “costly” for the evolution process itself; furthermore stakeholders are sometimes changing during the definition of the project.

The separation between infrastructures managers and transport operators implies in any case an additional desegregation of costs and benefits among these two categories, which has to be added to the former desegregation between “integrated” transport companies, final users and the state. The suggestion of “Railpag” from EIB to constitute a matrix of effects for different categories of stakeholders (SE matrix) has also been discussed and progresses in this direction have been asked in first conclusion of ex post evaluation of the French experience when it is a legal obligation (see report on this experience).

\(^2\) or intermodal « graph » to use the use the Operation Research terminology
However EIB experts also pointed that stakeholders are sometimes very reluctant for such proposals because they are afraid that the expected benefits will determine the contribution for financing. Local authorities have been often reluctant because they are expecting important local impact from infrastructure projects.

But the distinction between infrastructure managers and transport operators appears to be necessary and will help to define the infrastructure charging policy.

The fact is that infrastructure evaluation is becoming more and more complex with more and more interactions to integrate with more stakeholders associated to the process.

In the 2004 TEN-T guidelines, proposed by the Commission and voted by the European Parliament, the infrastructure appraisal is coupled with an appraisal of the use of the infrastructure, which is, itself, related to European transport regulation of the market, and, in particular, to the opening of transport network.

Therefore many European policy measures will impact the infrastructures performances and the evaluation process will have to take them into account.

Furthermore the systemic approach of the transport sector will also integrate the role of the transport actors:

- Because different levels of public bodies are concerned
- Because private operators intervene either as transport operators using the new infrastructure or private entities interested in co-financing.

This means that the evaluation will have also to provide results as regards distribution of effects of the projects among these different categories of stakeholders.

The problem of participation of stakeholders to evaluate process came up again in the discussion related to policy aspects of the second panel.
**Needs and search solution in freight modelling**  
(MODEM project from PREDIT, France)

<table>
<thead>
<tr>
<th>Needs</th>
<th>Solutions</th>
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| Segmentation of transport market Demand Supply | • appraisal of international flows  
• introduction of logistics needs and shipment size (demand)  
• introduction of type of service (supply) |
| Promotion of alternative modes and intermodal solution | • improve modal split models (non constant elasticity)  
• direct measurement of chains performances point to point:  
  (new methods for network assignment and contribution of modes) |
| Transport operations: a new dimension of transport evaluation | • identification of major nodes (consolidation, marshalling yards, ports - hubs)  
• introduction of cost models for transport operations and choice of routes |
| Capacity evaluation a problem for rail | • introduction of priorities  
• assessment of slots availability and possible conflicts between passenger and freight |
| Environmental impact (and in particular local impact) | • utilisation of geo referenced land use database (pop, type of zone)  
• identification of point of emission |
III - Policy aspects

The policy aspects were discussed in the second panel, chaired by Marco Ponti from TRT.

In this panel, the discussion was oriented towards the implementation of an evaluation process, ex ante and ex post, as regards policy objectives and social acceptability.

1. The role of an evaluation unit: experience

A preliminary question raised was the role of an evaluation “unit” in general since the evaluation of a project is often made once the political decision has already been taken. An evaluation unit must be able to say “no” to political decision makers who want to implement it.

But the objective of EVA TREN is not the creation of an “evaluation unit” within the European Commission, whether it is part of DG TREN or not.

This is why the words of “supporting team” in an evaluation process has been preferred, referring to the content of tasks to be achieved and not to the status of the persons in charge of such tasks whether it will be in an existing structure or not.

References made to national experience point quite different situations depending upon the country. The output of an evaluation is not supposed to be “yes” or “not”, and it is time that conclusions often tend to point the positive aspects of a project.

But the experience also shows, at least in national administrations, that such conclusions do no necessarily mean that the project will be implemented, at least in short and medium term.

The evaluation process is indeed more complex and progressive, leaving the final responsibility to political decision makers who have the political responsibility. This is not in contradiction with existence of a rigorous and scientific evaluation process and with clear conclusions as regards financial and socioeconomic rate of return, or as regards risks and financing possibilities.

Several examples have been provided, at national scale.

In Germany all the projects of the national plan are ranked according to a methodology which is supposed to be applied to all the projects.

This shows that a planning framework for a programme of a set of projects within transport network is very useful in order to harmonise socioeconomic hypotheses, projections and evaluation methods. Such framework will allow comparing projects.
Once a list of projects is established, then, the political decision will be constrained by a global financial budget envelope. The order of priority can eventually change but this will be clearly a political decision. However there are limits to such ideal scheme since budget envelopes are not very precise and, most of the time, cannot be planned over several years for projects which require pluri annual financing.

Furthermore co financing and public private funding (PPP) change the context of such planning process.

In the case of France the same global approach has been also followed using more directly the socioeconomic rate of return for a ranking of projects.

However, the network structure might also intervene in the choice of a priority, (“option” analysis). This might result in the estimation of “optimal date” for implementation of a project as regards budgetary constraint envelopes.

But, again, in France, the political decision context has become more complex with the “schemas de services” when discussions with regions were substituted to a more central planning organisation of a “master plan”, even though the final decision was always left to government and political authorities.

The main results of evaluation remain an “economic” rate of return and a “socioeconomic” rate of return as reported in the HST case study of EVA TREN, being aware that if the economic rate of return happens to be below a predefined level (which varied over time) then:

- either the project is postponed,
- or public authorities, central government, regions and eventually the Commission, have to provide through subsidies the amount missing in order to reach the predefined level.

The collection of public funds was particularly difficult for HST Paris – Strasbourg project for which the economic rate of return was low but the project could get through because of involvement of regions financing, as well as participation of EU.

Such process is becoming more and more frequent with opening of new lines which will always have a lower rate of return as compared to former ones, implemented in corridors with highest density of traffic.

Members of the new TEN T Agency and representatives of ERA were also attending the workshop, pointing out that they will be concerned by recommendations of EVA TREN.

The TEN T Agency will progressively develop important means for evaluation interventions and ERA was interested by the necessity to better improve operating conditions of rail and by the way to include such improvements in the cost benefit analysis. : HST case studies have indeed shown that operating cost appraisal and interoperability perspectives for rail were essential for assessment of rail performances within a country and across European borders.
Therefore, existing structures already take part in evaluation process and conclusions of EVA TREN will focus more on what should be done for ex post evaluation rather than on “how” it should be done.

2. The policy objectives

The policy objectives of the Commission have been clearly presented in the White Paper of 2001 and refined since then as regard opening of rail market, integration of environmental effects, and development of new technologies for operations.

The development of intermodal solutions is a major priority which directly refers to new infrastructures in links and nodes (terminals), new operating systems and new services supplied, and opening to new entrants providing new types of services.

As far as the evaluation process is concerned a distinction can be made between construction of infrastructure, performances of operating systems and impact of new regulations.

For infrastructure development a first consequence is improvement of accessibility, and interconnectivity with, in particular, construction of missing links across borders which is a “first” “priority” of EU.

For use of infrastructure the evaluation must stress the increase of modal share of intermodal transport which is a major difficulty of modelling: the TEN-T network has become an “intermodal network” made up of links and intermodal nodes which are parts of TEN-T.

This is part of modal shift objectives

But in general the objective is to increase the performances of operations and services. This has always been difficult to assess in ex-ante and ex-post evaluations. For case studies more and more deviations in costs are coming from operating costs more than from construction costs.

For operation integration of new technologies, such as ERTMS, must also be considered. Concerning regulations two aspects must be focussed on:

- opening of market which means more competition in particular for rail, and expected reduction of operating costs by better use of personnel and rolling stock.
- internalisation of external costs which requires proper introduction of cost function in transport models.

All these policy measures impacts will influence evaluation results and must be traced all along the ex-ante, ex-post project cycle evaluations.
3. The redistribution effects

This has been discussed in depth during the final workshop with reference to Railpag methodology for ex-ante and ex-post analyses proposed by EIB and the Commission for rail projects.

The Railpag methodology details impacts of projects, costs and benefits for different categories of stakeholders.

The stakeholders’ analyses can then be considered as a refinement of evaluation which includes redistribution effects.

But the refinement which is not easy to include in the evaluation process becomes also a necessity from an economic and social points of view.

- From an economic point of view it is indeed important to analyse how the project “surplus” is distributed and, in particular, between infrastructure managers and rail operators.

Since the separation between infrastructure and operations it is indeed very important to assess what can be the contribution to project investments of public bodies (eventually through infrastructure managers), rail operators and final users, as regards their benefits.

- From a social point of view the stakeholders’ analysis can point the redistribution effects between regions and categories of populations including valuation of external effects.

In a larger debate of project cycle including ex-ante and ex-post evaluations, progresses must be made in distribution effect analyses which will in turn reinforce the links between TEN-T projects and regional projects, which will facilitate concertation between different levels of institutions, from European, to national and regional levels.

4. Social acceptability

It has been already stressed that social acceptability was nowadays an obligation for implementation of a project. Social acceptability will result from a set of initiatives as far as evaluation is concerned.

- Transparency of information
- Public consultation
- Analysis of redistribution effects

The transparency and redistribution effects have been already mentioned.
Concerning public consultation more remarks must be made.

Public consultation exists in different countries and different stages of the projects. Public consultation is, in most of the countries, an obligation at a later stage of the decision process when territorial implementation is discussed in detail, before starting of construction, when land acquisition.

The discussion in the final workshop pointed that public consultation must be made at different steps with different objectives and organisations.

- At an early step with general explanation of policy objectives and impact environment; an open attitude to solutions can sometimes bring interesting proposals.
- At a later step, when the choice of route is more precise within a limit of 2 or 3 kilometres, with very detailed impact analysis.

Such debates must be organised and their results will be part of the cycles with results of discussions registered as part of the files for the project.

5. The importance of project monitoring

During the EVA TREN project it appeared very difficult to collect relevant information about ex ante and ex post evaluations of the projects.

For ex post information, these difficulties were expected since ex post evaluation is not yet a current practice, except in few countries, with only the case of France where this is compulsory by law (LOTI of Dec. 1982); and, even in this country, the ex post evaluation methodology is constantly improving in particular for rail projects for which context analysis and competition with other modes are more difficult to appraise.

But for ex ante evaluation this was not really expected to such extend although most of the consortium partners were pretty well informed about the projects they selected, based on their ex post experience of large European TEN-T projects assessment. In most of the case it was even not possible to find which rate or return or cost benefit ratio was finally taken as reference for the final decision, with which GDP growth assessment for the medium and long term.

Such situation shows how much monitoring of project is really essential and a first step to be taken for ex post evaluation guidelines, and not only for research purposes.

This monitoring has indeed direct consequences upon:

- the quality of the evaluation process itself including ex ante evaluation for decision makers, which could be constantly improved during the life or project cycle, from
preliminary analyses up to final decision, construction phase and conditions of operation after the implementation of the project
- the “democratic” legitimacy of a decision process concerning a project which becomes more and more important with increasing concern and involvement of populations, with necessary cooperations between different public bodies, from local to national and European levels, and between public and private organisations.

6. Keeping information memory

Such steps go from preliminary studies and preliminary consultations to more detailed characteristics of the project up to a final decision.

The possible changes of objectives, of economic context during the ex ante phase can then be registered, in order to better understand how it can influence the final decision and later on, during construction and implementation, possible corrections or adaptation of operations.

During the construction phase itself which usually last several years, monitoring of the market and information of populations must be also organised so that the continuity of the project cycle can be preserved, even for periods when large publicity is not required.

In the ex post evaluation phase, time is required to observe the impacts to changes in behaviour and possible induced activities and traffic.

But experience also shows that the ex post observations must start fairly early 2 or 3 years after implementation for first results and to keep such observations up to 10 years for stabilisation of the impacts.

In the first ex post evaluations in France, the observations started often too late after implementation so that they were difficult to interpret as regards context evolution and changes in networks.

In order to illustrate the importance of this question Claus Doll has presented the monitoring of transalpine project through Switzerland.

During the construction phase and after the opening of Swiss roads to trucks with more than 28t, the traffic through Switzerland has been regularly stressed, constantly reported, and made available through web site.

Although the final objective was to reduce trucks transit, the trucks traffic through Switzerland has increased considerably, well above the 750 000 fixed as a final objective: the maximum reached almost to 3 millions trucks around year 2000.

But in the recent years and before opening of the first tunnel this figure has slightly decreased, which can be explained by higher loading rate of trucks.
The point made here is that without such monitoring and publicity the evolution of trucks traffic would have been very difficult to be accepted from a political point of view, during the transition phase of construction. People remain confident that traffic will move, for a significant share, to rail when the two tunnels open.

This has been a central point of the case studies, strongly confirmed during the final workshop with participation of national and European experts.

The main reason is the duration of a large TEN-T project which lasts over 10 years and most of the time over 20 years. During this life “cycle” one must include:

(a) a preliminary phase of definition of the project
(b) a maturity phase when ex ante evaluation is conducted for decision making with financial analysis
(c) a construction phase which also might last several years for most important projects
(d) an implementation phase, during which ex post evaluation will start, but which can last also 5 to 10 years before stabilisation of impact of project.

Such distinction is not made in general and can be discussed, because the whole “cycle” of a project is not considered as such. But, as a proposed guideline of EVA TREN, a phasing must be defined taking into account all “life” of the project in order:

• to classify and to keep information accordingly
• to facilitate interactions between ex post and ex ante analyses, a major point for improvement of evaluation process as stressed in former deliverables
• to better understand how changes in context and eventually changes in objectives, in type of stakeholder concerned, will affect the evaluation of the project.

This is why the concept of project “cycle” would make sense over such long period.

In most of the countries only the period before decision making is formalised with:

• preliminary studies which reflect political interest or major lobbies interest and during which the relevance of the project is analysed
• the more detailed studies during which the project and its territorial implementation are précised: at this stage land use regulations and policies of the countries must be taken into account and respected
• the decision process which becomes really effective when financing is available, then the construction starts and the project enters a quite different phase, disconnected from previous considerations, when major concern will be possible cost deviations, till its final implementation when operating conditions prevail independently of initial hypotheses taken as references.

Therefore keeping information memory is essential, to preserve interactions between ex post and ex ante analyses but also to simply check if the policy measure is efficient or to check if the information presented to the public for justification of the project (with most of the time use of public funds) is validated by ex post observations.
However this first recommendation for guidelines calls also for more details in order to be able to use such information which becomes very voluminous.

7. The time scale and phasing of project cycle

Three lines of structuring of information can be proposed:

- the first, mentioned before, is the definition of phases in the documentation with final synthesis at the end of each phase
- the second will be the necessary content of each phase concerning the data used, the methods, and the results obtained with eventually synthetic fiches with sources of reports mentioned, official reports which are parts of the “official” decision process mentions of studies used
- the third will be the definition of organisation in charge of collecting the information. At this stage incentive can be used at European level in order to link European contribution and TEN-T demand to a minimum collection of information. At the European level this collection can be shared between different specialised agencies as long as there is a focal point for access of information.

In most of the countries the information is supposed to be kept within ministries. But life of projects goes much beyond life of ministerial organisation, and this is why such collection should be managed within national “statistic” institutes.

For the first point the four phases proposed above must certainly be further decomposed and in particular for the preliminary phase.

During the final workshop participants insisted on the fact that the evaluation should be adapted to the phasing of the project with:

- early introduction of environmental analysis pointing out major stakes related to the project but not entering in the details of local effects when the exact location is not yet known or can change
- early consultation of the public to facilitate social acceptance, and to discuss more general political orientations

and to avoid the production of a complete evaluation at each project which will end up with incomplete results and more contradictions in expertise.

They also insisted on the fact that monitoring during the construction phase was very important as shown in the Swiss case for construction of tunnel which “Alptransit” information made available and kept over a long period of time. On the contrary the Channel tunnel case showed that during a long construction phase nothing was done to prepare the market confrontation between rail and ferry companies which invested in ships with more aggressive commercial policies.
For the content structure the guidelines proposed in the case studies templates can be useful. A basis structure always includes statistical sources, models used, reference and alternative scenarios (which in turn include socio economic hypotheses, transport hypotheses and types of outputs which are the elements included in the socio economic, cost benefit analysis.

For external impact the “handbook” of the Commission can be used.

At this stage it must be pointed out that evaluations for TEN-T projects differ from evaluations of regional projects as they are for example, conducted for allocation of structural funds. The methods used by DG Regio are certainly useful as reference but must be adapted to TEN-T projects in a way which stresses cross border exchanges and facilitates interrelations between project evaluations conducted both at European and national levels.

Keeping the information memory will, in our case, certainly also imply tracing the information at national level for countries concerned. The organisation in charge of the collection of information will certainly operate at European level in close relation with European agencies concerned and with national administrations in charge of transport planning.

The information collected within EU studies and research projects should also be kept although it did not have, most of the time, an “official status in the sense that it is not opposed to national evaluation results. This is for example the case of TEN STAC study for HLG chaired by Karel Van Miert, where northern 100 TEN-T projects, listed by countries, have been assessed within a common framework.

8. Transparency of information

The transparency of information is a basic principle of a “democratic” decision process. It has also become a way to improve social acceptability.

“Hidden agenda” certainly always exists in policy decisions: but the context is also a context where populations and citizens are more directly interested and feel concerned about transport decisions and their impact on local environment. This is why many projects which have been decided at national or even regional level are sometimes postponed, cancelled, or fundamentally changed after local opposition. Even in countries such as France, where it is possible to invoke national interest in order to pass over local opposition, such legal actions will not be taken for political reasons: there are many examples, and, in particular, the HST Mediterranean case study, showing that the final project has been considerably amended because of local opposition, even though regional authorities pushed initially in favour of the project proposed.

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3 The structures of scenarios have been discussed in SCENARIOS, SCENES, ASSESS, TRANS TOOLS EU projects
As a result it was decided to improve transparency and even to promote public debates in order to improve decision making process and to avoid the risk of blockage at a later stage of the decision process, including during construction phase.

In many countries there is an obligation for transparency in public decision process and obligation of public access to administrative documents, unless secret classification for defence.

But in practice things are not so simple and there are many documents which remain for long time “draft” documents, or documents which are not supposed to reflect the opinion of the administration. Therefore transparency is directly related to the organisation of the information supposed to be transparent as discussed in the previous paragraph.

The second aspect is the way to accede to such information. Nowadays things have been much more facilitated by development of new media such as web. The Commission has often showed the way of a good use of web for publicity of decision as well as for information. Public consultations through web have become a regular practice of the Commission for major problems. Therefore transparency in evaluation of projects should not be only a principle.

It should be also a guideline for a proactive policy of a promotion of transparency using modern media, with appropriate pedagogy for good understanding by administrations (local and national) and by the public of policy objective, expected impact of a project, and observed results when the project is implemented.

The body in charge of keeping information memory, which goes through structuring the information, should work also in the perspectives of transparency and promotion of this information to the administration and the public.

In a second phase of the debates the stress was put on procedure to be followed in order to improve ex post evaluation implementation and to make it more transparent to the public.

The memory of the project refers back to the very important difficulties faced during EVA TREN project in order to collect information about case studies. In most cases, as stressed in the introduction of Silvia Maffi, it was not possible to trace back the economic or socioeconomic rate of return, although they are supposed to have been through such evaluation process and for most of these cases, several times.

In some cases, it was even not possible to find which socioeconomic hypothesis, as general as GDP growth was taken as reference.

From this point of view the ex post evaluation experience in France is particularly useful, with the legal obligation of ex post evaluations. Because of public debates (which are also parts of legal obligation) the administration is now obliged to explain why figures provided ex ante do not correspond to ex post.
A specific note about the French experience, discussed during this workshop, provides in the final deliverable the most recent developments of this ex post experience. Among the recommendations made in the last report of July 2008 it is pointed out:

- that collection of information,
- reconstitution of “ex post reference scenario”,
- and comparison to observed situation with project implementation

are the three main steps of ex post evaluation.

Therefore a project cycle is indeed a very long cycle for which different steps must be clearly stipulated and concluded with relevant information to be kept for next steps information: this is what can be called the “memory” of the project.

**Proposed actions for supporting team**

CTP: Common transport policy
IV - ENERGY AND TRANSPORT EX POST EVALUATION: SIMILARITIES AND DIFFERENCES.

After the two panels’ discussion, the second day of the workshop had mainly two objectives:

- A first specific one concerning energy projects and stressing similarities and differences between evaluation of transport and energy projects. For this first point two detailed specific contributions have been made which are reported in annex. In these two contributions the same presentation plan and the same type of questioning have been discussed than for transport project in order to make comparisons more systematic.

- A second general one which consists of reviewing main conclusion which will be included in D5 guidelines for European ex post evaluation.

1. Energy projects: similitudes and differences with transport

During this session, the question of the impact of energy prices on transport has been raised considering uncertainty of energy price and valuation of CO emissions: this valuation differs considerably from one county to another, from one project to another with very important consequences on the estimation of the cost benefit result.

The effect of the financial crisis on the evaluation process has also been mentioned with new difficulties regarding the PPP scheme, since private funding will be more difficult and uncertain.

This again should push for more contrasted definition of alternative policy scenario.

One major recommendation is certainly to harmonise in common reference scenario at least for international transport where TEN-T projects are concerned, which will include intra-EU and extra-EU trade.

But the present uncertainty also pushes for definition of more contrasted alternative scenarios. So far the Commission was very successful for definition of long term energy scenario including reference and alternative scenarios, they are published regularly, but this is not the case for transport scenarios. In such context the ambitious objective of dividing CO2 emission by 4 will certainly imply a valuation of a ton of CO2 up to 600$ and such hypothesis are important to discuss.
1.1. Experiences from energy case studies

Concerning the demand analysis carried out within the case studies, ex-ante ex-post forecast deviations are lower than in the transport sector or in the energy generation sector because of less uncertainties in a more physically driven network. Both case studies showed however very different level of detail for demand analysis: on the one hand a brief supply and demand study including import forecast, on the other one a more detailed analysis including seasonal peak demand, consumption and production profiles of considered countries.

Results of the ex-ante economic analyses (cost-benefit analysis) have not been available for confidentiality reasons (private status of electricity network owner). The methodology used for ex-post reevaluation includes a scenario comparison with a long term energy system model (CH-IT electricity connection) and a conjectural variations model (IBELM interconnection). They enable to show the impact of the new interconnection on the marginal costs of electricity production.

Only one case study presented an uncertainty analysis based on the n-1 security criteria, taking into account several network improvement options, but however only relevant for short term planning in the field of security of electricity supply. Some critics were formulated to this approach, due to the fact that data are the possession of concerned network operators only, that it does not constitute an economic analysis, but only a technical one, limited to a specific time period (e.g. 1 year).

1.2. Presentation of energy-specific recommendations

A European reference scenario could contribute strongly to provide a common database for energy demand forecasts, especially of interest for cross-border network projects (harmonisation of data). It would also enable to consider European energy policies in addition to country-based forecasts, and might serve as a reference in comparison with alternative scenarios, thus implying a justification of strong ex-ante deviations.

A larger transparency and a improved continuity in the decision making process would ensure to take into account project changes over time (stakeholders involved, robustness of analyses, evolution of data), as well as the strong opposition in energy network infrastructure projects by providing the relevant documentation and public debate (acceptability) at an early stage of the project.

An EU supporting unit for energy network infrastructure projects would guarantee, through its neutral status, a better involvement of stakeholders, thus improving the overall decision making process. It might help in defining an agreed common assessment methodology for projects, providing common tools and reference data to be used in project evaluation, and finally providing output indicators for the different stakeholders involved.
• Comments to project related issues

In Issue 1 it is first pointed out that the data collection needs to be global, not only focusing on the project under consideration, but taking into account the whole European electricity transmission network. This is an absolute necessity because of the strong sensitivity of the network. This is in particular relevant when considering the important congestion of the area Switzerland-Italy-France-Germany. As an example, a network expansion in an east-European country might have impacts on the whole network, including west-European areas of the transmission system.

The type of data needed and used in ex-ante analyses is seasonal data (1-year last curves depending on typical days, peak load and base load) relative to (cross-border) transmission capacity flows. This data is already existing and used, and will be in future published by the ENTSO-E, new structure resulting from the merging of the UCTE and the ETSO.

The PRIMES model and its variants constitute the most used approach for the calculation of transmission flows in the electricity sector. These are global simulation models calculating a static equilibrium between energy supply and demand, taking into account energy demand and supply technologies and pollution abatement technologies. It includes a detailed representation of the European electricity and natural gas grids enabling the analysis of network reliability issues. In comparison with transport, it is important to keep in mind that the electricity transmission sector is considerably more physically driven, and not so strongly influenced by external behaviours. It is added that the multiplicity of models and algorithms in electricity transmission planning makes it difficult to match different flow data from different models, but the competition between models tends to improve the overall methodological approaches.

In issue 2 experts all agree on the large complexity of dealing with stakeholders’ involvement into the decision making process also in the electricity transmission sector. This complex issue is often driven by the changing of project situation and objectives over time. As an example of the paradox arising with this issue, it is underlined that a high involvement of a large number of stakeholders is needed for the decision making process and acceptability of projects but increases overall project costs in the meantime. Further points constitute strong similarities with the transport sector, as e.g. the need of public debate before project start, of process transparency, the scale differences between the technical project and the land use, the importance of a strong political framework within the project is implemented, and finally the importance of considering not only the phases before and after the project, but also during the project, as project duration often lasts about a generation time and thus cannot be neglected. However, concerning debates before project start, it is also pointed out that in electricity network expansion projects, environmental studies are very often published before the project starts but it is not a guaranty as it does not necessarily accelerate the decision making which remains very long.

• Comments to European policy issues

In issue 3, concerning European policy measures and their assessment within project evaluation, it is underlined that comparison scenarios are of crucial importance. In the field of
context analysis, which is particularly relevant for the electricity transmission sector, interdependencies must be and are generally widely considered during project evaluations.

In issue 4 most of the statements related to the creation of an EU supporting unit for project evaluation discussed for the transport sector are also relevant for electricity network expansion projects. In particular, the need of a cycle in project evaluation between ex-ante and ex-post assessments is real and could be encouraged by such a team, which could by the way contribute to provide some references to be used (data, scenarios) and foster independency in evaluation processes.

2. Integrated transport and energy issues

A first presentation is given by Panayotis Christidis from the JRC-IPTS about the integration a common transport and energy issues, underlying similarities and differences to be considered for the assessment of sector-specific projects. Is is first underlined the importance of relativising the detail of forecasts and the precision of models in comparison with the generous assumptions often made e.g. on discount rates, economic growth or external cost valuation. A comparison between transport and energy common factors is shown related to several items such as structure of supply and demand, funding and project alternatives. As an example, few alternatives can often be considered in the electricity transmission sector for a given project, which is not the case for transport. The focus is then set on further common issues of both sectors, such as modal split (transport) and energy mix (energy), the problem of external costs (e.g. social or environmental) which in both sectors are not fully internalised yet. Finally the need of common assessment methodologies is raised, as well as a more transparent decision making and an earlier consultation of further stakeholders.

The second presentation is given from Jacques Rossat, former Commerce and Trading Director of EOS (Energie Ouest Suisse), about his comments to energy related considerations of the EVA-TREN project, based on Deliverable 3.2 (Methodological developments). As a first remark, Mr. Rossat insists on the fact that the electricity grid is by essence supra-national and that there is therefore a need of general coordination. It is then confirmed that the private ownership of electricity network operators makes planning process at European level very difficult to implement. Another important item is the lack of coordination at European level, thus not taking into account national specificities, which often leads to a less effective transit than planned. The impact of common socio-economic scenarios is also expected to be very low in the electricity network sector, because of the high level of congestions, especially in Germany, Italy, Switzerland and France. For this reasons, the decision to build a new power line is often taken independently of socio-economic conditions and assumptions made. Furthermore the importance of considering production plants in the option analysis is also confirmed. Improving forecasts would imply the improvement of already very complex network simulation tools used by e.g. the UCTE (Union for the Co-ordination of Transmission of Electricity). Finally the impact of an improved procedure for the decision making is expected to be low, because of an already existing rather high transparency and continuity.
• **Discussion to project evaluation in electricity networks**

The discussion following both energy presentations starts with a debate on how to handle with externalities as e.g. CO\textsubscript{2} reduction costs. The need of including and integrating such externalities into the overall project assessment is mentioned. It is then underlined that the European electricity network has currently a very similar structure as 20 years ago, because of the few investments realised in network expansion in the last decades. Its use is nevertheless very different, leading nowadays to critical congestions in specific areas of France, Germany, Italy and Switzerland in particular. Furthermore it is proven that from 1998 to 2006 a decrease of cross border net transfer capacities has occurred, especially between Switzerland and France, and between Switzerland and Germany, which is due to a stricter adherence to the rules of the n-1 security criterion and to a strong increase in national and international traffic. The high volatility of electricity exchanges and of the grid situation in general is pointed out. Two further specificities of the electricity sector are pointed out: on the one hand project assessment seems much more difficult in this sector due to the difficulty of evaluating the increase of demand and the benefits of operators; on the other hand there is a stronger public opposition and a weaker acceptability due to the fact that there is no real return for citizens from the electricity transit situation. Finally it seems possible to identify some common general assessment principles for both sectors transport and energy, but details of project evaluation should strongly differ with regards to specificities discussed above.

At the end of the workshop each participant stressed what they will point as most important remarks for ex post evaluation. The following topics were stressed.

• need for harmonised methodology at European level (the D5 recommendations will help to precise the content of such methodology),
• need for common reference scenarios,
• but in the same time not to rely on only one model for projections in order to better take into account specificities of transport system and remain open for discussion,
• to provide a clear status for environmental impact assessment through different stage of the project : environmental assessment must be present at each step,
• but also to fix objectives to each stage and not to try to provide a complete assessment at each stage: this will lengthen the process, makes it more costly and not clarify the results “practitioner” are supposed to provide to the “policy makers”.

“Progressive” approach, project “cycles”, “memory of project evaluation”, “transparency”, “core data base”, “harmonised rules”, “stakeholder involvement”, “social acceptance”, have been the most important words of this second panel for implementation of ex post evaluation.
V - FRENCH EX POST EXPERIENCE

Since the transport law, called LOTI (Loi d’Orientation sur les Transports Intérieurs) has been passed end of 1982, the socio economic evaluation, ex ante and ex post evaluation is an obligation in France for large infrastructure project of national interest.

The ex ante evaluation was already a usual practice before within the planning process for road master plans and in particular for motorways construction following a common cost benefit methodology, regularly improved by the transport ministry. But there were, at that time, only few projects for rail or inland waterways except for the development of HST lines which became a policy priority in the beginning of the eighties after opening of Paris - Lyon new line. There was no directive for such projects and the socio economic evaluation process, always based on cost benefit analysis, was more depending upon the methodology adopted by “ad hoc” commission set up for a specific project. With the LOTI the objective was to harmonise the evaluation process taking into account all modes, and to have ex ante and ex post evaluations a legal obligation.

Considering the life cycle of a project, the ex post evaluation became indeed a reality at the end of the nineties. The projects which were already parts of a transport planning process (a 5 years process at that time) were not submitted to this new legal obligation. Originally the ex post evaluation obligation was 10 years after the implementation of the project and appeared more difficult to achieve for rail projects in competition with air and road than for completion of a French motorways network, which was more widely accepted to improve accessibility of regions, except for local choice of routes in sensitive areas where intense debates also took place.

In EVA TREN the choice was made to focus on ex post analysis of HST projects in France, Germany and across the Channel. The experience in France was then particularly useful although it can be still considered as a learning process: the two last ex post evaluation reports have been published in 2008 for the Rhone Alps HST, going around Lyon, and the Mediterranean HST between Valence, Nîmes and Marseilles which was an EVA TREN case study. RFF (Infrastructure Manager) was in charge of producing the evaluations which have been discussed by the Conseil General de l’Environnement et du Developpement Durable (CGEDD) in the ministry, an advisory body which has already played an important horizontal role within the ministry, and was recently granted enlarged competencies in the energy and environmental domains (formerly Conseil General des Ponts et Chaussées). The reasons for discussion with CGEDD were indeed to harmonise and constantly improve the methodology of ex post evaluation. The context for ex ante and ex post evaluations has indeed very much changed in France over the past 25 years:

- The planning process for transport, at the level of central administration, has been abandoned and replaced by a more decentralised process of concertation with regions: the so-called “Schema de Service”, which also stressed that the final objective of the transport policy is the provision of adapted services, regions have taken a more important role in the choice and financing of large national projects.
Consultation obligations with the public have been extended, with obligation of public debate at an early stage of the decision process.

New environmental laws for protection of environment have been passed, as well as new obligations in urban planning which must be taken into account within the evaluation process.

Therefore the ex post evaluation becomes more important in order to point what are the differences between projected and observed results, not only to analyse if the initial objectives of the policy have been reached but also to assess if the quality of information provided to the public before was satisfactory.

This shows clearly that ex post evaluation is indeed a long, complex, learning process which must also reinforce the “confidence relations” between the decision makers and the population. The last “Avis” (Advice) of the CGEDD (July 2008) is then particularly interesting to analyse in order to show what progresses have been made in the light of the publication of these last ex post evaluation reports: two provided by RFF concerning the two lines mentioned before which are closely interrelated (Rhône-Alps and Mediterranean new lines⁴, and a report provided by SNCF concerning the new stations of Mediterranean HST, showing how the problem of new stations becomes important in the evaluation process and in discussion with region; this is also a new point to emphasize the projections of traffic, in relation or competition with other modes, putting forward measures of accessibility within the modelling process.

Therefore the context has also very much changed since the initial legal obligation taking into account the separation between transport operators and infrastructure managers with expectation of new entrants, as well as growing influence of discussions with public, and environmental impact assessments.

The following remarks, which are parts of the last deliverable of EVA TREN, will then be presented as an illustration of main findings of EVA TREN project, concerning both methodological aspects and possible recommendations.

Concerning the methodology

A first remark is that CBA results must be desegregated taking into account results for infrastructure managers and transport operators separately; before the results were integrated for SNCF and the perspective of new entrants makes such desegregated presentation more important. A first attempt of desegregation has been made for HST Mediterranean (LN5) for RFF and SNCF.

As far as costs are concerned few remarks appeared particularly relevant considering that EVA TREN findings pointed a general underestimation of costs.

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⁴ Their current denomination in official documents is also LN4 and LN5 pointing out how such project takes place within a more global programme, which is very important as regards “option analysis”.

Deliverable 4.3 - Report on the findings and outcomes of final workshop
A basic distinction must be made between types of costs for which the situation is quite different:

- Investments costs can be fairly well assessed ex ante
  - when a detailed distinction is made initially between acquisition of lands, construction of platforms, equipment of lines, number of bridges… as well as so called related investments for stations, connections.., but also
  - when monitoring of these costs is made among the whole ex ante process including construction: major deviations occur with more constraints imposed during construction not necessarily because they have not been considered, but just because the political pressure becomes more important when the project is a reality.

In doing so the report points out that no major difficulties arose for the ex post evaluation concerning investments costs which were not very different from initial evaluation as pointed in the Mediterranean case study.

But the ex ante evaluation did not appear satisfactory for operating costs concerning rolling stock and maintenance, including infrastructure maintenance.

From this point of view the ex ante analysis was not enough detailed. Progresses have been made for investments costs evaluation ex ante and ex post with increase experience of evaluation process, but progresses must be made for presentation of operating costs, although this aspect is also related to a second important methodological difficulty: the projection of traffic.

- Projection of traffic

In the projection of traffic the distinction is made between reference traffic and traffic with the project.

For the reference traffic the initial projection was made with 2 % growth for traffic generated by Ile de France region (the major generation of traffic for the line) when only 1.4 % was observed. The difference is quite significant for ex post evaluation, and it remains difficult to demonstrate with econometric relations that this comes only from differences in GDP expectations (2.5% versus 1.9% over the period): observations made in different other lines such as Paris - Strasbourg do not provide at all such demonstration.

Furthermore the reference traffic will also depend upon the level of tariff assumed, and the evolution of types of services provided.

For the level of tariff the yield management practice of SNCF makes it very difficult to interpret the average revenue (produits moyens). The new ID TGV services have been presented by SNCF as a “commercial innovation” and not as a Mediterranean HST new service: this innovation was applied since then on other lines.
In any case the tariffs of ex ante evaluation were very different from ex post observation, for rail services and for competing modes and, in particular, air mode (for which tariff interpretation is also difficult).

The conclusion is that it is presently very difficult to provide an elasticity of traffic as regards tariff evolution: the estimations vary between 0.7 and 0.5. And behind these difficulties the question of the type of model to use is raised. So far the gravity model and the price/time model for modal split appeared to be fairly robust for competition between air and HST, but it is difficult to apply for competition between road and HST.

Furthermore the global results obtained for modal split between rail and air do not provide much explanation about what has happened. The difficulties encountered for projection of traffic and tariffs influence directly the results in terms of revenues. Although progresses have been made in the analysis of traffic and revenues, there is still a need for improvement in data collection and surveys.

The impact of such hypothesis on the estimation of the socio economic return of the project is important.

- Socio economic return

In addition to the previous remarks it is also pointed that:

- some tutelary values are still controversial and that some external effects are still not integrated in the evaluation; when such values have changed their ex ante evaluation has to be corrected
- data are often not sufficient for evaluation
- risks analysis must be developed with in particular the consequences after 2010 if the passenger traffic opening to international competition.

The socio economic cost benefit analysis is stressed again as a very important and efficient approach for the appreciation of “surplus” distribution related to a project. And in the same time the documentation provided is not considered as sufficient for good explanation of differences between ex ante and ex post rate of return: the analyses of differences between revenues provided by the company include variation of tariffs and traffics which cannot be explained. This situation is not satisfactory since hypotheses provided ex ante to the public cannot be controlled in ex post evaluation.

- Environmental impact

For environmental impact an important documentation was available but it remains difficult to differentiate what was indeed relevant for ex ante evaluation and what was relevant for ex post evaluation.

It was only possible to check for Mediterranean HST that over 464 engagements taken by the Government, only 9 were uncertain. But there are also critics about the method used to check such engagements and a methodology will be proposed for ex post evaluation of environmental impact.
Finally new developments and researches were also proposed for economic development and social equity impact: this is a domain where implementation of new stations and access to new services is essential.

To summarise with some figures these most recent experiences of ex post evaluation in France

- For investments costs: a difference of 22% for Rhone Alps which is explained by new demands coming after the public inquiry and a difference of 8% for Mediterranean HST, 4% explained by demands after public enquiry. However resulting costs per km are high: 17.5 Millions Euros per km for Mediterranean (with many bridges and tunnels) and 11.9 Ml € for Rhone Alps. Such results present almost a doubling as compared to HST north, but it can be explained partly by more complex technical solutions. The differences for stations constructions were higher: from 9% for Aix up to 35% and 43% for Valence and Avignon.

- For operating costs: the differential of operating costs between reference and project situation is considered

This differential was estimated to 31 Millions € in 2000 for Rhone Alps HST and 15 Ml € in 2003 for the Mediterranean HST: the ex post differential was estimated to respectively 87.5 Millions € and 39 Millions €, which is much higher.

But when considering the total operating cost which is around 500 Millions € for Mediterranean HST, such differences only represent 5% which nevertheless has a cumulative effect upon the actualised benefits over the whole life period of the project.

Form the revenue side, one must consider that index of tariff have changed very much since the opening of new lines going up and down according to implementation of commercial policies and context of competition with air.

If we compare the projection of traffic provided ex ante for these two lines for year 2000 and 2006 (document of “public declaration”) the differences with ex post observation are -0.7% and -2% respectively, which is not very high: about 20% of increase of traffic was expected, with half of the increase due to modal shift. The success of new stations was much more important than expected. The total revenue gain was 27% lower than expected. Therefore the economic and socio economic rates of return have been lower than expected, mainly because lower revenues:

For economic rate of return:

6.3% instead of 10.4% for Rhone Alps HST
4.1% instead of 8% for Mediterranean HST

For socio economic rate or return:
10.3 % instead of 15.4 % for Rhone Alps HST
8 % instead of 11 % for Mediterranean HST.

Main recommendations of the CGEDD are the following:

The ex post evaluation results appear just satisfactory for these two new lines and the ex post evaluation is still incomplete.

Therefore ex post evaluation must be better prepared in 3 phases

- Collection, completion and analysis of ex ante evaluation data
- Collection of data for definition of ex post reference and project situation (after implementation of project)
- Analysis of differences.

The documentation for public enquiry (ex ante DUP in France) must be better prepared including all information necessary for future ex post evaluations (which are sometimes available in pre feasibility studies but not in official final document).

Also progresses in methodology and research are necessary:

- For desegregation and redistribution effects
- For environmental analysis
- For risks analysis.

Concerning research the main topics are pricing policies and their impact, deepening of competition scenarios between modes, and again regional development and social equity, user needs and behaviour. Finally it is recommended to diffuse more largely the results of ex post evaluation.

More specific actions are also proposed concerning statistics collection, formalisation of environmental evaluation in relation with ex ante, ex post evaluations.
ANNEXES

1. Agenda of the final workshop
2. List of participants
3. Presentations of participants
1. Agenda of the final workshop
EVA-TREN Final Workshop
Brussels, 12th and 13th November, 2008
NCIS Business Center
Square de Meuûs 38/40 - 1000 Brussels

Organisation of the workshop and topic to be discussed

1. **Organisation of the workshop**

The persons invited to the workshop are:

- Partners of EVA TREN consortium and experts for evaluation in transport and energy
- National representatives which are involved in evaluation in different countries
- European representatives which have been involved in evaluation of European projects (European organisations, IFI).

The expected results from the workshop are:

- Relevance of ex post evaluation recommendations made in deliverables of EVA TREN (mainly 3.1 and selected chapter of 3.2).
- Interrelations between national and European decision making process, for implementation of projects and policies
- The proposal to set up an EU supporting unit involved in ex ante/ex post evaluation, in particular for transnational projects for transport and energy.

The workshop will be composed of three parts:

**1st part about reporting results of EVA TREN** based on case studies: analysis from a national and a European point of view with:

- Major problems encountered for “ex post” evaluation of case studies due to weaknesses of ex ante evaluations with few countries applying ex post evaluation
- Recommendations for ex post evaluation at European level in order not only to improve ex ante evaluation but also to improve implementation of European transport and energy policies,
- First recommendations for implementation of “supporting unit” at European level.

**2nd part for discussion within two panels**, for discussion of recommendations from “national” and “European” points of view so that synergies between national and European evaluations process can be reinforced:
• What can be expected at national level from EU evaluation process in order to improve national evaluation and better integrate the European dimension (development of international trade and application of EU transport policy)
• What can be expected, at European level, from national evaluation process in order to improve “multilevel” decision process for projects of European dimension, for co-financing for national, EU funds and possibly other sources.

Experiences from France, Germany, Italy will be reported for national approach and experiences from EU, EIB and World Bank for European approach.

3rd part for conclusion concerning

• Most important recommendations at European level for “ex post” evaluation
• Incentives for their implementation
• Relevance and role of a European supporting unit for ex post, ex ante evaluation.
• Common proposals and differences between transport and energy projects.

2. Topics to be discussed

1. Data collection and harmonisation
2. Use of common demand projections and models
3. Improvement of cost estimations
4. Measure of impact of CTP on European transport system
5. A European Reference Scenario and demand baseline
6. Construction of a stakeholder evaluation matrix for cost and benefit
7. Introduction of EIA at different stages of evaluation process
8. Risk analysis
9. Time dimension and formalisation of steps in project cycles
10. Role of supporting unit in the decision process for harmonisation of data, improvement of methodology, development of expertise, transparency and access to information

3. Basic EVA TREN documents for the workshop

• D.3.1 (already distributed)
• Focus on Chapter 4 of D.3.2* “Suggestion areas of improvements”
• Focus on Chapter 4.7.3 of D.3.2 “Relevance of a supporting unit for large infrastructure projects of the TEN networks”;

The presentations of Silvia Maffii and Christian Reynaud about recommendations will be forwarded before the WS, by the end of the week.

• Both deliverables have now been accepted by the Commission
Preliminary program

Day 1 – Wednesday 12th November 2008

09:30  Welcome and registration

10:00  Opening words  F. Rasmussen, DG-TREN

10:15  Experiences from case studies  S. Maffii, TRT

11:00  Coffee break

11:30  Presentation of recommendations  C. Reynaud, NESTEAR

12:30  Lunch

14:00  Panel of national experts – comments and proposals  Chair: W. Rothengatter, IWW

15:30  Coffee break

16:00  Panel of international experts – comments and proposals  Chair: F. Rasmussen, DG-TREN

17:30  End

Day 2 – Thursday 13th November 2008

09:00  Welcome and registration

09:30  Conclusions from panels and recommendations  S. Cail, DFIU / IIP

11:00  Coffee break

11:30  Integration transport / energy – which is relevant?  M. Ponti, TRT

12:30  Lunch / end
## 2. List of participants

List of participants on the 12/11/2008

<table>
<thead>
<tr>
<th>Name of participant</th>
<th>Organisation</th>
<th>e.mail address</th>
</tr>
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<tbody>
<tr>
<td>CAIL Sylvain</td>
<td>IIP</td>
<td><a href="mailto:sylvain.cail@kit.edu">sylvain.cail@kit.edu</a></td>
</tr>
<tr>
<td>CHRISTIDIS Panayotis</td>
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<td>HOLVAD Torben</td>
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<tr>
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<td>PACE Giuseppe</td>
<td>GHENT UNIVERSITY</td>
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<td><a href="mailto:m.virano@governo.it">m.virano@governo.it</a></td>
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</table>
3. Presentations of participants

Improved Decision-Aid Methods and Tools to Support EVAluation of Investment for TRansport and ENergy Networks in Europe

Experience from case studies

TRT - Trasporti e Territorio
Silvia Maffii

Final Workshop Bruxelles 12-13 November 2008

Case studies approach

Systematic in-depth comparison of ex-ante and ex-post appraisals of large TEN infrastructure projects

Two templates, one for transport and one for energy, for case studies data collection and methodological guidelines for data processing

✓ Identification of the full list of relevant quantitative and qualitative data to be collected with the fieldwork
✓ Ensuring comparability and relevance of data collection, providing a standard grid for data processing
Selected case studies

1. Madrid Sevilla AVE
2. Eurotunnel
3. Magdeburg Waterway Cross
4. Frankfurt-Köln ICE Network
5. Lyon-Marseilles HST line
6. Malpensa 2000 airport
7. Paris-Lille HST line
8. Baltic Sea Motorway
9. Oresund Connection
10. CH-IT Electricity cross border connection
11. Iberian Electricity Network Interconnection

Steps in case studies analysis

Make the projects comparable and allow an horizontal reading of projects alongside a number of key issues

Each case study considered the following topics:

- Decision making process
- Objective
- Context analysis
- Options analysis
- Demand analysis
- Financial analysis
- Economic analysis
- Environmental analysis
- Analysis of uncertainties
- Regional economical impact assessment
Steps in case study analyses

**Collect the relevant documentation**

A full comparison has not always been possible owing to the heterogeneous availability of data:

- Financial and economic data are the areas in which major difficulties have been encountered.
- Full CBA available only for three out of nine transport case studies; for the others, the methodology was partially reconstructed on the basis of the national guidelines.
- Similar difficulties were encountered for the financial analysis: for the majority of the projects, the financial data were limited to investment costs and revenues.
- For energy case studies, ex ante economic and financial results were not available for confidentiality reasons.

### Steps in case studies analysis

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<th>Option analysis</th>
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X available, O not available
Steps in case studies analysis

Identify the relevant documentation

Tracking down original appraisal reports difficult and time consuming (many of them either no longer exist or are impossible to locate).

Difficult to point out the ex ante analysis that supported the final decision.

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Case studies horizontal results

PROJECT OBJECTIVES

Project objectives change according to the stakeholders considered: evidence shows that each concerned stakeholder has its own objective.

Project objectives change over time: for projects with very long decision-making processes, the reference context might change quite significantly and the original objectives become obsolete or no longer feasible.

Reference context changes and several conflicting objectives negatively affect project costs because of the necessity for project redesign and/or planning, as well as for the development of further analyses to appraise the changed conditions.
Case studies horizontal results

DECISION MAKING PROCESS

Decision-making processes are long, complex and strongly country-specific

- Projects belonging to the same country follow very similar processes
- Projects belonging contemporarily to two or more different countries: duplications of tasks and entities in order to have both countries controlling the process
- Financing decision taken when all the project’s promoters have been consulted, the role of each stakeholder defined and all the information are available
- Direct correlation between the high number of stakeholders and the length of the process

Lengthening of the process and delays in the implementation negatively affect investment costs

CONTEXT ANALYSIS

Transport and energy infrastructure networks may consist of interdependent projects

Different projects might either compete with each other or be complementary

The analysis of the interdependence between a project and another already existent or planned is of the greatest importance

Project dependency both at national and international levels:

- strongly influences financial and economic performances (implementation of the whole network – project accessibility)
- plays an extremely important role to achieve sound demand forecast

Sensitivity analyses and/or scenario analyses never used to consider the impact of other projects delays or not implemented at all
Case studies horizontal results

OPTION ANALYSIS

Option analysis

- In many cases the only alternative considered is a "do-minimum" reference scenario against which the "with project" option is assessed.

- In a limited number of cases, the alternatives include different "do-something" options, including alternative technical solutions mainly to reduce the environmental impacts of the project.

More than one "do-something" positively affects the project decision-making process, acting as a strategic tool for the project’s planning and design.

The major weakness of the options analyses examined in the case studies is that the "do-something" alternatives considered are routes rather than modes or alternative technical solutions.

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### Case studies horizontal results

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DEMAND ANALYSIS

Methodologies and level of robustness against actual figures vary widely among the projects

**Transport projects:**
Actual demand is overestimated for almost all projects (7 out of 9) Main drivers for demand overestimation are shortcomings in the assessment of the project context, underestimation of the competitive scenarios, overestimation of the macroeconomic context

**Energy projects:**
Estimates are less susceptible to deviations because projects undergo significantly lower competitive pressure (electricity distributors and not generators); accuracy of demand estimation to be checked further (“young” projects)

The influence of “unexpected” events on actual demand proved to be very high (in particular, fuel price variations and changes in sector policies)

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Case studies horizontal results

FINANCIAL ANALYSIS

Full financial analysis are seldom available

Main issues are cost overruns and revenue overestimation

Adequate project management is one of the most effective tools to limit cost increase.

Strong responsibility of the project manager in respect of implementation deadlines is helpful to avoid cost escalation.

DEMAND ANALYSIS OF ENERGY CASE STUDIES

- Demand forecasts are less susceptible to deviations than in the transport sector or in the energy generation sector.

- Both case studies showed very different level of detail for demand analysis:
  - on the one hand a brief supply and demand study including import forecast,
  - on the other one a more detailed analysis including seasonal peak demand, consumption and production profiles of considered countries.
Case studies horizontal results

FINANCIAL ANALYSIS

Transport projects
Costs overrun: the majority experienced cost overruns due to lack of realism in initial cost estimates:

- underestimation of the length and cost of delays,
- contingencies disregarded,
- changes in project specifications and design not taken into account,
- ignored or underestimated changes in exchange rates,
- geological risk not considered,
- quantity and price changes undervalued,
- expropriation costs undervalued,
- underestimation of safety and environmental demand causing delays in the implementation and changes of objectives.

Revenue overestimation: revenue forecasts inaccuracy as a consequence of demand overestimations.

<table>
<thead>
<tr>
<th>Case studies horizontal results</th>
<th>Total construction costs</th>
<th>Cost Overrun (%)</th>
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Case studies horizontal results

### FINANCIAL ANALYSIS

**Energy sector**

No detailed financial analysis for both the projects could be found on the basis of the documents collected and the stakeholders interviewed.

Only the total investment figures for each line are available.

<table>
<thead>
<tr>
<th>Total Costs</th>
<th>Cost overrun (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forecast</td>
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Case studies horizontal results

ECONOMIC ANALYSIS

Energy case studies: the results of the ex ante economic analyses have not been available for confidentiality reasons.

Transport case studies: full cost-benefit analysis (CBA) available only in three cases.

Main methodology applied:
- all but one assessed with a Cost-benefit approach.
- approaches specificities are country based (strong evidence that project nationality matters, in particular with reference to the parameters).

Overestimation of the demand and underestimation of the investment costs in the ex-ante evaluation are the main causes of the deviation with respect of the actual performance.

<table>
<thead>
<tr>
<th>Waterway Crossing</th>
<th>Discount rate</th>
<th>Time horizon</th>
<th>Economic IRR</th>
<th>Economic NPV</th>
<th>Cost/Benefit ratio</th>
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<td>30 y</td>
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Case studies horizontal results

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ECONOMIC AND MARKET ANALYSIS OF ENERGY CASE STUDIES

- Results of the ex ante economic analyses (cost-benefit analysis) have not been available for confidentiality reasons (private status of electricity network owner)

- Methodology used for ex-post reevaluation:
  - scenario comparison with a long term energy system model (CH-IT electricity connection)
  - conjectural variations model (IBELM interconnection)

- Results show the impact of the new interconnection on the marginal costs of electricity production
Case studies horizontal results

ENVIRONMENTAL ANALYSIS:

In all countries the consideration of the environmental issues was mandatory but to very different extent.

Seven projects treated the environmental issues in the appraisal process, but for three the full documentation of the EIAs are not available to the public.

Delayed inclusion of EIA in the project design may lead to the adoption of technical solutions not able to minimize the environmental costs.

Delayed inclusion of EIA into the project decision making process negatively affect project costs (difficult to find effective and efficient technical solutions).

The earlier the integration of the EIA in the design of transport projects, the stronger its influence on the final project design.

EVA TREN case studies horizontal results

ANALYSIS OF UNCERTAINTIES

The analysis of uncertainties is not a common practice.

The analysis of the uncertainties mainly concentrates on a project’s economic performance and neglects the financial performance.

The analysed variables are usually: implementation delays, investment costs, demand and tariffs. Variations range from ±30% to ±20% and proved to be too narrow and not realistic in the light of projects’ actual data.

In no cases a probability analysis has been implemented.
Case studies horizontal results

ANALYSIS OF UNCERTAINTIES

Four projects included an analysis of the uncertainties in their appraisals, mainly limited to sensitivity testing of project outcomes.

Only in two cases the construction of some “optimistic” and/or “pessimistic” scenarios has been carried out.

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EVA TREN case studies horizontal results

RISK/UNCERTAINTY ANALYSIS IN ENERGY CASE STUDIES

- Out of both case studies only one presented an uncertainty analysis based on the n-1 security criteria:
  - including several network improvement options
  - not relevant for long term planning

- Critics:
  - data are the possession of concerned network operators only
  - not an economic analysis, only a technical one
  - limited to a specific time period (e.g. 1 year)
Case studies general conclusions

The strongest evidence from the case studies is demand overestimation and cost overruns:

- The decision to implement a certain project is often taken by the authorities before the ex ante analysis.
- Appraisal responds more to the need to justify a decision already taken rather than to select the best decision to take.

Adequate project management is one of the most effective tools to limit cost increase.

Since future changes in objectives, environmental requirements, prices, etc., are not easily predictable, avoiding delays in the decision-making process and in project implementation is the first recommendation to keep the costs down.
## Case studies general conclusions

Environmental issues must be enforced - despite the formal recognition of their importance, they are playing a marginal role.

Wrong assessments are often the result of a restricted focus on the project itself, not considering other crucial factors highly influencing project performances.

Greater importance must be given to the issue of interdependency. Such factors should not be considered as external, and not predictable, but as endogenous because of belonging to the network in which the project is integrated.

A good balance between decision-making process time span and stakeholders’ involvement can contribute to avoid delays in project implementation but it should be obtained not to the detriment of transparency through public consultations.

Cooperation between national and regional local authorities is a necessary condition to improve project assessments.

Both the assessments and the decision-making processes can benefit from the adoption of a general framework in order to harmonise the country-based specificities (homogeneous use of parameters as the discount and the GDP growth rates, agreed steps).

Cross-border problems require to move from national/sub-national perspective to a networking super-national one.
The usefulness of ex post evaluation

The critical review of the case studies does not represent a proper ex post evaluation, as in many cases the project documentation was not available or incomplete.

The lack of official documentation of ex ante assessment results and planning documents for many projects made it difficult to apply some type of sound ex post analysis.

The review has highlighted the relevance and the usefulness of carrying out ex post analysis not only because it allows to trigger a positive process of continuous refinements and improvements of the ex ante approach, but also to reduce optimism bias through the reference forecasting and to increase transparency in investment decisions.

The usefulness of ex post evaluation

Despite the general agreement on the need for ex post evaluation, and on the significant benefits of undertaking ex post evaluation, the number of ex post evaluation results is surprisingly small.

Among the reasons for this lack of success are the difficulties in conducting detailed ex post evaluations, the fact that are considered costly (the costs are obvious while benefits are not clear) and that are not welcomed by the project promoters.
Improved Decision-Aid Methods and Tools to Support EVAluation of Investment for TRansport and ENergy Networks in Europe

Guidelines for ex-post evaluation

TRT - Trasporti e Territorio
Silvia Maffii

Final Workshop Bruxelles 12-13 November 2008

The Purposes and Benefits of Ex-post Evaluation

- Increase transparency
- Measure the effectiveness of the project
- Provide elements to improve the ex-ante assessments of future interventions
- Collect relevant information about past projects to be used as reference class forecasting
- Provide incentives for better ex ante analysis by giving publicity to the real achievements of the projects.
Conducting an Evaluation: Timescales

✓ After short term: the period over one to three years after opening, during which short term behavioural responses (e.g. changes of route, changes of mode) predominate

✓ After medium term: the period over three to seven years after opening, during which all of the longer term transport responses (e.g. changes of work location) and shorter term land-use/demographic responses are likely to occur

✓ After long term: the period during which most of its impacts have had sufficient time to work through

Steps in ex post evaluation

✓ Establish what has to be evaluated (space and intermodal dimension; pricing with substitutes, etc.)

✓ Establishing the analytical framework (is the evaluation limited to outturns, or is it to extend to processes? how many “after” periods are to be explored? are modelling/forecasting tools required?)

✓ Data collection requirements

✓ Measure the outcome of the project
Steps in ex post evaluation

- Comparison of the outturn of the ex post evaluation with the expected project outputs
- Identify the counterfactual (the “after-without” situation) in order to evaluate the project validity and to investigate the effects which may be attributable to a project
- Assess what caused the discrepancies between the ex ante appraisal and the ex post results
- Identify Endogenous or Exogenous Factors

The Importance of Dissemination

Ex-post demonstrates how well a scheme has delivered its expectations and the main reasons for significant deviations. This should be made clear to the general public and not only to the policymakers, for two main reasons:

1. the first one is democracy;
2. by giving publicity to the real achievements of the projects, incentives for better and more accurate ex ante analysis are provided.

In order to achieve these objectives it is crucial that presentation and dissemination of the evaluation’s outcomes are as wide as possible.
Ex-post evaluation is a critical learning devise for improving ex-ante evaluation (modelling and forecasting in particular)

Ex-post evaluation can be useful to make more realistic estimates in the future (e.g. reference forecasting) and to take corrective actions
EVA TREN

Recommendations

Final workshop
Brussels 12 – 13th November 2008
Christian Reynaud- NESTEAR

Introduction

1. The context
   - Ex post evaluation of national case studies for project of European dimension performed in WP1 and WP2.
   - Review of national case studies in a European perspective (WP3)
   - National experiences and international experiences for evaluation (ex ante, ex post) from EU countries and international organization including EU directorates and EIB
   - The objective of EVA TREN to promote European ex post evaluation in order
     - to improve ex ante evaluation (scientific objectives)
     - To improve the implementation of EU transport and energy policy (policy objectives)
     - To reinforce the decision process both at European and national level, stressing an interaction between ex ante and ex post, of what can be called a “project cycle”.


2. **First general conclusions**

- « ex post » evaluation process is probably the best way to improve «ex ante» evaluation and reinforce the overall decision process.
- There is a close interrelation between ex post and ex ante evaluations:
  - In practice ex post evaluation is similar in techniques of appraisal, based on historic data, rather than forecast data.
  - However in ex ante evaluation focus is put on « project » scenario, when the main problem of ex post evaluation is to define the « reference » scenario if the project had not been implemented.
- Both « ex post » and «ex ante» evaluation are complementary to improve the decision process.

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**Introduction : the context**

3. **First specific objectives**

- The conservation of data and information relative to the decision process.
- The transparency of a decision process including policy objectives and public access to information.
- The harmonization of data used in different projects for socio-economic context, transport performance and environmental impact.
- The management of time dimension of the decision process, which runs over a long period of time from initial study to implementation.
- The creation of an adequate specialized unit to support such objectives.
The presentation of recommendations will be structured as follows:

I. Methodological aspects for ex post/ex ante evolution
II. The introduction of European policy measures
III. The redistribution effects and participation of different types of stakeholders in the decision process
IV. First suggestions for implementation of an Evaluation Support Unit

I – METHODOLOGY

1. Data collection and harmonization of data
2. Use of common demand projections and models
3. Improvement of cost estimations
4. Risk and financial analyses.
1. Data collection harmonization (1/4)

**General statement**
- There are already several EU projects relative to data collection (in particular ETIS).
- But there is still important needs for harmonization, in particular for international O/D flows.
- Some data are more and more difficult to obtain (because of confidentiality, facilitation procedures) but some new data can also be better utilized (geocoded data, GPS information, EDI).
- Model results can sometimes be substituted if they are accepted as general reference mainly for international exchanges.
- Relevant data for evaluation also include transport performance as regards evaluation of technologies, energy consumption, and environment impact.

1. Data collection harmonization (2/4)

**Types of data**
- Socio-economic data concerning population, production and trade.
- Transport demand data:
  - Importance of basic segmentation for passenger/freight.
  - Importance of common reference for intra EU flows (region to region) and extra EU flows.
- Transport supply data:
  - Network data which can be geocoded (cf. infrastructure statements).
  - Data on services performances (including time, price and quality indicators).
- Evaluation of transport performances as regards development of technologies, changes in organization and environmental impact.
1. Data collection and horizon (3/4)

Main recommendations:
- To provide socio economic reference database for a base year (current or recent year) including in particular intra-EU and extra-EU trade in Euro and tons
- To provide a reference database for international traffic, in particular for freight and passengers
- To provide GIS network reference for Europe and connection to neighbouring countries
- To provide basic technical information about global and local environmental impact of transport
1. European reference scenario for the energy sector

- providing a common database for energy demand forecasts, especially of interest for cross-border network projects (harmonisation of data)
- taking into account European energy policies in addition to country-based forecasts
- serving as a reference in comparison with alternative scenarios, thus implying a justification of strong ex-ante deviations

2. Demand projections and models (1/4)

General statement about European modeling

- Many EU models have been developed with in particular reference to RANSTOOLS for general modeling framework
- But specific models are also required in order to take into account specific market segments, or simulate impact of specific transport policies (ex dedicated freight network)
- Models becomes more and more complex with increasing interactions within transport system but validation is limited by availability of data
- Therefore new dimensions in modeling must be permanently explored for better introduction of intermodal solutions, measures of economic and environmental performances.
2. Demand projections and models (2/4)

Different types of models

- Economic models for trade and in particular interregional, intra EU and extra EU trades
- Transport models for traffic projections for passenger and freight: introduction of transport price (considering yield management for passenger) and intermodal performances is often problematic
- Environmental impact models for energy consumption and environmental impact in relation with conditions of operation (congestion, urban/suburban, emission ...)
- Models which can differentiate different type of traffic: generated traffic, diverted traffic from other modes or routes, and “induced” traffic.

2. Demand projections and models 3/4

EU research projects and studies relevant for evaluation (non exhaustive)

<table>
<thead>
<tr>
<th>EU Policy</th>
<th>Models</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCENARIOS / SCENES</td>
<td>SCENES</td>
<td>INFRA (environment)</td>
</tr>
<tr>
<td>PRIMES (energy)</td>
<td>TEN STAC</td>
<td>UNITE (management cost)</td>
</tr>
<tr>
<td>THINK-UP (segmentation)</td>
<td>TRAN-STOOL</td>
<td>TINA (network)</td>
</tr>
<tr>
<td>TEN STAC (TEN-T)</td>
<td>NEW OPERA (dedicated freight network)</td>
<td>RAILPAG (rail)</td>
</tr>
<tr>
<td>ASSESS (whitepaper)</td>
<td></td>
<td>HEATCO</td>
</tr>
<tr>
<td>1. TREN 20-30 (energy)</td>
<td></td>
<td>TREMOVE (environment)</td>
</tr>
</tbody>
</table>

14
2. Demand projections and models (4/4)

Recommendations

- First provide « projection » of traffic (and not "previsions ") based on « socio economic » and transport scenario (see later) and in particular for international traffic.
- Integrate variables which are major “demand, variables” consistent with basic segmentation of market and major “supply variables” which characterize transport competition between modes, as well as policy variables so that transport policy assessment can be achieved.
- To produce outputs adapted to evaluation requirement which means outputs per mode (including intermodal techniques) at different spatial level (local, national, European), for different types of stakeholders.
- Look for solutions which are a consistent combination of models rather than the construction of a unique model (which will never integrate all the interactions required for evaluation): a common multimodal modeling approach with appropriate geographic scale (see TRANS-TOOLS example).

3. Costs estimation (1/3)

General remarks

- Costs (and related prices) are critical variables which are frequently underestimated.
- But differentiation between types of costs is, in general, not sufficient: a distinction must be made between infrastructure cost and operation costs (which have been very difficult to trace back).
- Furthermore, separation between infrastructure management and transport operation requires analysis of distribution of costs and benefits between infrastructure managers and transport operators.
- Focus must be put on infrastructure charging and internalisation of external cost which enlarge the scope of cost analysis with, eventually, a differentiation, according to time and space.
Costs estimation (2/3)

**Different type of costs to be considered are:**

- Infrastructure costs for construction including associated works (stations, connections..)
- Additional construction costs for protection of environment which are often increasing during the project cycle as compared to initial evaluation and contribute to internalisation of external costs
- Operating costs which are usually expressed with constant term, cost per hour and cost per km (trinome formula)
- Value of time has important impact on evaluation results in particular for passenger (inventory costs for freight plays a less important role)
- Cost for environmental impact

Costs estimation (3/3)

**Recommendations**

- A more detailed desegregation between type of cost, with distinction between infrastructure and operating costs
- Definition of an infrastructure cost database depending upon topology and modes
- Definition of an operating cost database, this exists for road and should be developed for rail, depending upon operating system (direct trains, wagon load, intermodal trains), as well as for IWW and maritime transport (this has been introduced in ETIS)
- Define reference unit costs for environmental impact as already proposed in the Commission recent guidelines
4. Risks analysis (1/2)

The risks analysis has been often neglected in the case studies.

Four steps have been identified in the risk analysis:

- sensitivity testing, selection of the variables to which a project design is most sensitive;
- probabilistic distributions for critical variables, determining the possible range of variation from the base value;
- quantitative risk assessment, to determine the effect of such variation on the project performance indicators (NPV - IRR);
- interpreting the results.

### Influential factors for risk analysis in transport and energy projects

<table>
<thead>
<tr>
<th>Categories</th>
<th>Examples of variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price dynamics</td>
<td>Rate of inflation, growth rate of energy prices, changes in prices of goods and services</td>
</tr>
<tr>
<td>Demand data</td>
<td>Population growth rate, GDP growth rates, motorization, value of time, volume of through traffic, energy demand, pricing policies</td>
</tr>
<tr>
<td>Investment costs</td>
<td>Duration of the construction site (delays in realisation), cost of land, cost of other inputs, cost of environmental impacts mitigation</td>
</tr>
<tr>
<td>Operating costs</td>
<td>Prices of goods and services sold, hourly cost of personnel, price of electricity, gas, and other fuels, consumption of energy and other goods and services, number of people employed</td>
</tr>
<tr>
<td>Prices of outputs</td>
<td>Tariffs, sales prices of products</td>
</tr>
<tr>
<td>Quantitative parameters for the revenues</td>
<td>Volume of services provided, productivity, number of users</td>
</tr>
<tr>
<td>Accounting prices (costs and benefits)</td>
<td>Coefficients for forecasting market prices, value of time, cost of deaths avoided, valorisation of externalities</td>
</tr>
</tbody>
</table>
II – Integration of CTP in evaluation

1. Prerequisite: a relevant context / system analysis

- This concerns in particular competition conditions between modes including intermodal solutions and competition between routes.

- From a methodological point of view, this can be called a "system analysis" of transport situation taking into account interactions:
  - Between infrastructure and operating system including new technologies (hardware, software)
  - Between infrastructure, operating system and transport regulation including liberalization access of new entrants
  - As well as impact of Policy measures which cannot be limited to infrastructure building transport operation but also affect and transport regulation (see 2004 TEN-T guidelines)
II – Integration of CTP in evaluation

2. Relevance of corridor approach and importance of scenario definition

- A “corridor” approach has been proposed (TEN T priority corridors, ERTMS corridors) in order to better take into account this transport context and facilitate cooperation.
- The “underlying” system analysis will be reflected in the definition of the scenarios with specification of endogenous and exogenous variables.
- A basic distinction must be made between reference scenario and project scenario (which definition have been very difficult to find in the case studies).
- The scenario formulation includes socio economic variables and transport variables which characterize the infrastructure; the transport market (conditions of competition) and relevant transport policy measures.

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Transport Operation CORRIDOR</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geography (land use)</td>
<td>Links</td>
<td>Intermodality</td>
</tr>
<tr>
<td></td>
<td>Nodes</td>
<td>Interoperability</td>
</tr>
<tr>
<td>Economy (performances)</td>
<td>Cost / benefit</td>
<td>Operation cost</td>
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<tr>
<td></td>
<td>Services quality</td>
<td>Capacity allocation</td>
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<td></td>
<td>financing</td>
<td>Dedication</td>
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<tr>
<td>Institutions (governance)</td>
<td>EIA</td>
<td>Coordination</td>
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<tr>
<td></td>
<td>Distribution effect</td>
<td>Harmonization</td>
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<tr>
<td></td>
<td></td>
<td>Corridor planning</td>
</tr>
</tbody>
</table>
III. The decision process and stakeholders participation

1. Preliminary remarks
   • European decision process requires participation of different stakeholders, private and public, at European, national regional level. Therefore analysis distribution analysis of effects is required: (the Stakeholders Effect matrix of EIB)
   • Such analysis will help to define infrastructure charges and rules of co financing.
   • Decision process also develop over a long period of time: this time length affect ex-ante and ex-post evaluation results with changes in transport context.
   • Therefore it is important to identify different stages in the “project cycle”, for ex-ante to ex-post evaluation.
3. **Recommendations**

Analysis of redistribution effects including costs, benefits stakeholders including environmental impact for major Stakeholders with:

- Distribution of surplus between infrastructure managers, transport operators, final users due to implementation of project
- Measure of improvement of local and regional accessibility
- Assessment of global and local environmental impact

- Introduce EIA at an early stage of the decision process, when options are more open (with more detailed impact analysis once project is more precise)
- Introduce also public consultation at a early stage of the project, in order to facilitate social acceptability and, eventually, improve the project definition
- Formalise different stages in the project cycle from early stage of ex-ante evaluation up to mature implementation phase with an appropriate reference documentation

3. **Continuity and transparency of decision process for the energy sector**

Taking into account *mutations of project* over the time (stakeholders involved, robustness of analyses, evolution of data over the time)

- Importance of *transparency*
  - Strong opposition in energy network infrastructure projects
  - Relevance of documentation and public debate (acceptability) at an early stage of the project
III. The decision process and Stakeholders participation

4. Project cycles: 5 stages can be proposed

- Preliminary analyses with global exploration of the impact of the project including expected environmental impact which is a priority of transport policy
- More detailed analyses when the project is more mature and the spatial location more precise. At this stage concertation with stakeholders must take place. A network modelling will be in general required with O/D flows data collection
- Detailed ex ante evaluation including official documents required by legislation or regulation in order to satisfy legal aspects of evaluation (EIA, reference to planning documents, agreed reference values for unit costs...)
- First ex post evaluation: 3 or 5 years after implementation
- Second ex post evaluation 10 years after

Implementation of evaluation support unit

Actions for ex post assessment
- to collect data form ex post evaluation to be used as reference forecasting
- support the ex post evaluation by providing tools and approaches which can help in keeping the costs of evaluation low
- to disseminate the results, and demonstrate that the benefits are higher than the costs
II - Integration of CTP in evaluation

3. Recommandation

- Elaboration of a checklist for basic variable for reference / project scenarios.
- Define common reference “socio economic” scenario for European project with at least, harmonized demographic, GDP hypotheses, trade elasticities per country (international trade) for medium and long term
- common reference “transport scenario” with evolutions of transport costs per mode for medium and long term
- Provide common reference transport projections for O/D trafic concerning in particular intra EU and extra EU trade

IV. Implementation of evaluation support unit

Actions for ex ante assessment

- provide reference scenarios at the strategic level (see section 4.3), updated every two years with disaggregated estimates of future demand
- set up a scientific committee that will define and update the basic requirements of the modelling tools to be applied in large infrastructure projects forecasting
- provide data for risk analysis through past experience, reference forecasting
- collect the project relevant documentation and made it available to other projects, stakeholders and concerned groups
IV. Implementation of evaluation support unit for the energy sector

- **neutral status** of the unit to improve stakeholders’ involvement and overall decision making process
- defining an agreed **common assessment methodology** for projects
  - -> providing common tools and reference data to be used in project evaluation
  - providing **output indicators** for the different stakeholders involved
In the French export evaluation experience the following have been stressed for methodological progress and results (for HST)

- Cost/benefit results per type of stakeholder (including state and competitive modes) with stress upon differentiation between infrastructure managers and transport operators.
- Environmental impact analysis.
- Integration of risk analysis.
- Problem of integration of tariffs in a context of yield management.
- Scenario analysis of condition of competition within modes and between modes.
- Regional impact.
- Social redistribution of effects in relation with demand analysis.
- Time for change of behaviour.
ERA Perspectives on Impact Assessment

Torben Holvad
European Railway Agency

ERA - Background

• Set up (under EC Regulation No 881/2004) to help create an integrated European railway area by reinforcing safety and interoperability

• The Agency is based in the French region of Nord-Pas de Calais (Valenciennes / Lille)

• Headed by an Executive Director

• It employs around 100 staff members of 20 nationalities
What is meant by EE?

- EE = Economic Evaluation = generic expression
- Impact Assessment to improve quality of EU lawmaking
- Particular case of the Directives:
  - 2004/49 (Safety directive):
    - All proposals for [...] CSTs shall [...] be accompanied by an assessment of the estimated costs and benefits, indicating their likely impact for all the operators and economic agents involved and their impact on the societal acceptance of risk
  - 2004/50 (Interoperability directive):
    - "The cost-benefit analysis of the proposed measures will take into consideration, among others, the following:
      - cost of the proposed measure,
      - reduction of capital costs and charges due to economies of scale and better utilisation of rolling stock,
      - reduction of investment and maintenance/operating costs due to increased competition between manufacturers and maintenance companies,
      - environmental benefits, due to technical improvements of the rail system,
      - increase of safety in operation."
Overview of activities

Key documents

- General EE guidelines
  - One document for all ERA recommendations

- Applied Impact Assessment Guidelines
  - One document for each ERA recommendation

- Impact Assessment Report
  - One document for each ERA recommendation
• Centralizing sets of data necessary to perform CBA

• Pre-formatted input sheets (questionnaires), including definitions

• At least store Excel-based models using aggregated responses to questionnaires

• Provide output tailored to the various readers

Some known problems & possible remedies

• To be avoided:
  – Mechanistic application of cost-benefit analysis
  – Separation between the decision-making process and economic evaluation
  – Black-box analysis
  – Starting with the solution rather than the problem

• To be sought:
  – Approaches to address data uncertainty
  – Significant consultation with the stakeholders
  – Calculation of disaggregated outputs
  – Eventually, publication of full models
  – EC Impact Assessment Guidelines
Ex-post evaluation framework

- **Purpose**: complementing the ex-ante appraisal framework already in use
- **Focus I**: to check whether Recommendations are working according to ex-ante IA conclusions
- **Focus II**: to improve ex-ante methodology
- **Status**: ex-post framework is being prepared

Critical issues for improvement of decision-aid methods

- Importance of establishing the context of the transport interventions being examined
- Scenario definition – both reference scenario and project scenario
- Disaggregated analysis: consideration to implications on different stakeholders
- IA not only relevant for infrastructure projects but also for other initiatives + packages of instruments
- Linkage and influence between transport and the wider economy
- Integration of non-monetary impacts
Final Workshop

EVA-TREN and the HT Grid

Some Last Minute Considerations

J. Rossat, Nov. 10, 2008

Electrical Networks.

3. Results From the Case Studies Reexamination. [Many a remark may apply to other aspects of the reexamination].
   1. The European Dimension
      1. “Inclusion of supra-national dimension”.
      1. Remark: The VHT electrical grid is, by essence, supra-national. Even the “local traffic” may be international.
Electrical Networks.
The San Fiorano – Robbia (Bernina) connection

3. Results From the Case Studies Reexamination. [Many a remark may apply to other aspects of the reexamination].

1. The European Dimension
   1. “Inclusion of supra-national dimension”.
      1. Remark 1: The HT electrical grid is, by essence, supra-national. Even the "local traffic" may be international.
      2. Remark 2: Any action on a VHT line triggers perturbations up- and downstream, including over the borders. General coordination would be welcome to minimize unwanted interactions. But...
      3. Remark 3: Even after the opening of the electricity market, complete unbundling is not realised and all HT networks belong to private or semi-private entities, with close ties to producers and marketers (Terna-ENEL [I], RTE-EDF [F], RWE, EnBW, etc. [D]). Any European program and planning is therefore difficult to implement.
      4. Remark 4: Thus, not sure the integration of the Bernina project into TEN-E would have had the effect mentioned in the report.
3. Results From the Case Studies Reexamination. [Many a remark may apply to other aspects of the reexamination].

1. The European Dimension
   2. "Lack of reliable EU data and demand segmentation"
      1. Remark 1 re the Bernina line: At project starting time (1980's) growing demand in Italy and near impossibility to build new lines anywhere else triggered Rätia Energy's and ENEL's interest to build the Bernina line. The usual forms of commercial relations at that time were full (energy and transport), profitable, long term contracts. EU dimension was of no interest.
      2. Remark 2: Huge public opinion resistance to any new HT line construction makes comparison with other projects irrelevant. One builds when one is able to do so.

2. "National Specificities and Institutional Context"
   1. The Bernina was clearly influenced by national specificities and "local" profit-seeking by the owners.
   2. Lack of consideration of and coordination within the European context and VHT network have led to the construction of a line with a nominal capacity of 3'000 MW and an effective transit of 1'000 MW (unofficial figure).

"Formulation of socio-economic scenarios"

1. The intra- and international exchanges of electricity have massively increased since the deregulation, on a grid mostly designed to move some long term contracts and temporary inter-company help.
2. The present network status is gross under dimensioning (D-CH-I, F-CH, F-D, etc.) which has led to generalised congestions and the introduction of lucrative (for the network operators,…) border auctions.
3. Better forecasting needs to involve very complex network simulations at the European level (fusion of UCTE and EDSO => ENTSO).
Electrical Networks.  
The San Fiorano – Robbia (Bernina) connection  

3. Results From the Case Studies Reexamination. [Many a remark may apply to other aspects of the reexamination].

4. Implementation of these forecasts into a European level planification is wishful but applying the planification will be difficult:
   1. Necessity to tackle congestions upstream and sideways: e.g. the construction of an additional border-crossing line moves the congestion upstream, maybe onto the network of a competitor.
   2. Absence of options (impossibility to build elsewhere, production plant construction also lagging behind needs).
   3. Possible absence of motivation of integrated or pseudo-integrated companies:
      1. Low return (regulated) on investment in transport facilities.
      2. Good return of existing congestion fees.
      3. Price differentials between markets essential to trading.

4. Evaluation methodology
   1. "(Lack of) An agreed procedure for ex-ante evaluation"
      1. Before deregulation, line construction was mainly decided upon the getting of a good return from full delivery long term contracts and/or bilateral transit contracts. Decision was made according to classical DCF calculation, with expected return depending on each company own strategy.
      2. Nowadays, return is most of the time limited by regulating authorities by way of [rather low] fixed transit fees; main driver is now mostly increased safety of networks.
      3. Occurrences where a real choice of options is offered and hence an agreed ex-ante evaluation is needed are few.
Electrical Networks.
The San Fiorano – Robbia (Bernina) connection

3. Results From the Case Studies Reexamination. [Many a remark may apply to other aspects of the reexamination].

6. “Continuity and transparency of decision process”.

1. I don’t think more transparency could have eased the implementation of the Bernina line, at least from the Swiss side. Public opposition is now absolutely systematic and the progresses made since 1983 to expand environmental procedures and hearings have brought absolutely no streamlining of new line projects.

2. Summarized present Swiss procedure for line construction:
   1. Pre-project by utility.
   2. 1st EIA about selected “corridor’’ (x km wide)
   3. Establishing of a “corridor accompanying group” including local and environmental organisations representatives.
   4. Issuing of formal proposal by the “corridor accompanying group” to the federal Government (Conseil Federal).
   5. If approval, start of the detailed projecting
Electrical Networks.
The San Fiorano – Robbia (Bernina) connection

3. Results From the Case Studies Reexamination. [Many a remark may apply to other aspects of the reexamination].

6. “Continuity and transparency of decision process”.

2. Summarized present Swiss procedure for line construction (part III):

13. If unsuccessful (for opponent), possible appeal to the Federal Supreme Court.
14. If opposition rejected, adoption of the general detailed project.
15. Issuing of the detailed execution plans (mast by mast, sub-station, etc.). Public enquiry.
16. Possible opposition by land owners, neighbours, etc.
17. Examination by IFCF,
18. Appeals,
19. etc.

3. With total transparency and continuity, procedures for new lines keep dragging for decades.

Kirschoff and Friends:
Boost in national and international traffics, stricter adherence to n-1 rules (post Italian Blackout !) tend to decrease available NTC at borders
Les capacités disponibles "n-1" 1998 vers l’étranger…

Current Status in Switzerland
Physical capacities for trade

Exchange capacities between CH and its neighbours
[total and n-1]
... et les capacités théoriques et NTC de et vers l'étranger vers 2005

Europe's the Limit
Limited interco capacities which split the market...
Thus, unimproved networks show moderate increase in physical transfers...

Source: UCTES
(Aparté) Développement des échanges internationaux, en volume

Part of exchanges in the consumption 1975 - 2004

- UCTE
- Ext.

From year 2001 sum of exchanges include CENTREL countries CZ, H, PL, SK
From year 2003 sum of exchanges include RO and BG
Ext. = exchanges with third countries

The limits of Europe

- Partial and incomplete unbundling between producers/marketers and transmission operators impedes fair access to networks
- Efficiency, legal and technical competences of regulatory bodies very different from one country to another
- Cooperation between TSOs sketchy at best; improving various "international blackouts"
**Blurred future**

- 30+ projects identified to improve Swiss VHT network; some of them to have decisive impact on interconnector capacity.

- Hypersophistication and slowness of decision process in Switzerland, uncertainty of regulatory and economic framework, diverging interests within the “Big 6” community to have these projects dragging for years to come.

- More mature and transparent allocation processes in international trading needed to optimize use of available capacity.

- Incentive needed to push TSOs to build new lines instead of cashing the revenues of auction.

- In another word, improvement in network planification and implementation definitely necessary ...

- … with a spoonful of congestion to keep traders happy!

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**Capacités d'interconnexion avec l'Italie**

**Participations à la capacité transfrontalière Italie-Suisse (base MW installés)**

- **AXPO** 40.9%
- **RE** 9.8%
- **EOS** 6.6%
- **BKW** 7.8%
- **Atel** 15.6%

**Capacités techniques théoriques état 1.1.2006**
Volutility par excellence: Wind Blowing Into German Windmills

Wind Production in 2006

The Historical Role of the Swiss Transporters II
Back-up, smoothing, long term international contracts

Theoretical technical capacities to/fr abroad as per 1.1.06
1st Discussion on project-related issues (Chair: W. Rothengatter, IWW):

**Issue 1: Technical aspects of evaluation (data, models, and methods)**

- Data collection and harmonisation: need for European database?
- Traffic forecasts (in particular international traffic): need for a European baseline scenario?
- Financial and risk analysis: commitment for both analyses at national/European level?
- Common tools/models: how can common models support better ex-ante evaluation also on a national level (TRANSTOOLS, TEN STAC, etc.)

**Issue 2: The integration of the various stakeholders in the process: national, European, public, private**

- How to mobilise stakeholders?
- When is the most efficient point in time when Stakeholders should be integrated – first ideas, project planning, project assessment, project implementation?
- Need to calculate the distribution of costs and benefits between stakeholders instead of “only” calculating aggregated values?
- Need to formulate output indicators for different families of stakeholders which have to be calculated for every project?

2nd Discussion on policy aspects (Chair: M. Ponti, TRT, Politecnico di Milano):

**Issue 3: The integration of policy objectives in the evaluation process**

- Quantification of scenarios: Need for common (baseline) scenarios concerning socio-economic and transport developments?
- Context Analysis: is there a need for considering/measuring interdependencies between projects?
- How do changes in policy objectives influence the long-term success of infrastructure projects? Do we need to appraise such unknown changes (sensitivity analysis, ...)?

**Issue 4: The implementation of a supporting unit**

- How should a supporting unit be designed (responsibility, competency, liability,...)?
- Where should it be located (DG TREN, ...)?
- In which phase of the project can a supporting unit be most efficient (evaluation, project design, stakeholder involvement, project management)?
- Who should participate at the supporting unit (DGs, national representatives, scientists, stakeholders, ...)?
- Which tasks can be adopted by the supporting unit?
Claus Doll

Applied ex ante and ex post assessment - the case of the NEAT projects in Switzerland
EVA-TREN Final Workshop

Basics and history of the NEAT project

1. Strong growth of North-South cross Alpine traffic from and to Italy
2. Agreement by public vote 1992; later re-dimensioning due to less favourable economic situation. Final Approval approval November 1998
3. Related projects: BAHN 2000 (phase 1 and 2) and the connection Switzerland to the European HSR network
4. Related to transit agreement of 1992 and the land transport agreement with the EU of 1998
5. Financing through Heavy Vehicle Fee (LSVA)
The NEAT projects

Time Savings Zurich - Milan
Very coarse structure of project controlling

Ex post studies
Separately for each axis

Feasibility and ex-ante Studies
Separately for SBB and government.

Agreements with construction companies and railways
Public transport financing act (FinÖV)
NEAT Controlling Order (NCW)
Land Transport Agreement Switzerland – EU
Traffic Shift Act – max. 650'000 HGVs 2009

Continuous traffic & impact monitoring

Local impact studies
Mainly of regional impacts of building sites and tourism

Early warning system / actions and interventions

Continuous financial monitoring
Every six months:
Current overrun 2.9 bn. CHF

History of communication process and specific conditions

High level of transparency and continuity of monitoring traffic impacts and financial performance. Reasons:

1. Financial disaster and misallocations at Furka-Tunnel 1976: Budget fully used after only 50% of construction progress
2. First positive experiences with stringent cost controlling at Vereina-Tunnel (19 km, 500 mill. €)
3. High costs and risks of NEAT
4. Long construction time of NEAT
5. National prestige project
6. Link to bilateral treaty with EU

Traffic shift target after Lötschberg opening or from 2009 on: 650’000 HGV passages / year

Impact monitoring – scenarios and HGV traffic targets until 2020
Financial monitoring – Status report of 30th July 2008

<table>
<thead>
<tr>
<th>Million CHF</th>
<th>Invoices incl. contracted inflation</th>
<th>Obligations / loan</th>
<th>Cost overrun / savings</th>
<th>Projected final project costs</th>
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<tbody>
<tr>
<td>Project Supervision</td>
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<td>85</td>
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<td>Lötschberg Axis</td>
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<td>– Gotthard</td>
<td>5442</td>
<td>7161</td>
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<td>– Canton (CBT)</td>
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<td>Upgrade Surselva</td>
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<td>Connection Eastern Switzerland</td>
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<td>Upgrade St. Gallen–Arth-Goldau</td>
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<td>Upgrades remaining network</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Total Constructor</td>
<td>11 474</td>
<td>15 604</td>
<td>–2871</td>
<td>18 475</td>
</tr>
<tr>
<td>Further Cost Items</td>
<td></td>
<td></td>
<td></td>
<td>1325</td>
</tr>
<tr>
<td>BAV Final Cost Projection</td>
<td></td>
<td></td>
<td></td>
<td>19 800</td>
</tr>
</tbody>
</table>

Cost Controlling – Analysis of deviations

BAV-Endkostenprognose: 19,8 Mrd. Franken

Änderungen
+7,0 Mrd. Fr.

12,0 Mrd. Ursprüngliche Kosten
3,0 Mrd. Sicherheit und Stand der Technik
0,6 Mrd. Verbesserung für Bevölkerung und Umwelt
0,6 Mrd. Politisch begründete Vorzüge
1,3 Mrd. Geologic
0,6 Mrd. Projektverweiterung
0,0 Mrd. Vergabe und Ausführung
**Cost Controlling – Potential risks**

NEAT has special conditions due to its size and potential risks

Open and transparent controlling procedure emerged from badly performing projects

EU context: projects in similar size and risk are on the table (Fehman-Belt, Lyon-Tourin, Brenner Base Tunnel, ...)

- Positive experience with continuous controlling + early warning systems in case of violating targets is recommended for big projects with public money involved.
- This controlling regime nor prevents from hidden agendas in the design phase nor from cost overruns during the construction,
- but allows for monitoring project performance against initial plans for early reaction on risks or opportunities

**Conclusions**

Deliverable 4.3 - Report on the findings and outcomes of final workshop