


**Can TERM determine the environmental impact of transport?
Reflections on a core set of transport indicators**

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Indicators for the environmental impact of transport

- The Transport & Environment Reporting Mechanism (TERM) in EU since 1999 to “measure the integration of environmental concerns in transport policy.”
 - a.o.: “Is the environmental performance of transport improving?”
 - ⊗ precursor: OECD environmental indicators (last 2001) ⊗
 - ⊗ off-springs: SUMMA, ETIS, ... – “ideal” set, data problematic ⊗
 - ⊗ competitors: ASSESS was used for Mid-term review of EU transport policy
 - ⊗ No indicators for transport and environment in use in Germany
 - ⊗ Countless indicator sets at local level treat transport.
- Only set of transport’s environmental indicators with real data in EU.
- Designed for policy monitoring and as role model for other sectors.

This talk: Analysis of internal concept, indicators and data

Science can help in


- definition of sound concept,
- definition of appropriate indicators,
- provision of reliable data,

internal

Review: Have indicators delivered,

- are they useful – what are institutional provisions?
- and used – what procedures in place?

external


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I. TERM-concept: All relevant environmental impacts covered?

Cross-check for

- completeness with Life Cycle Assessment and Strategic Environmental Assessment.
 - classification of TERM indicators according to impact categories
- relevance according to German Federal Environment Agency for LCA (UBA 1999) :
 - of impact category: „Ecological importance“ and „distance-to-target“; evaluations for Germany – no EU assessment available,
 - of transport: Specific contribution to overall pressure.
My cut-off level: >5%.
- Identify core indicators – by aggregation or selection (pre-cautionary principle).
 - representative for impact AND specific for transport AND data available
 - Provide focus (DPSIR scheme in background).

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I.1: Impact: Climate change

- TERM indicators for transport operation:
 - fossil fuel consumption and
 - emissions of direct greenhouse gases: CO₂, N₂O, CH₄
- Ecological relevance (UBA 1999): +++++
- Distance-to-target (UBA 1999): +++++
- **Specific contribution** of transport (2001, EEA2003a):
 - 32% of final energy consumption,
 - 21% of CO₂-eq.
- **Suggestion:** Choose emissions of greenhouse gases, as directly related to impact.

I.2: Impact: Stratospheric ozone depletion

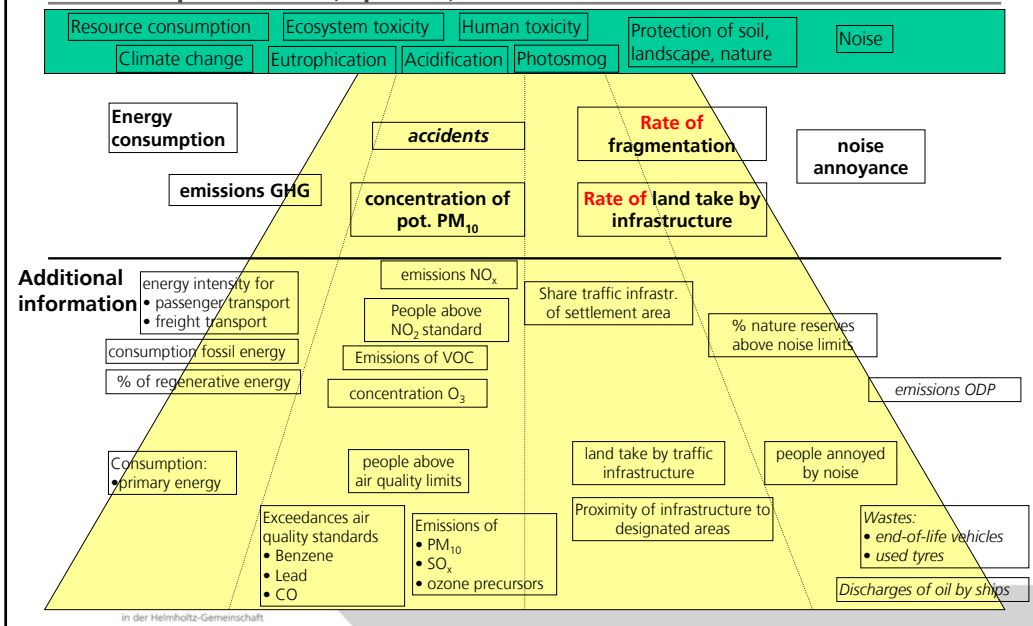
- No TERM indicator
- Ecological relevance (UBA 1999): +++++
- Distance-to-target (UBA 1999): ++
- **Specific contribution** of transport (2001, EEA2003a):
<<5% of ozone depleting substances: HFCs, SF₆, N₂O
- **Suggestion:** No **core** indicator.

I.3: Impact: Air pollution - Human health

- TERM gives
 - Emissions - annual national totals transport: CO, NH₃, NO_x, NMVOC, prPM, SO_x
 - Concentrations (selected urban points): NO₂, PM₁₀, SO₂, O₃
- Group by impact categories:
 - Toxic pollutants: Elemental carbon, benzene, aldehydes missing!
 - Photosmog: Aggregate into ozone forming potential.
 - Particles: Aggregate into particle forming potential (de Leeuw 2002)
- Ecological relevance: ++++ Particles >> Toxics >> Photosmog,
- Distance-to-target ++++ (Lambrecht et al. 1999; UBA 1999; WHO 2004, 2005; Borken 2005)
- Specific contribution of transport (2001, EEA 2003): 50% of TOFP, 35-40% of PFP.
- Suggestion: Use particle forming potential (pre-cautionary principle), if only one indicator.

! Reasoning only for EU/national area. Different pollutants might be more important in individual places.

II. Proposal for core TERM indicators, that are representative, specific, non-redundant AND data available



III. Data are problematic – focus the more important

Indicator	Time	Space	Accuracy
Final energy consumption	1	1	<5%
Emissions of climate gases	2	1	<5%
Accident fatalities	1	2	<5%
Accidental oil discharges at sea	1	1	2
End-of-life vehicles	1	1	3
Oil slicks discovered	2	1	30-40%
Emissions: Acidifying pollutants	2	2	30-40%
Emissions: Eutrophication pollutants	2	2	30-40%
Emissions: Ozone precursors	2	2	30-40%
Emissions: Particle precursors	2	2	50%
Accident injured	a	b	
Proximity to protected areas	3	1	3
non-fragmented areas	3	2	3
Exposure to NO ₂ , SO ₂ , O ₃	3	3	2
Exposure to PM ₁₀	3	3	3
Exposure to traffic noise	c	c	30-50%
Annoyance by traffic noise	c	c	30-50%
Land take	3	3	3
Used tyres	3	3	3

Quality/comparability as assessed in TERM fact sheets

Green: Good
Yellow: Medium
Red: Poor

Bold:
Indicators suggested as
key representatives.

**TERM fact
sheets 2002ff
or estimated**

IV. Summary on TERM indicators

Core indicators can help...

- ... to answer central question: „What is the environmental performance of transport?“
- ... to manage data improvements: Reliability, comparability, timeliness,
- ... to focus message.

Limitations:

- Beware of simplification:
Other indicators needed for analysis of causes and potential measures,
- Selection represents a value judgement on importance and purpose
=> Review selection regularly,
- Use review as communication and education process !

Factors for success and failure of indicators - Theses

I. Concept must be sound:

- Focused on important issues, dynamics, policy levers
- Integrated in causal chain / explanatory model,

II. Data must be:

- up-to-date and reliable.

III. Integrated in a context:

- Institutional fit (purpose, detail, timing,...) and ownership.

IV. Routines help to gain

- trust, credibility, awareness.

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