Rationality, Garbage Cans and Public Engagement:
a new look at decision-making in transportation systems

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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
- Decisions on transportation are time-consuming and non-efficient due to the complexity of the legal procedures and the fragmentation of the decision-makers system
- Decisions on transportation systems often capture the public eye 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 efforts of decisions (e.g. congestion, pollution, accessibility)
- Services not meeting the travel demand
- Insufficient revenues
- Losses for operators managing transportation infrastructures or services

1. protesting against new infrastructures

1. (new) competition in the markets

1. protesting against changes of the politics for mobility management
1. Difference between traffic forecasts and actual values

Inaccuracy for rail projects (%)

Inaccuracy for road projects (%)

Source: Flyvbjerg et al. (2007)

1. Costs overruns for transportation infrastructure projects

Average cost overrun of 28%

Source: Flyvbjerg et al. (2002)

1. Operators' financial problems

Source: Flyvbjerg et al. (2002)
1. background

PLANNING FAILURES

Main causes of failures are due to:

1. Unpredictable events modifying the overall scenario
   - Economic crisis 2008-2013, 9/11, oil prices, etc.

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/fares, etc.

Failures in decision-making processes

1. premessa

TRADITIONAL APPROACHES TOWARDS DECISION-MAKING THEORY IN 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

3. 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

outline

1 Background
2 Decision-making processes and markets in transportation planning
3 Models of decision-making processes
4 Stakeholders Engagement
5 Elements of a “good” decision-making process
6 Some indications from the new perspective
2. decision-making processes

OVERALL PERSPECTIVE AND OBJECTIVES (why?)

Factors that trigger the decision-making process:

- Mobility Planning
- Environmental Planning
- Land-Use Planning
- Business Planning
- ...

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- The Interactions
  - Competitor barriers
  - Coalition

TRANSPORT-RELATED MARKETS

- Natural Monopoly
  Only one subject is possible/convenient for construction and/or management of a transport system
  - Direct management by the Public Administration
    - Urban/State/Federal road network
    - School bus services
    - etc.
  - Indirect management through associate/subsidized companies
    - "In-House" management of Public Transportation services
    - Railway network and services through Rail Company
    - Management of the state/federal road network through Public Agencies
    - Port Authorities

TRANSPORT-RELATED MARKETS

- Natural Monopoly
  Only one subject is possible/convenient for construction and/or management of a transport system
  - Competition for the market, based on the public tender system, where multiple operators/companies compete for the exclusive commitment of the contract:
    - Concession contracts: private operators manage public infrastructures on behalf of the Public Administration (e.g., Public Private Partnership, Project Financing, highway concession contracts, port concession contracts, airport concession contracts)
    - Service contracts: they regulate the commitment of not-profitable public services, and the Public Administration takes the total cost (or part of it) (e.g., Public Transportation services, subsidized rail services, etc.)
2. decision-making processes

TRANSPORT-RELATED MARKETS

- Competitive Markets (Competition in the market)
  - Approved subjects compete for the same economic activity:
    - air companies,
    - railway companies (freight, passengers)
    - multimodal transport terminals
    - shipping companies
    - etc.

3. decision-making processes

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

- The Interactions
  - Conflict barriers
  - Consensus barriers
  - Coalitions

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>Stakeholders</th>
<th>Contact Between</th>
<th>Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>National and local industries associations</td>
<td>National and local trade unions</td>
<td>Environmental associations</td>
<td>Radio stations</td>
</tr>
<tr>
<td>National parliament</td>
<td>Indirect users (freights)</td>
<td>Retailers associations</td>
<td>Visitors</td>
</tr>
<tr>
<td>National government and authorities</td>
<td>Regional governments</td>
<td>Industry in public works</td>
<td>Political parties and single members</td>
</tr>
<tr>
<td>Regional transport authorities</td>
<td>Local authorities (Provinces and Municipalities)</td>
<td>Industry in vehicles production</td>
<td>Industry in technology production</td>
</tr>
<tr>
<td>Local interest groups (e.g. borough associations)</td>
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<td>Industry in technology production</td>
<td>Policy makers and legal movies</td>
</tr>
</tbody>
</table>

3. decision-making processes

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3. decision-making processes

Decision-Making Processes and Markets in Transportation Planning: Models and Quantitative Tools
Freiburg, June 13th, 2013

2. decision-making processes

TYPES OF DECISION (what?)

- Regulations
  - Land use regulation
  - Location of activities (e.g. Public Facilities)
  - Market regulation (e.g. Liberalizations)
  - Air quality regulations, ...
- Services
  - Timetables
  - Fares, ...
- Infrastructure
  - Building
  - Upgrading, ...
- Vehicles & technologies
  - Fleet composition
  - ITS deployment, ...

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

Types of decisions/documents
- Plan: 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
### 3. decision-making processes

**COMPONENTS OF PUBLIC/PRIVATE DECISION-MAKING PROCESSES**

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  - Environmental impacts, mitigation solutions (e.g. noise barriers, ventilation systems, etc.)
  - Building technology and phases
  - Landscape insertion studies

### 2. decision-making processes

**TEMPORAL PERSPECTIVE OF DECISIONS (when?)**

- **strategic**
  - Decisions on significant investments requiring long implementation and pay-back periods

- **tactical**
  - Decisions on investments that require short implementation and pay-back periods

### 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 toll collection, speed enforcement, ramp-metering, variable speed limits, etc.)

- **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.)
2. decision-making processes

TYPES OF DECISION

Urban Traffic Plan

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

- Traffic control and operations (e.g. actuated/coordinated control, circularity directions, one-way roads, parking area and regulations, parking fees, etc.)
- ITS systems (e.g. speed enforcement, limited access areas, 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.)

WHY? Mobility Planning

WHO? Local Transport Authority

WHERE? Natural monopoly

2. decision-making processes

BARRIERS

Elements limiting decision-making capabilities or the range of action (e.g. block a project during the building stages, or change the way in which it is implemented). Often, they are the results of conflicting interests and reduce the number of alternative options.

3. decision-making processes

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CONTEXT BARRIERS

Contextual barriers derived from elements “external” to the decision-making process:

- **institutional**
  - Several and overlapping competences in different institutions
e.g. Infrastructure design to be approved at the national, regional and local levels.
- **legal**
  - Legal constraints limiting specific options
e.g. Non-regulated toll systems
- **financial**
  - Budget limitations
  - Revenues constraints
  - Stability agreements...
3. decision-making processes

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2. decision-making processes

CONSENSUS BARRIERS

Limitations “internal” to the decision-making process. They originate 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

E.g. High Speed Railway between Turin and Lyon

E.g. Stuttgart central station (Stuttgart 21)
2. decision-making processes

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

3. decision-making processes

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2. decision-making processes

COALITIONS

- Groups of actors (decision-makers / “stakeholders”) whose objectives and interests converge towards the same (single or set of) solutions
- Coalitions take place along with and after the decision is taken
- The importance to include stakeholders in the process to extend coalitions

Virtuous coalitions through negotiation

2. decision-making processes

COALITIONS

Coalitions take place because:

- the objectives of the actors converge (coalitions based on interest)
- negotiation among coalition members allows to reach consensus (coalitions based on negotiation)
3. models of decision-making processes

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)

CLASSIFICATION

- RATIONAL models
- A-RATIONAL models

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

Decision-Making Processes and Markets in Transportation Planning: Models and Quantitative Tools
Freiburg, June 13th, 2013
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

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

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

Limits of the strongly rational approach

1. Problem complexity, that is impossibility of evaluating all the alternatives and the related impacts
2. Different and often contrasting objectives among decision-makers and stakeholders
3. Each option brings a series of favourable or unfavourable consequences difficult to compare
4. Cognitive limits to the capacity of the decision makers of considering all the feasible options, and in the uncertainty of the results
5. Limited time and resources to assess and compare alternatives
6. Presence of stakeholders with a quasi-veto right

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
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

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 Carteni (2012) on eco-rationality
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 depend 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

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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

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Factors favoring a-rational decisions:

- No regulations requiring formal assessment of projects, proposals, plans
- Strong interests for a specific solution rather than for solving the problem
- Limited public debate (see later)
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)

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

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 increase costs
- It increases times
4. PE: definition and levels

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.

ENGAGEMENT STRATEGIES

INTEREST/POWER MATRIX

<table>
<thead>
<tr>
<th>POWER</th>
<th>HIGH</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTITUTIONAL STAKEHOLDER (IDENTIFICATION)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KEY STAKEHOLDER (CONSULTATION/PARTICIPATION)</td>
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<tr>
<td>MARGINAL STAKEHOLDER (INFORMATION COMMUNICATION)</td>
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<tr>
<td>OPERATIVE STAKEHOLDER (ACTIVE LISTENING)</td>
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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.

Outline

1. Background
2. Decision-making processes and markets in transportation planning
3. Models of decision-making processes
4. Stakeholders Engagement
5. Elements of a “good” decision-making process
6. Some indications from the new perspective
5. elements of a “good” process

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. elements of a “good” process

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. elements of a “good” process

- The model proposed here is based on “three legs”:
  - Cognitive or Bounded rational decision-making processes
  - Public Engagement
  - Transportation System Analysis

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13/06/2013
5. elements of a “good” process

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

6. some indications from the new perspective

- To model the impacts relevant to stakeholders and decision-makers
- To present results in ways that can be understood by non-experts
- To adopt assessment methods allowing the evaluation of both quantitative and qualitative impacts for different actors
- To quantify the uncertainty entailed in the simulation results and in the assessment methodology
- To improve the capability to capture users’ willingness to pay for transport services
- Standardization of procedures and DSS
- More importance to Feasibility Studies
- Third-part assessment and performance comparison with base-rates
- To highlight the (neglected) relevance of ex-post studies
- The decision-making process should leave a number of open options as large as possible compatibly with the implementation of decisions

6. some indications from the new perspective

To analyze the impacts relevant to stakeholders and decision-makers
6. some indications from the new perspective

To analyze the impacts relevant to stakeholders and decision-makers

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

75 people can travel in 60 cars or in a single bus
6. some indications from the new perspective

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)

6. some indications from the new perspective

Quantify the uncertainty entailed in the simulation results and in the assessment methodology, for risk assessment
Uncertainty Propagation and Global Sensitivity Analysis frameworks

6. some indications from the new perspective

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

- Traditionally, quantitative tools mainly focus on physical measures (e.g. flows, speeds, travel times, etc.)
- Increasing need to capture willingness to pay for different users’ segments of transportation services (e.g. yield management)

6. some indications from the new perspective

Improve the modeling of the users’ willingness to pay for new services/infrastructures

Over-estimation zone
Under-estimation zone

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

Improve the modeling of the users’ willingness to pay for new services/infrastructures
6. some indications from the new perspective

Standardization of procedures and methods for supporting decisions

- Less personal assessment, with 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

6. some indications from the new perspective

More importance to preliminary stages (e.g., Feasibility Studies)

<table>
<thead>
<tr>
<th>Design Stages</th>
<th>Fraction of total value of the project defined at each stage</th>
<th>Fraction of total design cost of each design stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasibility</td>
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<tr>
<td>Preliminary</td>
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<tr>
<td>Final</td>
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<tr>
<td>Working Plan</td>
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</tbody>
</table>

6. some indications from the new perspective

Third-party 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

6. some indications from the new perspective

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
6. some indications from the new perspective

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 process coordination has to be credible.

- To contrast prejudices: "When we don't want to do something, we propose a study…"

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**Toledo station in Naples**

"The most impressive underground railway station in Europe" - Telegraph

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Thank you for your attention!
Decision-Making in Transportation and Models – RATIONAL MODELS


The role of quantitative methods in transportation decision-making

Reference papers


Planning failures


Decision-Making in Transportation and Models – PUBLIC ENGAGEMENT


The role of quantitative methods in transportation decision-making


