Insights from life cycle modelling

Presentation at the UNEP/SETAC Life Cycle Initiative workshop on

    Knowledge mining on Product Sustainability from LCA Studies for

    Effective LCM Practice, Berlin, 2011.09.01

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Examples of common knowledge that changed due to LCA-based knowledge

- Bio-based inputs are better than fossil
  - No, bio-based inputs often have large impact via area demand

- Paper bags are better than plastic bags
  - No, paper often heavier and demands more fuel

- Recycling is not always good, incineration just as good
  - No, recycling of separate fractions is nearly always preferable

- Buy local – reduce transport distance
  - No, transport distance is not the problem – transport mode is

...and many more prejudices will fall in the future

- as currently available knowledge spreads

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Knowledge is not the problem

We know what impacts on nature:

- Nature occupation (26% of global area)

- Global warming (14)

- Invasive alien species (9)

- Nutrification (4)

- Acidification (2)

- Photochemical ozone (1)

- Ecotoxicity (1)

- Overexploitation of biotic resources (?)

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Knowledge is not the problem

We know the impacts on human health:

- Poverty-related diseases (50 QALY/1000 pers.)
- Accidents (14)
- Occupational health (7)
- Respiratory inorganics (6)
- Noise (2)
- Human toxicity (0.3)
- Food-borne diseases (0.3)
- Global warming (0.2)
- Ionising radiation (0.1)
- Ozone-layer depletion (0.2)

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Knowledge is not the problem
We know **where** the problems are, e.g. deaths from air pollution:
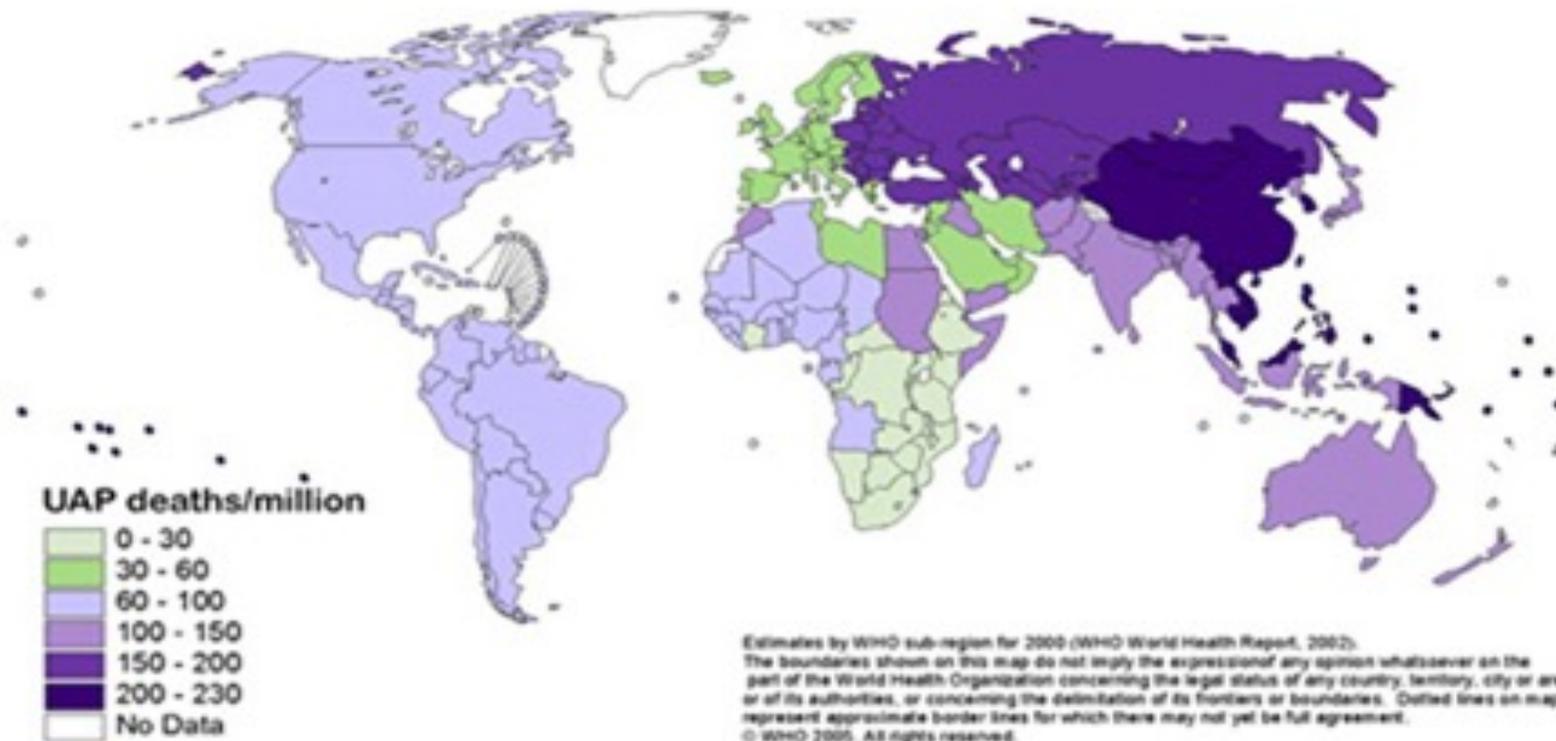

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UAP deaths/million

- 0 - 30
- 30 - 60
- 60 - 100
- 100 - 150
- 150 - 200
- 200 - 230
- No Data

Estimates by WHO sub-region for 2000 (WHO World Health Report, 2002).
The boundaries shown on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.
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Source: WHO

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Knowledge is not the problem

We know what activities are responsible:

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Knowledge is not the problem

We know most of the alternatives:

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- Solar-based energy-forms

- More (environmentally) efficient and biotechnologically based agriculture, e.g. production of primary protein from cellulose

- More gentle fishing methods

- Recycling of metals, biological extraction methods, containment of harmful substances from mining

- Planning laws reducing impacts from dwellings and infrastructure

- Substitution of solvents, heavy metals and hazardous chemicals

- …

- etc.

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Policy messages from insights in life cycle modelling

- Focus on the hotspots

- Focus on improvements, not past performance

- Focus the policy tools (issue-specific or product-oriented)

- Focus on needs rather than on means (learn from the functional unit)

- Focus on systems: Understand the value of by-products (recycling)

- Integrated view on economic, environmental and social externalities

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