European Methodology for Valuing Changes in Transport Accident Risks

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Transport Project/Intervention Assessment

Aid for answering the question:

Is a transport project – for example a safety–related intervention - worthwhile from an overall social point of view?

Principle Approach

- **Comparison of a reference scenario (without project) with a project scenario (with project); differences are allocated to project.**
- **Assessment over life time of project (or at least 40 years) and discounting to net present value**

  -> increase of economic values (income elasticity 0,7 to 1)
- **Integrated assessment (a multidisciplinary process of synthesizing knowledge across scientific disciplines with the purpose of providing all relevant information to decision makers to help to make decisions).**

  thus not only accident risks and costs, but – as far as relevant – time use, noise, climate change, air pollution, welfare/utility gains/losses should be assessed.

Principle Approach II

- **Impacts are expressed in monetary units**

  ->allows transfer of values, units are conceivable, direct use of results in CBA and for internalising via taxes possible.

- **Assessment of intangible impacts is based on the preferences of the affected well-informed population.**

  E.g. use of contingent valuation studies (WTP), choice experiments,…

- **Use of factor costs (prices minus indirect taxation), real values in € of a common base year (e.g. $€_{2002}$), PPP (purchase power parity) adjusted values.**

Categories of Accident Risks

Fatality: death caused by the accident **(incl. after 30 days -> correction)**

Serious injury: injury requiring hospital treatment and/or having lasting injuries (excl. fatalities)
further differentiation would be helpful

Slight injury: injury not requiring hospital treatment or effects quickly subside

Accidents with material damages only

- associated costs small compared to casualties; cost data assumed to be available in different countries

Accident Risks

Recommended Correction for Unreported Accident Impacts

Road transport: use country-specific values if detailed studies are available (e.g. for DK, DE, SE, UK, CH, NO).

Otherwise use following correction factors:

	Fatality	Serious injury	Slight injury	Average injury	Damage only
Average	1.02	1.50	3.00	2.25	6.00
Car	1.02	1.25	2.00	1.63	3.50
Motorbike/moped	1.02	1.55	3.20	2.38	6.50
Bicycle	1.02	2.75	8.00	5.38	18.50
Pedestrian	1.02	1.35	2.40	1.88	4.50

b) Other modes: underreporting is not an issue. Use evidence if available, otherwise use correction factor 1

Accident Risks

Cost components:

Direct cost: **medical and rehabilitation cost, legal cost, emergency services and property damage cost.**

Indirect cost: **lost capacity of producing goods and services (net lost production!)**

Value of safety per se: **WTP to reduce accident risks; requirement: values from up-to-date stated preferences studies**

Value of a Preventable Fatality

- Value of a preventable fatality: fatalities are not prevented, but postponed, however VPF may be used as proxy for average life years lost (0,5*life expectancy).
- Same value for the whole EU or country specific values?
- Taking account of risk aversion?

Proposed default values

- **WTP for reduction of fatality risks:**
  central EU value: 1,25 Mio € per PF 2002,
  to be adjusted for future years with per capita GDP growth
  to be transferred into country specific values with PPP adjusted per capita income
  uncertainty range factor 1/3 to 3 !
- **Direct and indirect economic costs per PF:**
  10% of WTP for a PF.
- **WTP to avoid injuries: from ECMT 2000:**
  severe: 13% of VPF; slight 1% of VPF
- **Direct and indirect economic costs per injury**
  source: COST 313 report 'socio-economic costs of road accidents, 2004

Fall-back Values for Casualties ($€_{2002}$ per case)

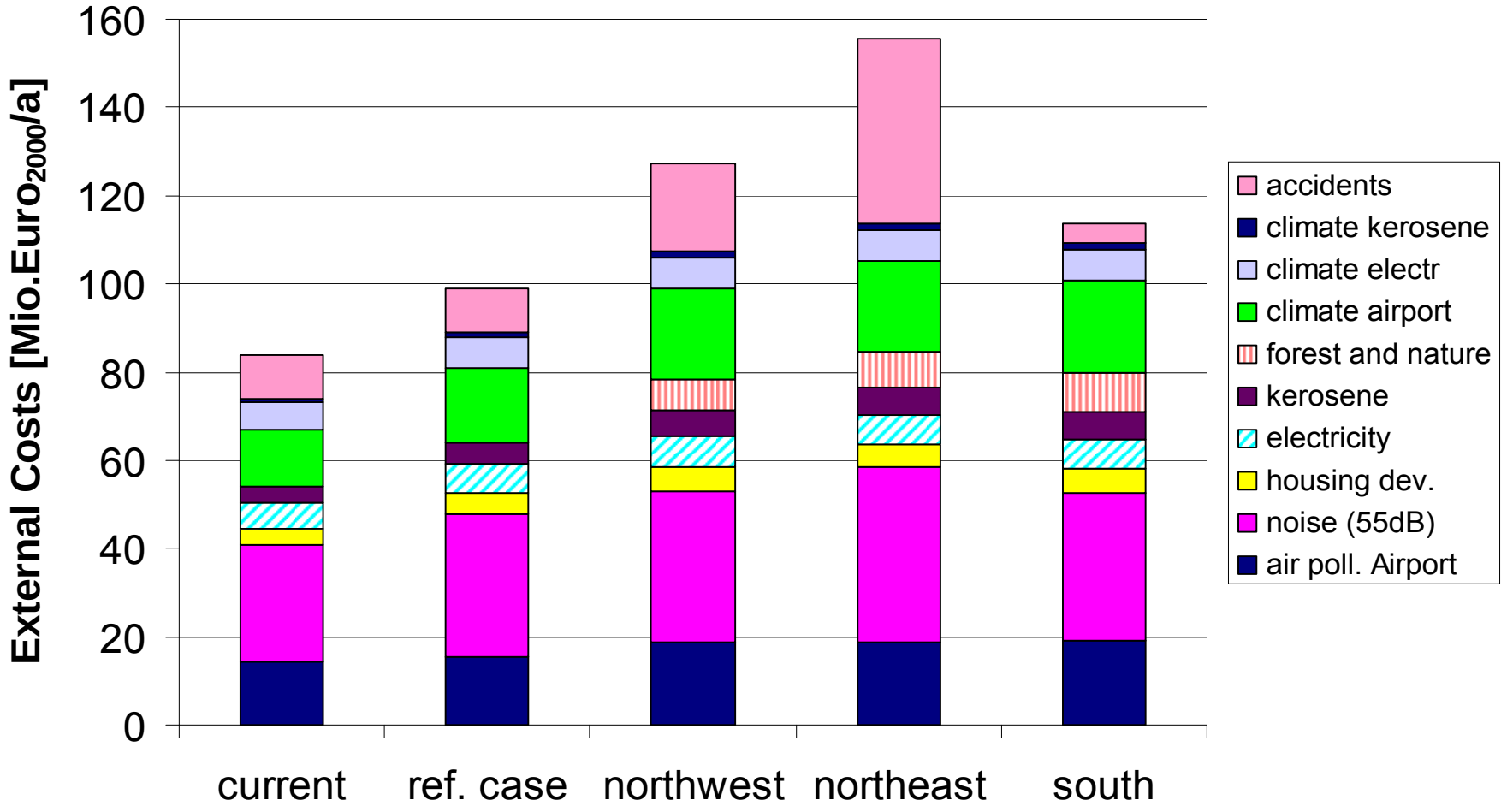
Country	Fatality	Severe injury	Slight injury
	(1000 $€_{2002,PPP}$, factor prices)		
Czech Republic	932	125	9,1
Finland	1,548	206	15,4
Germany	1,493	207	16,7
Greece	1,069	140	10,7

Risks and Uncertainty

Recommendation

- **To undertake sensitivity analysis for the following assumptions:**
  - **Discount rate;**
  - **Investment cost (for optimism bias);**
  - **Valuation of safety, life expectancy changes and noise costs;**
  - **Value of travel time saving;**
  - **Growth of real GDP and of real wage rates;**
  - **Traffic growth;**
  - **Climate change costs;**
  - **Producer surplus (when estimated).**
- **To undertake Monte Carlo simulation analysis, if resources and data allow.**

Example: Building of a new (additional) runway at the Frankfurt airport – external costs of different alternatives



The guidelines, report on current practice, results of the survey and other information is available on the HEATCO webpage:

http://heatco.ier.uni-stuttgart.de