Decision making, public engagement and the role of transport system analysis

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1. Background

2. Decision-making processes and markets in transportation planning

3. Models of decision-making processes

4. Stakeholders Engagement

5. Some elements for more effective decision-making processes
1. Background

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1. background

- Decisions related to transportation systems, made by both **public** and **private subjects**, often impacts on diverse and contrasting interests.

- Decision on transportation are time-consuming and non-efficient due to the **complexity of the legal procedures** and the **fragmentation of the decision-makers system**.

- Decision on transportation systems often capture the **public interest**.

- Often, decisions on transportation systems **do not perform as expected**.
1. background

PLANNING FAILURES
Decision-making processes leading to not satisfactory results

- Delays/Inability to build new infrastructures
- Problems in the implementation of new mobility policies
- Costs overruns during building stages of new infrastructures
- Unexpected effects of decisions (e.g. congestion, pollution, accessibility)
- Services not meeting the travel demand
- Insufficient revenues
- Losses for operators managing transportation infrastructures or services
1. background

PLANNING FAILURES
Main causes

1. **Unpredictable events modifying the scenario**
   - *Economic crisis 2008-2013, 9/11, oil prices, local changes, unexpected market behaviour*

2. **Technical mistakes in forecasting the effects**
   - *Traffic, revenues, costs, pollution, etc.*

3. **Inability to implement the project as intended**
   - *Protests against new infrastructures/services/foares, etc.*

*Failures in decision-making processes*
1. background

TRADITIONAL APPROACHES TOWARDS TRANSPORTATION PLANNING

The decision-making process has some form of “rationality” and quantitative tools, i.e. statistical analyses and mathematical models, play a central role in it, contributing to define the decisions or at least influencing them. (Manheim, 1979; Meyer and Miller, 2001; Ortuzar and Willumsen, 2011; Cascetta, 2009)

Transport system analysis and transportation planning are seen mostly as public-oriented activities, based on the simulation of alternative projects and the assessment of priorities.

...but this is often not the case
1 Background

2 Decision-making processes and markets in transportation planning

3 Models of decision-making processes

4 Stakeholders Engagement

5 Some elements for more effective decision-making processes
2. decision-making processes

COMPONENTS OF PUBLIC/PRIVATE DECISION-MAKING PROCESSES

- The Context
  - Overall perspective (why)
  - Market regulations (where)

- Actors and procedures
  - Decision-makers (who)
    - Stakeholders
  - Process coordination
  - Regulations and procedures for planning and designing

- Objectives
  - Stated
  - Unstated

- Choices/Decisions and implementation
  - Types of decision (what)
  - Temporal perspective (when)
  - Implementation and Monitoring

- The Interactions
  - Context barriers
  - Consensus barriers
  - Coalitions
2. decision-making processes

TYPES OF DECISION (what?)

Different levels and types of decision, as well as different documents formalizing the contents of a decision

Types of decisions/documents

- **Plans**: what we want and how we can obtain it
- **Programs**: when we implement our decisions and with which resources
- **Studies**: how the things are and how we can change them
- **Projects**: how we implement the decisions
2. decision-making processes

TYPES OF DECISION

Project Financing proposal for a new highway

**WHY?** Business planning

**WHEN?** Strategic decision

**WHO?** Private company

**WHERE?** Natural monopoly
(Competition for the market)

**WHAT?** Design Variables

- Geometry and Functional characteristics
  *(e.g. type of road, road alignment, connectivity with the existing network, etc.)*

- ITS systems
  *(e.g. tolls and tolls collection, speed enforcement, ramp metering, variable speed limits, etc.)*

- Environmental impacts mitigation solutions
  *(e.g. noise barriers, ventilation systems, etc.)*

- Building technology and phases

- Landscape insertion studies
2. decision-making processes

**TYPES OF DECISION**

**Business Plan of a private investor in High-Speed railway services**

**WHY?** Business Planning

**WHEN?** Strategic decision

**WHO?** Private HSR Operator

**WHERE?** Competition in the market (no subsidies)

**WHAT?** *Design Variables*

- Line design and operations 
  *(e.g. service, stations, timetables for different time periods, etc.)*
- Vehicles and Technology 
  *(e.g. rolling stock number, performances, etc.)*
- On board services and travel accommodation 
  *(e.g. classes, comfort services, etc.)*
- Pricing policies 
  *(e.g. fares, reductions, special offers, etc.)*

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**Business Planning**

**Private HSR Operator**

**Competition in the market** (no subsidies)

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**Cities and Stations**

![Map of Italy showing cities and stations](image)

**Venezia 18-20 settembre 2013**

**XV Riunione Scientifica della SIET**
"Trasporti, organizzazione spaziale e sviluppo economico sostenibile"
### TYPES OF DECISION

**Urban Traffic Plan**

<table>
<thead>
<tr>
<th>WHY?</th>
<th>Mobility Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHEN?</td>
<td>Tactical decision</td>
</tr>
<tr>
<td>WHO?</td>
<td>Local Transport Authority</td>
</tr>
<tr>
<td>WHERE?</td>
<td>Natural monopoly</td>
</tr>
</tbody>
</table>

**WHAT? **  
*Design Variables*

- Traffic control and operations  
  *(e.g. actuated/coordinated control, circulatory directions, one-way roads, parking area and regulations, parking fares, etc.)*

- ITS systems  
  *(e.g. speed enforcement, limited access zones, priority light control, route clearance, infomobility and ATIS, V2I communication systems, etc.)*

- Pricing policies  
  *(e.g. congestion charge, eco-pricing, tolling system, mobility credits, etc.)*

- Maintenance plans and Monitoring  
  *(e.g. traffic counts, demand forecasting, etc.)*
2. decision-making processes

COMPONENTS OF PUBLIC/PRIVATE DECISION-MAKING PROCESSES

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  - Stakeholders
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- Choices/Decisions and implementation
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- The Interactions
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  - Consensus barriers
  - Coalitions
CONSENSUS BARRIERS

Limitations “internal” to the decision-making process. They origin from problems related to the level of acceptance by stakeholders and to communication issues (e.g. with the public opinion).

“There is no opinion, however absurd, which men will not readily embrace as soon as they can be brought to the conviction that it is generally adopted”

– Schopenhauer
2. decision-making processes

CONSENSUS BARRIERS

E.g. High Speed Railway between Turin and Lyon
2. decision-making processes

CONSENSUS BARRIERS

E.g. Stuttgart central station (Stuttgart 21)
2. protesting against changes of the politics for mobility management

**Go-slow protest over road charge**

Hundreds of drivers have taken part in an anti-congestion charge protest in London in a last-ditch attempt to stop the western extension of the zone.

Organised by the West London Residents Association, the go-slow began at Addison Road, in Kensington.

Protesters argue the £8 charge, being introduced from Monday, will damage businesses and cost residents hundreds of pounds a year.

But Transport for London believes congestion will be cut by 15%.

TfL also claims the number of vehicles will be reduced by 10 to 15% once the charge is introduced.

The zone will expand west from central London on Monday to include Kensington and Chelsea.

*Click to see new congestion charge area*

The protest convoy and march travelled along the Earls Court Road, which will be the boundary of the new zone.

One resident said: "We're fighting [London Mayor Ken Livingstone]. At least we can show him that we care, even if he doesn't."

"Since the introduction of the charge in 2003, traffic levels have been reduced in the central zone by 20%" — TfL spokesman

**Livingstone praises congestion zone extension**

Matt Weaver and agencies
guardian.co.uk, Monday 19 February 2007 14:47 GMT

2:30pm update

London 20

News > Society > Local government

Livingstone praises congestion zone extension

An anti-congestion charge protester in London. Photograph: Sang Tan/AP

Ken Livingstone today hailed as a success the westward extension of the congestion charge zone in London, despite angry protests from residents in west London.
CONSENSUS BARRIERS

NIMBY and other syndromes

- **NIMBY** Not In My Back Yard
- **NIABY** Not In Anyone's Back Yard
- **NAMBI** Not Against My Business or Industry
- **BANANA** Build Absolutely Nothing Anywhere Near Anything (or Anyone)
- **NIMTO** Not in My Term of Office
1 Background

2 Decision-making processes and markets in transportation planning

3 Models of decision-making processes

4 Stakeholders Engagement

5 Some elements for more effective decision-making processes
3. models of decision-making processes

TRANSPORT-RELATED DECISION-MAKING PROCESS

A sequence of activities performed by several actors (decision-makers and possibly stakeholders) in order to decide on options including not deciding (delaying)

CLASSIFICATION

- RATIONAL models
- A-RATIONAL models
RATIONAL MODELS

Rationality: Acting in the best possible way considering the aim (Elster, 1986)

Minimal Requirements of Rational decisions: (Cascetta et al., 2013)

• **consistent**
  - both internally w. r. t. the stated objectives and existing constraints, and externally with other decisions (plans, projects) taken in other interacting contexts or at different moments in time

• **comparative**
  - considering one or more alternatives (e.g. not deciding, one of the available options, searching for other possibilities)

• **aware**
  - based on unbiased information about the options (features), the context (physical and decisional) and their likely impacts (costs, benefits, risks and opportunities), for technical, economic and administrative feasibility

• **flexible**
  - open to changes due to new information on alternative options and their effects, to changes in the economic, physical, institutional contexts, and taking into account decision “opportunity costs” (i.e. postponing unnecessary decisions)
3. models of decision-making processes

RATIONAL MODELS

- STRONG RATIONALITY
  Homo oeconomicus is a utility maximizer relative to his/her choices

- COGNITIVE OR BOUNDED RATIONALITY
  Decision-makers have limited time, capacity and resources and therefore choose an alternative which is satisfying, learning from previous choices
3. models of decision-making processes

RATIONAL MODELS

Strongly Rational model

- Comprehensive (full enumeration of possible solutions)
- Aware (evaluation of all the impacts)
- Optimization algorithm (chosen solution is the one that maximize objectives and fulfill the constraints)
- Conclusive
RATIONAL MODELS

Application areas of the strongly rational approach

✓ **Simple objectives** (e.g. to minimize total travel time, production costs, with constraints expressed by quantitative variables)

✓ **Possibility to automatically generate alternative options** (Supply and Demand problems)

✓ **Limited or no impact on stakeholders**

✓ **Limited number of decision-makers**

*Examples*

Public-oriented context: the design of the optimal control scheme at road intersections, or the optimal frequencies for transit lines, etc.

Private point of view: the design or management of the personnel shifts, yields management, dispatching of ships in a container terminal, etc.
3. models of decision-making processes

RATIONAL MODELS

Cognitive/Bounded Rational approach

- The actors are still goal-oriented but they implicitly take into account their cognitive limitations in attempting to achieve those goals.

- The decision-making model is intrinsically dynamic, with several feedback loops adapting the “solutions” to their ability to satisfy objectives and constraints until reaching a “satisfactory” level of compliance.

- The problem setting may be revised if solution satisfying previously set objectives and constraints are not found within reasonable time and resource budgets.

- The concept of satisfaction is necessary a fuzzy one, as no single value objective function can be referred to, and even non-quantitative objectives and constraints are included in the process.
3. models of decision-making processes

**RATIONAL MODELS**

- **Decision-Making Context Identification**
- **Identification of Objectives, Constraints and Project Typologies**
- **Formulation of Alternative Options (Planes/Projects)**
- **Simulation and Technical Assessment**
- **Monitoring and Ex-Post Evaluation of Implemented Options**

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**The cognitive or bounded rational approach**

- **Decision-Making Context Identification**
- **Identification of Objectives, Constraints and Project Typologies**
- **Formulation of Alternative Options (Planes/Projects)**
- **Simulation and Technical Assessment**
- **Monitoring and Ex-Post Evaluation of Implemented Options**

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**“The Fox and the Grapes”**

- **Implementation Choices (Phases)**
- **Implementation 1st Phase**
- **Implementation 2nd Phase**
- **Implementation Choices (Phases)**
- **Implementation 1st Phase**
- **Implementation 2nd Phase**

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**MONITORING AND EX-POST EVALUATION OF IMPLEMENTED OPTIONS**

- **COMPARISON OF ALTERNATIVE SOLUTIONS (ASSESSMENT/EVALUATION)**
- **SATISFYING OBJECTIVES**
- **IMPLEMENTATION CHOICES (PHASES)**

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**MONITORING AND EX-POST EVALUATION OF IMPLEMENTED OPTIONS**

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- **IMPLEMENTATION CHOICES (PHASES)**

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**PRESENT SITUATION ANALYSIS**
- Activity system
- Transportation system
3. models of decision-making processes

RATIONAL MODELS

Cognitive/Bounded Rational approach

It is loosely consistent with:

- Bounded Rationality Choice Theory (Simon 1957; Rubinstein, 1999; Kahneman, 2003) (Behavioral Economics)
- Learning Theory in Dynamic Decision-Making Models (Brehemer, 1992; Gonzalez et al., 2003) (Management science/Psychology)
3. models of decision-making processes

RATIONAL MODELS

Application areas of the cognitive/bounded rationality approach

✓ Multiple (and possibly ill-posed) objectives, also related to non-quantitative variables
✓ Not exhaustive knowledge of the context variables/available solutions
✓ Impacts on multiple stakeholders
✓ Several decision-makers
✓ Significant uncertainty in the simulated impacts
3. models of decision-making processes

A-RATIONAL MODELS

The garbage can model (Cohen et al., 1972; Daft, 2001; Lipson, 2007)
Originally proposed for describing organizational decision-making processes in companies

The variables

- Actors/participants (A)
- Problems (P)
- Solutions (S)
- Decision Opportunities (O)

O are the cans in which A throw P and S. The decision depends on the random coupling of P and S

Applications to public decision-making in transportation can be found in Cascetta and Cartenì (2012) on eco-rationality
3. models of decision-making processes

A-RATIONAL MODELS

The garbage can model
3. models of decision-making processes

A-RATIONAL MODELS

The garbage can model

It deals with “organized anarchies”, i.e. organizations where there are three properties:

1) Choices are made on the basis of ill-posed and inconsistent ideas

2) A solution/idea could be proposed even if there is not a problem or it could contribute to define it. On the contrary, a problem could exist without being able to find a solution

3) Participation changes: different actors are involved over time
3. models of decision-making processes

A-RATIONAL MODELS

The garbage can model

Decisions based on an a-rational approach have a number of limitations:

- **Non-efficiency**: the “organized anarchy” often brings to projects that do not solve the problems or might solve them only partially

- **Instability**: decisions depends crucially on the actors (decision-makers and stakeholders) contributing to it, and are not retraceable if they change

- **Lack of legitimization**: the organization is able to survive without making its processes understandable by the members of the organization itself
3. models of decision-making processes

A-RATIONAL MODELS

An example: a-rational planning of an infrastructure (e.g. a motorway, a tram)

- **Looking for problems** (environmental pollution, congestion, urban redevelopment, etc.) to apply specific solutions

- **Personal interest** of actors (decision-makers/stakeholders) overcome the public interests of the decision

- The infrastructure is proposed **without analysis of possible alternatives** and their likely impacts

- **Decision-making process is not robust against the decision** (The infrastructure is part of a political programme, Administrations changes and withdraw the decision when funding is actually available)
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4. Stakeholders Engagement
5. Some elements for more effective decision-making processes
4. PE: definition and levels

- Public Engagement (PE) is the process of identifying and incorporating stakeholders’ concerns, needs and values in the transport decision-making process.

- It is a two-way communication process promoting stakeholder interaction with the formal decision-makers and the transport project team.

- The overall goal of engagement is to achieve a more transparent decision-making process with greater input from stakeholders and their support of the decisions (larger coalitions).

- Stakeholders management is also studied in organization and management sciences (Clarkson, 1999)
## 4. PE: definition and levels

### STAKEHOLDERS

Those who hold a stake in a particular issue, even though they have not a formal role in the decision-making process

<table>
<thead>
<tr>
<th>Institutions and Authorities</th>
<th>Users</th>
<th>Transport operators</th>
<th>Business and Unions</th>
<th>Local communities</th>
<th>Media</th>
<th>Financial institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
<td>Direct users (passengers)</td>
<td>Transport operators</td>
<td>National and local industry associations</td>
<td>Local interest groups (e.g. borough associations)</td>
<td>TV station</td>
<td>Banks</td>
</tr>
<tr>
<td>National government and authorities</td>
<td>Direct users (freights)</td>
<td>Transport operator associations</td>
<td>National and local trade unions</td>
<td>Environmental associations</td>
<td>Radio station</td>
<td>Funds</td>
</tr>
<tr>
<td>National parliament</td>
<td>Indirect users (passengers)</td>
<td>Professionals and experts</td>
<td>National and local craft unions</td>
<td>Citizens</td>
<td>Newspapers</td>
<td>Insurances</td>
</tr>
<tr>
<td>Regional governments and Authorities</td>
<td>Indirect users (freights)</td>
<td></td>
<td>Retailers associations</td>
<td>Visitors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional transport authority</td>
<td>Transport users associations</td>
<td></td>
<td>Industry in public works</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Local authorities (Provinces and Municipalities)</td>
<td></td>
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<td>Industry in vehicles production</td>
<td></td>
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<tr>
<td>Political parties and single members</td>
<td></td>
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<td>Industry in technology production</td>
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</tbody>
</table>
4. PE: definition and levels

THE ARCH-ENEMY OF PE: THE DAD (DECIDE, ANNOUNCE, DEFEND) SYNDROME
(e.g. Susskind et al., 1983; Walker, 2009)
Administration makes a DECISION (the best project/plan), it ANNOUNCES the project to the population and other stakeholders that have not been involved previously. This produces many oppositions and the Administration is obligated to DEFEND the decision against criticism, accusations and controversy without having the opportunity to change the project (if only marginally).

Limits of the DAD

- It fosters consensus barriers
- It increases costs
- It increases times
THE FIVE LEVELS OF PE

1. **Stakeholders identification**: e.g. authorities, local communities, etc.

2. **Listening and stakeholders management**: systematic analysis of the current social, cultural and economic conditions with a direct impact on stakeholders

3. **Information communication**: information relative to the project provided by the stakeholders

4. **Consultation**: decision-makers interact with the stakeholders in defining/evaluating alternatives

5. **Participation**: extension of the consultation level where the groups, directly interested, become joint partners of the project and in the project implementation. They take part in making the final choice
## 4. PE: definition and levels

### ENGAGEMENT STRATEGIES

<table>
<thead>
<tr>
<th>POWER</th>
<th>INTEREST</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>LOW</td>
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<tr>
<td>LOW</td>
<td>HIGH</td>
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</table>

<table>
<thead>
<tr>
<th>INTEREST/POWER MATRIX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POWER</strong></td>
</tr>
<tr>
<td><strong>HIGH</strong></td>
</tr>
<tr>
<td>Institutional Stakeholder (Identification)</td>
</tr>
<tr>
<td><strong>LOW</strong></td>
</tr>
<tr>
<td>Marginal Stakeholder (Information communication)</td>
</tr>
</tbody>
</table>

**Stakeholders Empowerment**
SOME EXPERIENCES OF PUBLIC ENGAGEMENT REGULATIONS

In France:

The National Public Debate Commission was established in 1995 with the Barnier law, related to the protection of the environment. Public debates to be organized between the various actors during the implementation phase of the large-scale public projects promoted by the State.

In the United States:

- Title VI of the Civil Rights Act (1964)
- The Intermodal Surface Transportation Efficiency Act (1991)
- Office of Public Engagement (since 2009)

In UK:

Code Of Practice On Consultation (2000): how consultation exercises are best run and what people can expect from the Government when it has decided to run a formal consultation exercise.
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5. Some elements for more effective decision-making processes

A “good” transportation planning process should combine the potential benefits of rational decision-making and Public Engagement.

By “good” planning process we mean one which is transparent, i.e. whose decisions can be justifiable and retraceable, and participated, i.e. whose decisions are shared by the largest possible number of decision-makers and stakeholders.

Higher probability to reduce failure types 2 and 3.
5. Some elements for more effective decision-making processes

COGNITIVE RATIONALITY, PE AND QUANTITATIVE ANALYSES

- PE and rational decision-making model are not necessarily correlated (e.g. DAD syndrome and PE based on pure “negotiation”)

- The absolute rationality model has little room for PE apart from the stakeholders identification and listening phases in the setting of objectives and information provision about results. The a-rational model could include PE in the relatively instrumental process to arrive, in the best of cases, to a purely “negotiated” solution

- Cognitive model has the greater potential for integration with PE, both in public and private contexts
5. Some elements for more effective decision-making processes

- The model proposed is based on “three legs”:
  - Cognitive or Bounded rational decision-making processes
  - Public Engagement
  - Transportation System Analysis
5. Some elements for more effective decision-making processes

- Demand/Supply interaction modeling and simulation
- Identification of future scenarios and reference one
- Weaknesses and planning strategies
- Indentification of project scenarios
- Performance assessment
- Economic assessment
- Financial assessment
- Environmental assessment
- Comparison of alternatives
- Transportation system analysis
- Demand analysis and modeling
- Demand analysis and modeling
- Socio-economic analysis
- Institutional and organization analysis
- Passenger and freight demand estimation
- Present situation analysis
- Activity system
- Transportation system
- Identification of objectives, constraints and project typologies
- Formulation of alternative options (plans/projects)
- Simulation and technical assessment
- Comparison of alternative solutions (assessment/evaluation)
- Implementation 1° phase
- Decision-making context identification
- Present situation analysis
- Listening and stakeholder management
- Stakeholder identification
- Information communication and consultation
- Information communication
- Monitoring and ex-post evaluation of implement. options
- Consultation and participation
- Satisfying results and consensus
- Stakeholders engagement
- Decision-making process
- Presentation of results
- System performance assessment
5. Some elements for more effective decision-making processes

TRADITIONAL ROLES OF TRANSPORTATION SYSTEM ANALYSIS

1. Understanding and modeling mobility and transport related phenomena
2. To assist in the design, assessment and evaluation of transport-related decisions:
   - What If
   - What To

NEW ROLES

3. To contribute towards reaching larger consensus through Public Engagement (e.g. information-based PE)
4. To provide inputs for economic/financial plans of operators
5. To analyze new transport markets and their possible regulations
5. Some elements for more effective decision-making processes

To analyze the impacts relevant to stakeholders and decision-makers
5. Some elements for more effective decision-making processes

To analyze the impacts relevant to stakeholders and decision-makers

**USERS’ IMPACTS PERCEIVED BY THE USERS**

- Value of Being Informed
- Traveling quality/experience
- Aesthetic Quality
- Contributing to sustainable mobility
- Reliability of travel times
- Possibility of multitasking
- Time spent waiting/queuing
5. Some elements for more effective decision-making processes

To analyze the impacts relevant to stakeholders and decision-makers

- Winners and losers by area
- Impacts for socio-economic groups (e.g. children and elderly people, no-auto licensed, ethnic minorities)
- ...
5. Some elements for more effective decision-making processes

Creative ways to represent results that can be understood by non-experts

Establishing the role of quantitative methods in PE decision-making processes

- Make use of appropriate communication language
- Adoption of “self-explanatory” graphics for the presentation of results (“one picture one thousand words”)
- Analogies for quantitative variables (e.g. impact levels classified by letter)
- Use “causal” presentation of data (e.g. travel time reductions due to solution of certain bottlenecks in certain areas)
- Make reference to comparable case-studies (the outside view)
- Flexible aggregation levels
5. Some elements for more effective decision-making processes

Creative ways to represent results that can be understood by non-experts

75 people can travel in 60 cars or in a single bus
5. Some elements for more effective decision-making processes

Adopt assessment methods allowing the evaluation of both quantitative and qualitative impacts for different actors
(Cost-Benefit analysis is not enough!)

Multiple Agent Multi-Criteria Decision Making (MAMCDM)

Identify competing alternatives
Define objectives
Establish performance criteria for each objective
Establish relative importance of performance criteria
Rank of alternatives

Determine the most shared alternative

Adopt assessment methods allowing the evaluation of both quantitative and qualitative impacts for different actors (Cost-Benefit analysis is not enough!)
5. Some elements for more effective decision-making processes

Improve the capability to capture users’ willingness to pay for transport services
More reliable simulation of transport services revenues

Over-estimation zone
Under-estimation zone

Number of monitored road infrastructures

Measured AADT / Estimated AADT

- toll-free roads (over-estimation of 23%)
- toll roads (over-estimation of 5%)

Improve the modeling of the users’ willingness to pay for new services/infrastructures
5. Some elements for more effective decision-making processes

Standardization of procedures and methods for supporting decisions

- **Reduce subjectivity through reproducible, transferable, and comparable results** (e.g. minimum requirements of Feasibility Studies, proposals for funding from the World Bank, etc.)

- **Stakeholders Engagement regulations:**
  - stakeholders’ points of view, efforts and feedbacks are fundamental for a “good” decision-making process
  - information communication improves the quality of the planning process, providing the knowledge, the data and the quantitative tools to the project team. Information communication with stakeholders’ groups reduces delays and allows the process to continue
More importance to preliminary stages (e.g. Feasibility Studies)

5. Some elements for more effective decision-making processes

- Fraction of total value of the project defined at each stage
- Fraction of total design cost of each design stage

- Value
- Costs

Design Stages
- Feasibility
- Preliminary
- Final
- Working Plan

Graph showing the decrease in value from feasibility to working plan stages and increase in costs from feasibility to working plan stages.
5. Some elements for more effective decision-making processes

Third-part assessment

- Reduce interest conflicts within the assessment phase
- Less subjectivity in the analysis
- Increase of credibility of results and widening the consensus around the decision

Base-Rates comparison

Performance comparison (e.g. unitary average building cost, variation of pollution levels, etc.) between alternative project option and base-rate values related to similar projects
5. Some elements for more effective decision-making processes

Highlight the (neglected) relevance of ex-post studies

- To give **feedbacks** to stakeholders and decision-makers for further stages of the process
- To increase **credibility and establish limits of quantitative methods**
- To enrich the **stock of “narratives”** to be used for similar projects
- To provide elements for **“outside views”** of similar projects
A dynamic and flexible decision-making process

- The decision-making process should leave the higher number of open options compatible with the need to implement actual decisions

  *To Decide* from latin: *de-coedere* – to cut out has an “opportunity cost”

- In a cognitive process model the decision-making is *dynamic*: a sequence of decisions, at each stage defining a subset of choices needed for implementation and leaving a larger set of options opened for later decisions

- The institution and process coordination has to be credible to contrast prejudices

  “When we don’t want to do something, we propose a study…”
5. Some elements for more effective decision-making processes

- Definition of general objectives and constraints
- Specification of intermediate objectives and constraints
- Formulation of alternative sets of decisions to be made and options to be further explored (e.g., feasibility studies)
- Stakeholders engagement
- Adjustment of intermediate objectives and constraints
- Formulation of alternative sets of decisions to be made and options to be further explored (e.g., feasibility studies)
- Monitoring and ex-post evaluation of implemented options
- Satisfying objectives and consensus

Implementation of the choices

Yes

No

Satisfying objectives and consensus

Yes

Implementation of the choices

No

Satisfying objectives and consensus
Thank you for your attention!


**Planning failures**


basic references (2/4)

Decision-Making in Transportation and Models – RATIONAL MODELS


Decision-Making in Transportation and Models – A-RATIONAL MODELS

Decision-Making in Transportation and Models – PUBLIC ENGAGEMENT


The role of quantitative methods in transportation decision-making


