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Annual Polis Conference, 1-2 December 2016, Rotterdam

Need for a holistic assessment of urban mobility measures

Holistic Impact Assessment Method – Combining CBA and MCA effectively

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TIDE
Transport Innovation Deployment for Europe

Evidence
economic benefits of sustainable transport

Overview

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Why do we a need a holistic appraisal approach?

What are the key characteristics of the TIDE impact assessment method?

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Sustainable transport:

- Increases liveability
- Improves accessibility and social equity
- Has a positive effect on health
- Reduces urban air pollution
- Needs little investments
- There is evidence that such measures are economically viable

Postponed

Expansion of the urban motorway:

2 Million Euro travel time savings

Has a high return on investments:

Benefit to cost ratio 3:1*

* Factors not included: induced traffic, noise effects, CO_2 emissions, real estate value, quality of life….

Approved for funding

Cost-benefit Analysis for sustainable urban transport measures

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Challenges	Potential Consequences
An accurate CBA requires a high amount of data	Socio-economic benefits or costs are underrecognized
Travel time dominates CBA results	CBAs may favour traditional measures (e.g. road expansion)
CBAs do not encapsulate the full range of externalities	Some benefits of sustainable transport measures are not reflected in the CBA results

CBA

Yes — **No**

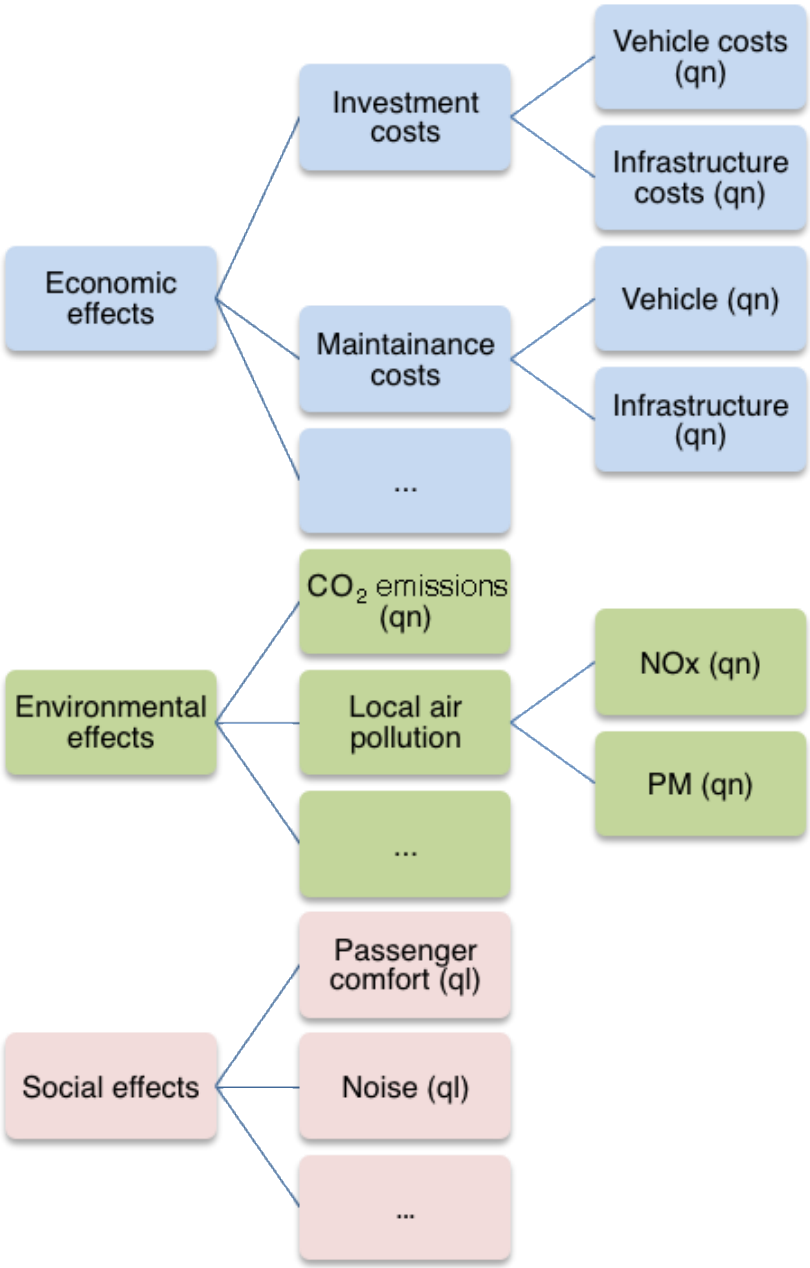
- Congestion charge
- Cycling infrastructure
- Bus priority
- People friendly streets

THE HOLISTIC IMPACT ASSESSMENT APPROACH
–
COMBINING CBA AND MCA

The proposed approach

- Simplified method based on MCA and optional CBA
- Steps:
  1. Describe project and alternatives
  2. Identify effects and indicators
  3. Impact assessment
  4. Normalisation
  5. Criterion weighting
  6. Visualisation and interpretation
  7. Sensitivity analysis
  8. Communicate results

Broad range of indicators can be included!



Normalisation

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Translate the performance figures to a comparable scale

Compare performance without the need to monetize indicators!

Can be applied to a variety of measures!

Maximum score approach:

$$Score\ C1(A) = \frac{x_{C1(A)}}{\left|x_{C1(mox)}\right|} \times F_{scale}$$

	Impacts		Normalised score	
	Diesel	CNG	Diesel	CNG
Investment	- €6.22m	-€9.72m	-6,4	-10
Operation/Maintenance	- €6.82m	- €5.95m	-10	-8.72
CO_2 emissions	-60.2kt	-57.6kt	-10	-9.6
Passenger comfort	-4	-1	-10	-2.5

Example - Results

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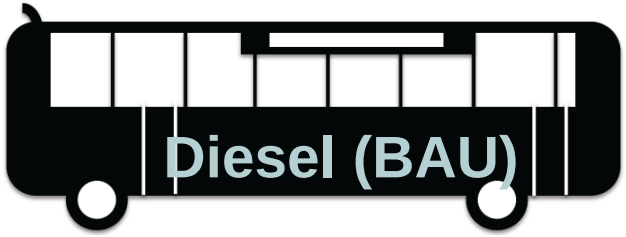
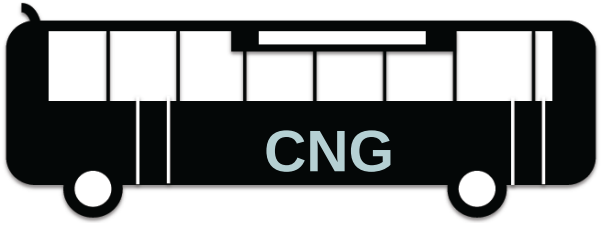
	Impacts		CBA	Normalised score		Weights	Weighted normalised scores	
	Diesel (BAU)	CNG		Diesel	CNG		Diesel	CNG
Monetary								
Investment	- €6.22m	-€9.72m	-€3.5m	-6,4	-10	26	-166.4	-260
Maintenance	-€2.4m	-€3.6m	-€1.1m	-6.8	-10	8	-54.4	-80
Fuel	-€4.4m	-€2.4m	+€1.9m	-10	-5.4	8	-80	-43.2
GHG emission	-€1.22m	-€1.16m	+€0.06m	-10	-9.6	7	-70	-67.2
Local air pollution	-€5.4m	-€4.6m	+€0.8m	-10	-8.4	23	-230	-193.2
Economic results	∑-€19,6m	∑-€21,4m	**BCR: 0.63**				-600.8	-643.6
Non monetary								
Noise	-6	-2		-10	-3.3	10	-100	-33.3
External city image	1	3		3.3	10	9	29.7	90
Passenger comfort	-4	-1		-10	-2.5	5	-50	-12.5
PT non-user comfort	-5	-1		-10	-2	4	-40	-8
Overall results				***-63.5***	***-41.2***		**-761.1**	**-607.4**

An economic assessment can be integrated!

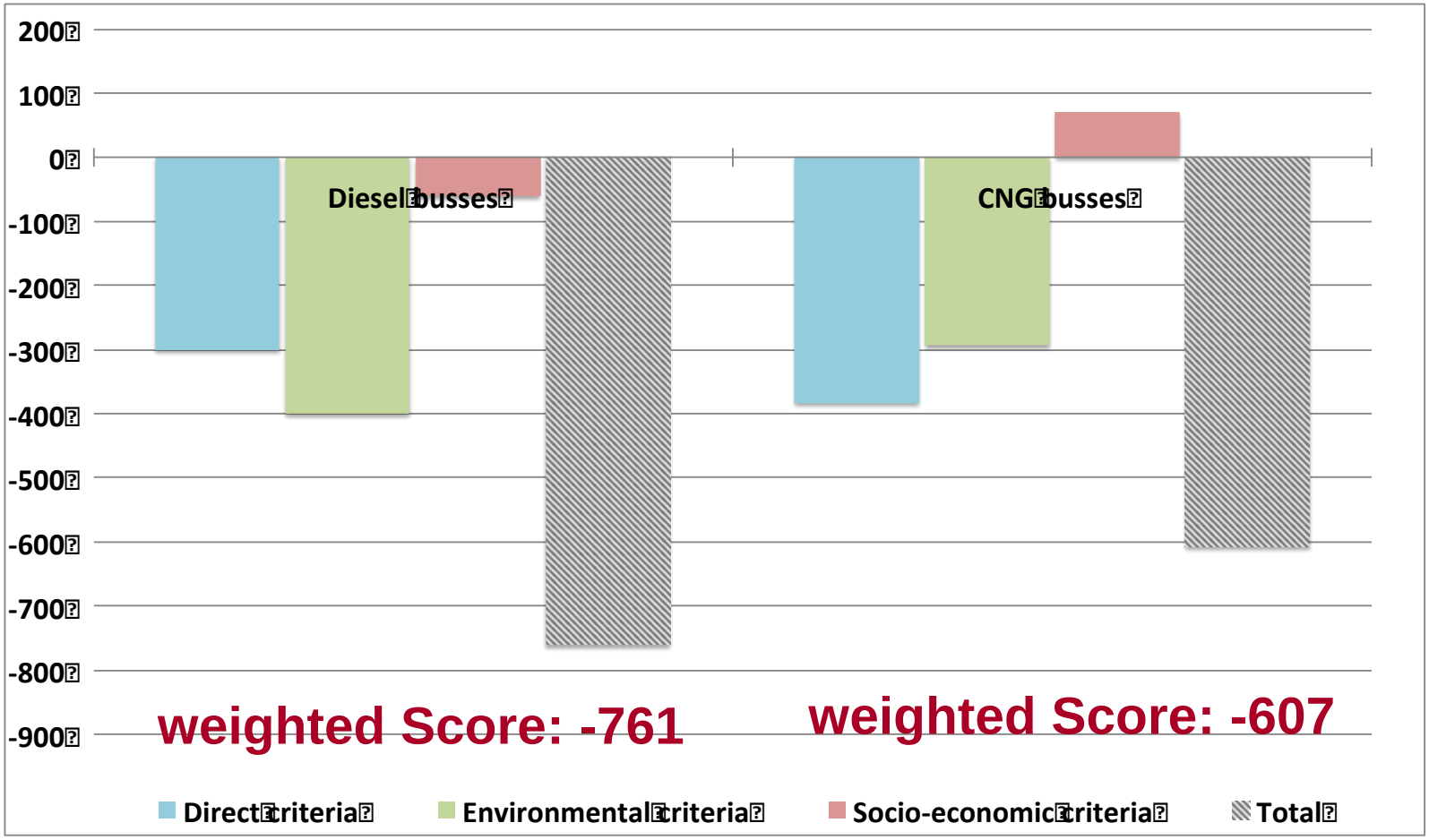
Example - Results





Score: -63,5

BCR: 0.63
Score: -41,22



New options for data collection and low cost measures

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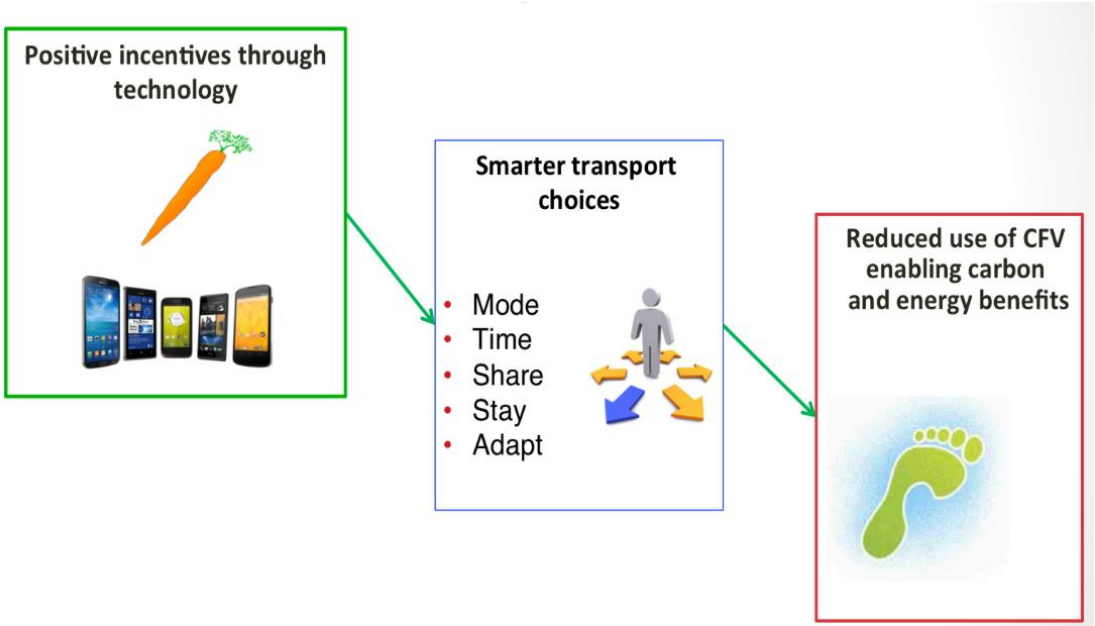
EMPOWER
Rewarding Change



http://empowerproject.eu/

Conclusion / Discussion

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- Conventional assessment methods are often not suitable for sustainable mobility measures
- Approaches like the TIDE impact assessment method account for a wider variety of effects
- A range of decision support tools exist for individual purposes

→ **Integrated Transport Planning needs integrated assessment and decision support tools**

→ **What is needed in terms of assessment and decision support tools to accelerate the implementation of sustainable transport measures?**

→ **Is it possible to combine existing decision support tools?**

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THANK YOU

Further information:

Impact assessment methodology for urban transport innovations - A handbook for local practitioners

Methodologies for cost-benefit and impact analyses

TIDE
Transport Innovation Deployment for Europe

www.tide-innovation.eu

SEVENTH FRAMEWORK PROGRAMME

Evidence
economic benefits of sustainable transport

http://evidence-project.eu

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