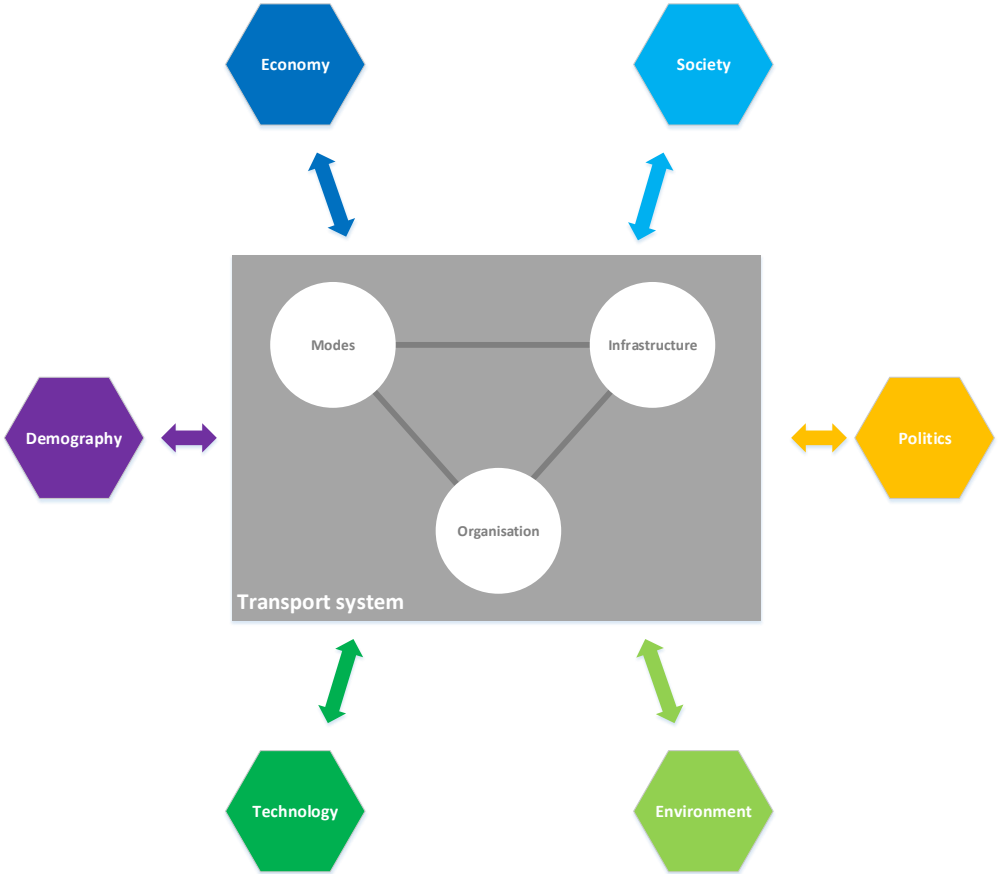
SPADE

Assessing the added value from SPAtial DEvelopment as a factor in infrastructure planning

Jan Kiel - Panteia

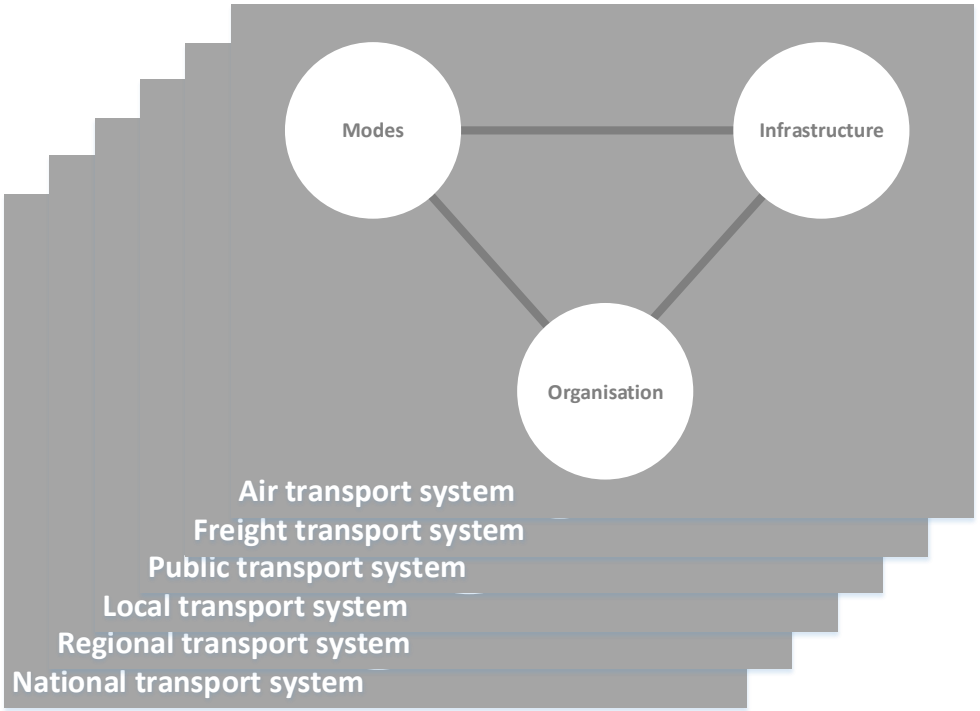
CEDR
Conférence Européenne des Directeurs des Routes
Conference of European Directors of Roads

Background



- Transport system and the main driving forces
- All embedded in space

Background



- Many subsystems
- Many dimensions
- Many spatial levels
- Many stakeholders
- Many challenges

- National Road Authorities feel pressure to collaborate in their planning

Background

Need for innovative approaches to address the challenges on infrastructure and spatial planning.

Main question by Conference of European Directors of Road (CEDR):

How to achieve integrated project development of infrastructure and its spatial surroundings?

Objective of SPADE

CEDR seeks a method for assessing costs and benefits of combined infrastructure and spatial development.

The method should:

- be based on existing knowledge
- include contexts such as nation-wide, urban and rural regions
- go beyond CBA and valuation

Provide an integrated assessment method for transport infrastructure measures and spatial development.

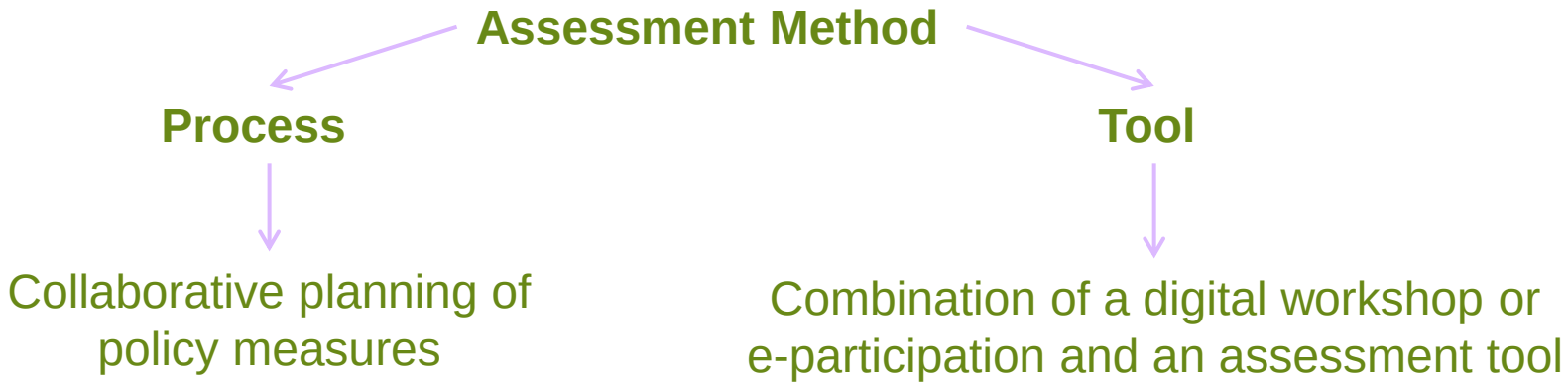
Challenges set out for SPADE

Development of an assessment method that:

- Identifies and involves **different stakeholders;**
- Includes both **freight** and **passenger** transport;
- Can be applied on different scales: **international, national, urban, rural;**
- Assesses **indirect benefits** such as economy, social cohesion and environment;
- Is applicable on **different time horizons** (short, medium, long);
- Takes into account **different types of information;**
- Includes the **weights of different aspects;**

What will be developed?

- SPADE will provide a method for assessing measures and packages



- Method will be tested in urban and rural settings

First part of the journey: Literature review

Review

- Review of 480 reports, guidelines, papers and articles
- Mainly published after 2010

Topics

- Impacts of spatial measures
- Collaborative planning
- Assessment methods
- Discussion tools
- National or regional guidelines

Impact spatial measures

Categorization of impacts

Impacts	Conventional impacts	Unconventional impacts
Economic	Construction & maintenance costs, journey time costs and savings, revenues and costs	Resilience, operator impacts, Imperfect markets, Land value and use, Labour market
Environmental	Local air pollution, Noise, Global air pollution	Landscape, townscape, biodiversity, heritage, water environment, contamination waste
Social	Accidents, time savings for commuting and leisure trips	Security, severance, option and non-option values, service accessibility, affordability, risk of accidents and stress of congestion
Public budget	Tax financing, public income	Tax income related to change in economic activity

Collaborative planning

- Stakeholders central in the planning process
- Consensus finding, decision making determined by dialogue
- Not the only valid method: others such as top-down apprach

Top-down planning	Collaborative planning
Instrumental rationality	Communicative rationality
Certainty	Uncertainty
Direct causality	Ambiguous causality
Goal maximization	Process optimization
Centralized management	Self-management
Simple problems	Complex problems
General approach	Context specific approach

- Source: De Roo & Voogd

Tools

Tool	Description	Advantages	Shortcomings
Future Search	Meeting to search common ground and foster coope-ration between partner	Structured	Slow
Participatory GIS	Map-based interaction	Visualization	Confusing on large scale evaluations
e-Participation	Online forums for surveys, discussion, petitioning, etc.	Multi-purpose	Crowded participation
Bayesian Causal Map	Method to identify causal relations	Statistically consistent	Complex
Soft System Method	Models of actions built by actors to discover their view and create a unique model.	Accounts for different viewpoints	Subject to interpretation

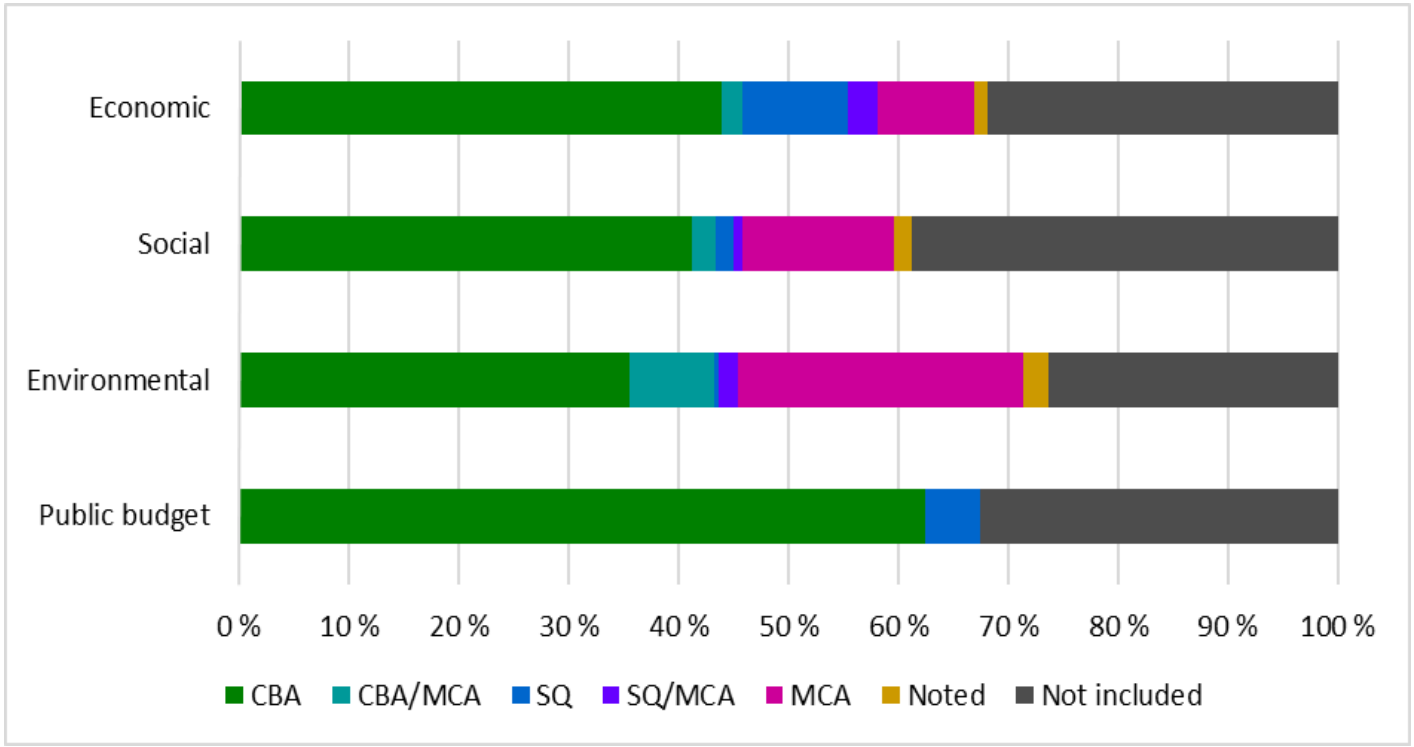
Tools

Tool	Description	Advantages	Shortcomings
Fuzzy MA	Method for understanding trends and scenarios	Simplification	Fuzzy definition
KonSULT	Tool for making alternative solutions and scores in transport planning based on experience	Awareness of options	Determination of scores
Joint Gains	Method for negotiating contrasting items and pursue a solution between stakeholders	Pareto-efficiency	Hard to apply
Delphi Method	Method for consensus, the technique allows feedback and deeper understanding of tacit viewpoints.	Structures discussion	Possible bias

Assessment methods

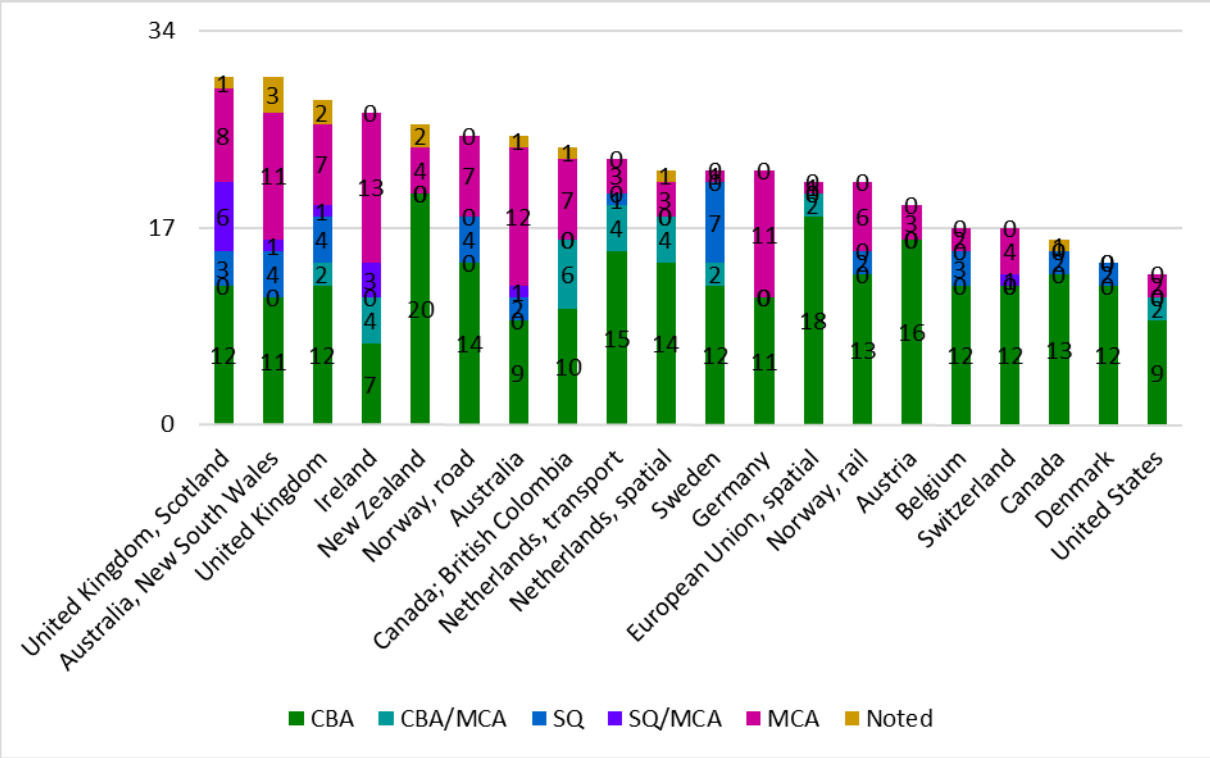
- Cost-benefit analysis (CBA)
  - Advantage: Monetization of different aspects
  - Disadvantage: Understating economic development benefits from investments, incorporation external effects
- Multi-criteria analysis (MCA, MAMCA, MCDM)
  - Advantage; Qualitative non-monetized effects taken into account
  - Disadvantage: Potential subjective biases, sensitive to choice of criteria and weights
- Combination of CBA and MCA
  - Advantage: Best of both worlds, inclusion wider range effects, particpation stakeholders and objectively montized effects
  - Disadvantage: Not much experience or literature, no value for money method

Coverage of impacts and methods in guidelines



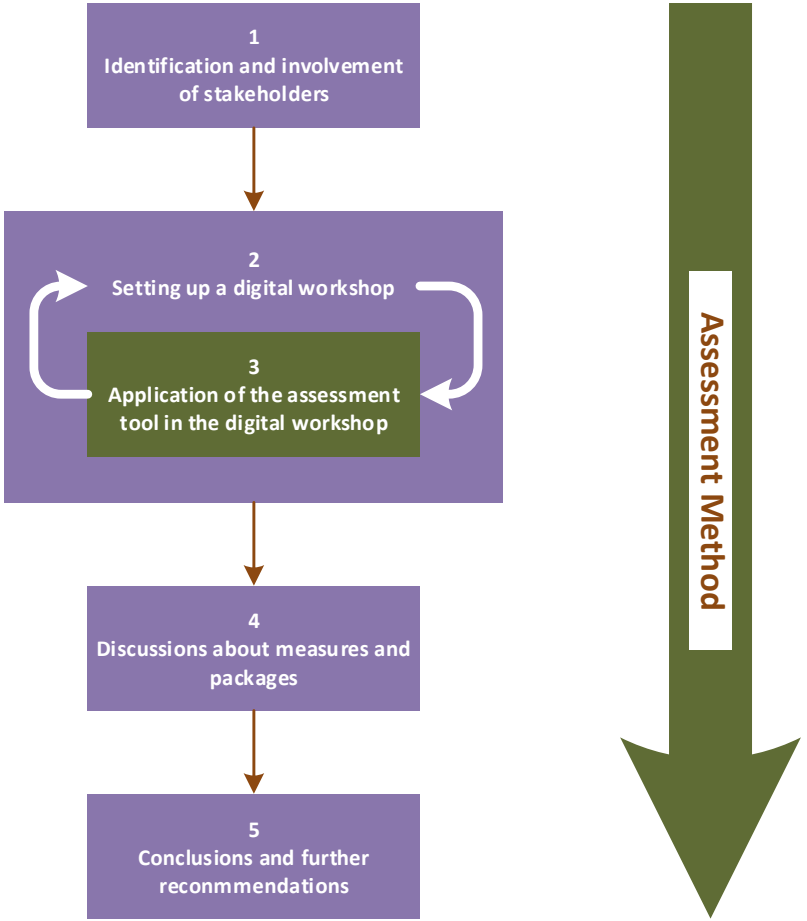
Guidelines

- Impacts and method by guideline



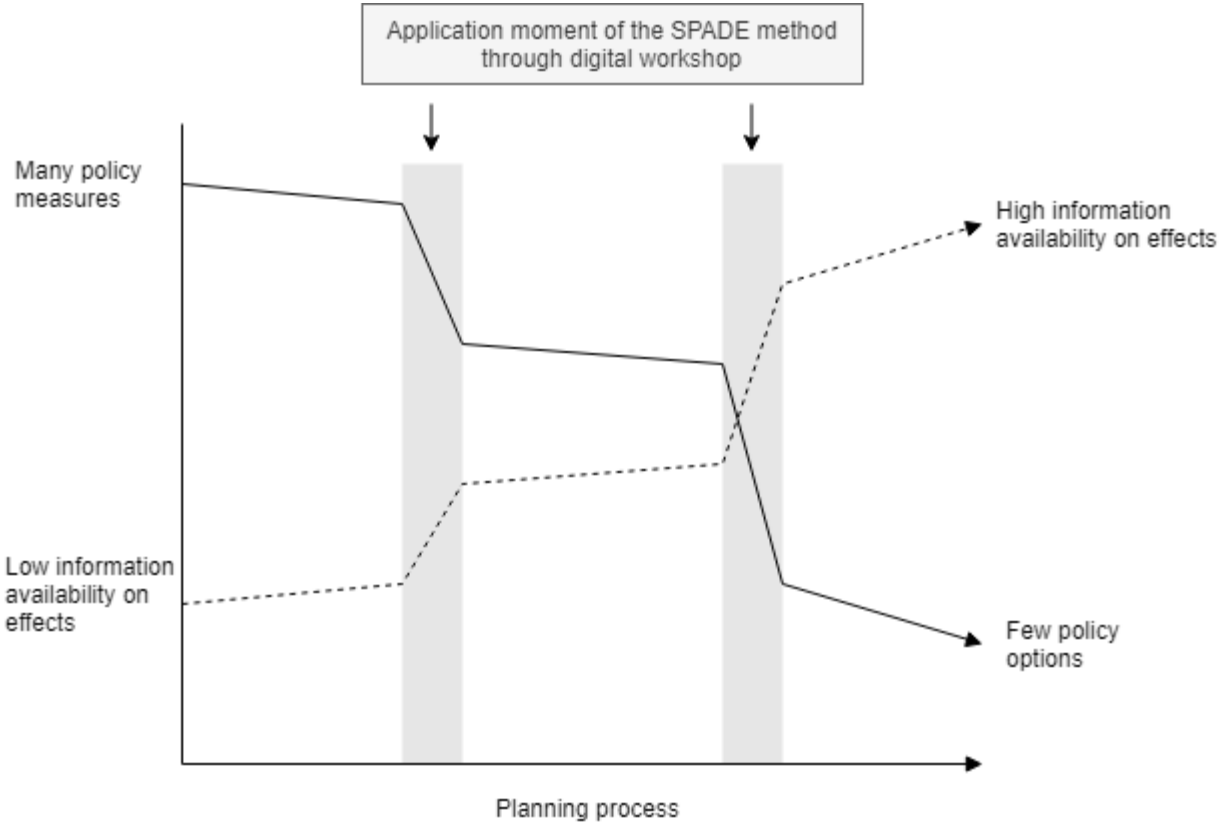
 © 2018 HaCon Ingenieurgesellschaft mbH | SPADE Project

Assessment Method



 © 2018 HaCon Ingenieurgesellschaft mbH | SPADE Project

Assessment method in the planning process

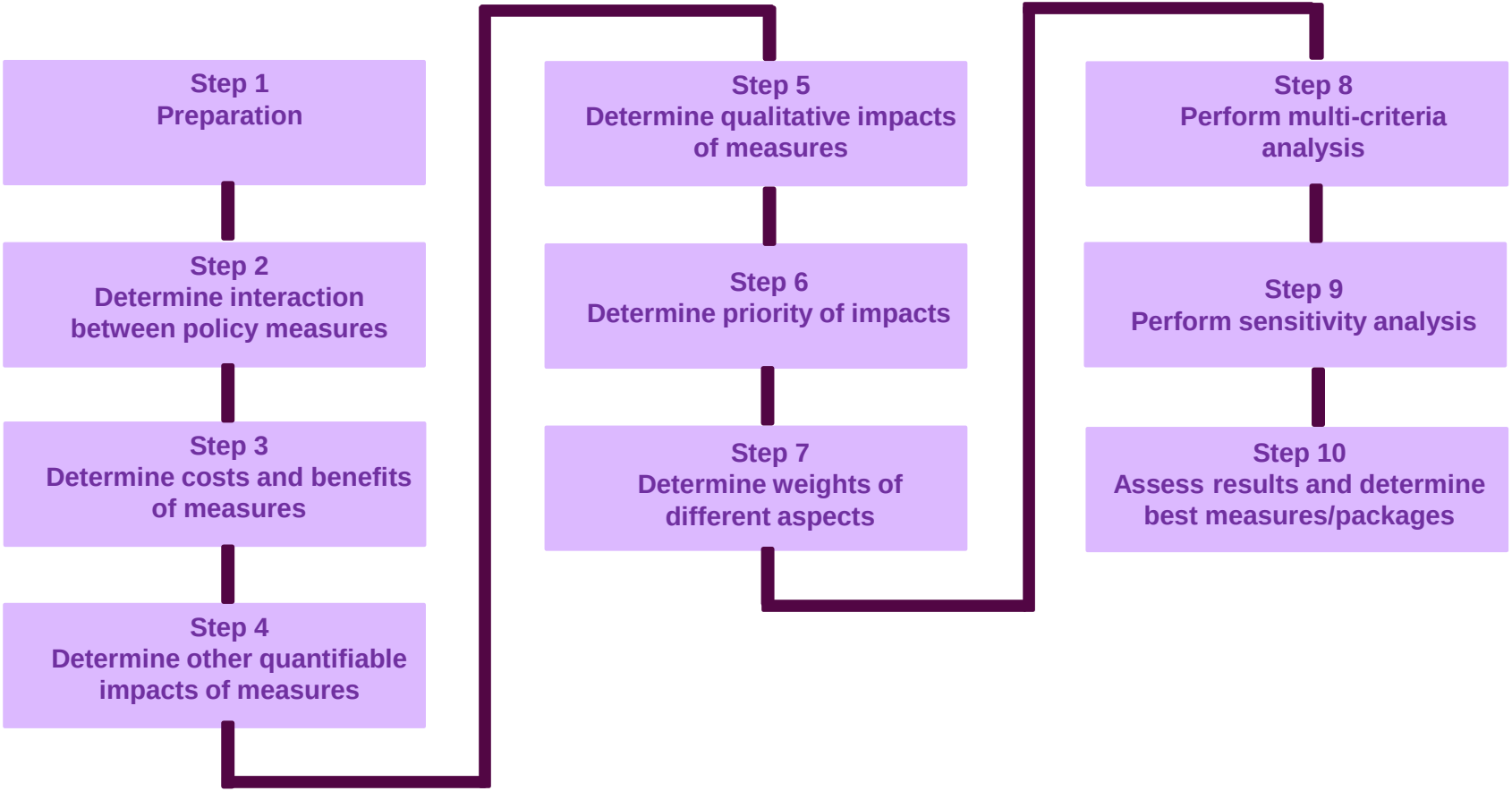


 © 2018 HaCon Ingenieurgesellschaft mbH | SPADE Project

Discussions via a digital workshop or e-participation

- 10-20 attendants with different background.
- Each attendant contributes *actively*
- Discussions become more democratic
- Questions guide the discussion
- Rating can be part of the questions
- Resembles a Delphi method with digital means

Assessment Tool



Example assessment matrix

Policy measure / Aspect	Costs	Accessibility	Liveability	Safety	Quality	Interaction	Relative score
Subway 'Hoekse Lijn'	1.7	2.4	1.4	1.3	1.3	0.2	**8.2**
Greenport accessibility	1.7	1.7	0.8	1.3	1.3	0.4	**7.2**
Rotterdam-The Hague Airport improvement	2.2	0.3	0.7	0.1	1.6	0.5	**5.4**
A13-A16 motorway extension	0.2	3.0	0.1	0.1	0.2	0.5	**4.2**
A15 motorway capacity	0.7	2.4	0.3	1.3	0.7	0.3	**5.7**

Expected Achievements and Benefits

- More and faster exchange of information
- Better understanding amongst different stakeholders
- Supports planning on different levels

- Cost-efficient and fast
- Includes not directly quantifiable aspects
- Inclusion of ´wish lists`
- Used in different phases of infrastructure planning
- Method is assessed in 3 different test cases

Conclusions so far

- This is work in progress

- Method is less rigourous than a CBA
- Stakeholder involvement is essential
- Choice of facilitator/mediator fo the workshop is important
- Planning and opportunity costs can be reduced,
- Method accelerates the decision-making processes.

- SPADE improves the planning experience of administrations and the users' satisfaction when they are well-represented

Key facts & Contact

Duration: 24 months
09/2018 – 08/2020

Website: www.spade-project.eu

Contact: Jan Kiel
Panteia BV
T: +31(0)79 322 24 36

Project Partners: Panteia Research to Progress; toi Institute of Transport Economics Norwegian Centre for Transport Research; HaCon; AIT Austrian Institute of Technology

Funded by: CEDR Conférence Européenne des Directeurs des Routes Conference of European Directors of Roads

 © 2018 HaCon Ingenieurgesellschaft mbH