Option analysis in CBA and the project development cycle

NP Event on CBA in the Transport sector

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Lessons learned
- financial perspective 2007 - 2013

Lessons learned from previous financial perspectives

- Selected investment options sometimes oversized,
- Selection process concentrated too much on technical parameters instead of transport solutions
- Needs of end users most often not addressed fully

Common problems with option analysis process

Common problems in the previous programing periods

- Reversed sequence
  - Project started from preliminary or final design
  - Feasibility study prepared at Application stage
- Retrofitting the selected option into option analysis
- Concentration on dogmatic full options not analysing sub-options or combinations of options
- Lack of sub-options and short-listing
- Process of in depth analysis of current transport problems is omitted or neglected.

Legislative framework (1)
- requirements to the option analysis – Regulation

Regulation EU No. 207/2015, Annex III (CBA Methodology), point 2.1.4 (c) requires that:

1. CBA for a major project shall include results of feasibility studies with demand and option analysis.

2. Option analysis is performed to assess and compare different alternative options which are found generally feasible to meet the existing and future demand for the project and to find the best solution.

- Major steps
- Key aspects

Legislative framework (2)
- requirements to the option analysis – Regulation

Major steps:

- look at basic strategic options (i.e. type of infrastructure and location for the project) – usually based on qualitative methods (MCA),
- find specific solutions at the technological level – mostly uses quantitative methods (CBA)

Key aspects o option analysis process:

- ability to properly justify the solution chosen
- if options can meet the same project objectives (i.e. similar externalities, traffic demand, etc.), the least cost solution should be taken into account,
- if the output and externalities are different in different options, then a simplified CBA should be undertaken for selecting investment option.

Option analysis – common-sense

Why do we need an option analysis?

To avoid	To achieve
Underperformance	Feasible optimal solution
Over-dimensioning / oversizing	Solution addressing all relevant transport needs.
Wasting of financial resources	Financing the best cost effective investment project
Consuming too big proportion of EU allocation	Socio-economic best value for money
Project failure	

Option analysis – Practical approach (1)

Why do we need an option analysis?

- To refer to strategic plans and documents perspective
- to address project objectives and project goals
- To reach cost effectiveness
- to comply with EU and national regulatory considerations (legal, financial, environmental, institutional requirements,
- to achieve technical and financial long term sustainability
- to facilitate project success

Option analysis – Practical approach (2)

Option analysis analytical process – cycle

- What do strategic documents require from a project?
- What are current transport problems, real ones?
- What are real project goals and objectives (strategic and operational)? – Quantitative targets
- How can we achieve these goals and objectives?
- **Creation of options and sub-options (clouds of options / matrices of options)**
- **Preselection process** – *MCA to be used*
- A few selected options (normally 2-4 investment options) for further analysis – *CBA to be used*

Option analysis – Practical approach (4)

Creation of options and preselection process

Aim : Come to preferred small set of main options (very probably feasible) for final detailed assessment

Process

- Creation of options and sub-options (clouds of options / matrices of options)
- Development and implementation of an assessment approach
  - Define set(s) of criteria for assessment
  - Define methods of assessment of criteria as a whole
  - No single approach fits all cases
- Short-list options/sub-options

Option analysis – Important to remember

Always consider in option identification and selection the following drivers:

- Cost of a potential option
- Expected demand that an option can „guarantee”
- Environment including climate change

Option analysis – Practical approach (3)

Option analysis process cycle – recommended approach - rail

- **Step 0**. Specification of the needs towards railway infrastructure expressed in the strategies and plans regarding railway infrastructure.
- **Step 1**. Specification of the current status of a railway line (or another component of the railway infrastructure)
- **Step 2**. Analysis of expectations of future market participants (carriers)
- **Step 3**. Determination of the project operating objectives
- **Step 4.** Assessment of possibilities of improvement in the operating layer (capacity, speed)
- **Step 5**. Identification of options.
- **Step 6.** Initial analysis of all options and **pre-selection.**
- **Step 7**. Specification of options for further analyses (CBA)

Option analysis – Practical example from a country

FS for Zilina-Kosice – Slovakia - railway corridor

- Main objective - significantly reduce travel times in a cost-effective and affordable way
- Invariant requirements for train operations, station capacity and TSI fulfilment
- Main degree of freedom is corridor travel time
- Four main travel time concept options required for detailed CBA analysis
- Main sub-options based on different section routings to achieve target travel times
- Sub-options assessed with MCA for each corridor concept - cost is the dominant criterion
- 4 short-listed options assessed with CBA, environmental and detailed risk analysis

Option analysis – Summary of best-practice

No single options analysis approach in FS can be prescribed

Strategic level – justify and pre-define where possible

- Choices on mode balance
- Range of expected scale/impact level of investment

- Further identify/explore FS "degrees of freedom"
  - Usually significant differences in costs and/or impacts
  - Could be routing or capacity for different operational plans
  - Explore sub-decisions separately where significant (e.g. new major station on line in all routing options)
- Assessment should properly take into account
  - Measureable cost-effectiveness + impacts on other objectives
  - Qualitative and quantitative risks / feasibility constraints

Option analysis – recommendations

DG Regio and JASPERS recommendations for 2014 -2020 financial perspective

- The are no dogma on option analysis (technical parameters, speed options, etc.)
  - Example from railway sector
  – minimum line speed requirements
- More qualitative tools like MCA to be used for preselection process
- More quantitative tools like CBA for short list analysis to be used – as an important criteria for final option recommendation

Thank you for your attention

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