39th LCA Discussion Forum:

Summaries & input for small group discussion

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Summary Göteborg

- Parametrization on LCA
- Input/Output LCA -> EXIOPOL
- Regional findings in mining LCA in South America
- Regional studies of Eastern Spain
- Normalization
- Regional case studies:
  – energy crops (Chile), cotton (US), dairy feed (UK), power mix (Latvia)

Summary of Regionalization
in LCIA session at LCA IX in Boston

11/12/09

http://www.lcacenter.org/LCA9/special/Regionalization.html

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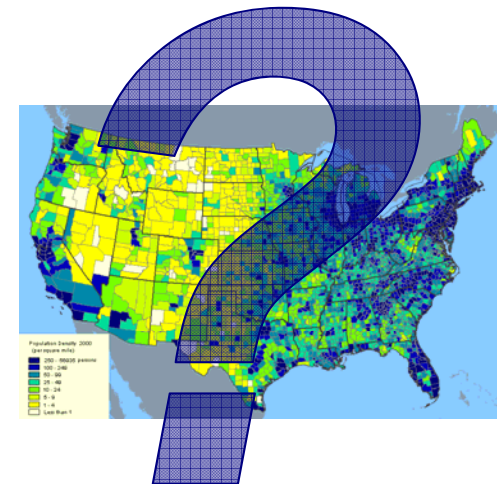
LCA forum DF39, Zurich, Switzerland, November 13, 2009

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Session presentations and key results

- **Integration with other tools:**
- <u>Integration of LCIA and ERA</u> for the assessment of contaminated sediment remediation options
    - Michael Ditor
  - Each site remediation option is evaluated both with and without the integration of ERA results to assess the extent to which site-specific data can modify the conclusions obtained using a generic LCIA method

- **Inventory:**
- Geographical extrapolation of <u>crop life cycle inventories</u> and impacts
    - Thomas Nemecek et al.
  - Results reveal an important variability in impacts between different countries for the same crop

Session presentations and key results

- **Impact assessment (human health from pollutants):**
- GLOBOX: a spatially differentiated global fate, intake and effect model
  - Reinout Heijungs and Anneke Sleeswijk
    - Spatial differentiated CFs differ by many orders of magnitude, especially for releases to soil and fresh water; CFs may be more than 95% wrong for up to 40% of the world's emissions
- Spatial variability and optimal regional scale for intake fractions in Canada
  - Rima Manneh et al.
  - Necessary to have a higher resolution when assessing human health impacts caused by pollutants emitted to water; efforts should be focused on how to make results compliant with inventory data; need to consider other types of uncertainty (parameter, temporal)
- Regionalization of LCIA: geographic differentiation vs archetypes
  - Sebastien Humbert et al.
    - Archetype approach can be as accurate as geographic, but more practical to implement
- LCIA Framework for Characterizing Human Health Benefits and Impacts from Emerging Biofuels
  - Agnes Lobscheid and Thomas McKone
    - Improved LCA methods that can account for complex and non-linear interactions; calculated county-level CF estimates that can be aggregated to different spatial scales; created practical tools for LCA based on high-quality science and engineering that can be used by government, industry, and consumers

Session presentations and key results

- **Impact assessment (water use):**
- Capability and challenges of regionalized LCIA: the <u>water</u> case
    - Stephan Pfister et al.
    - Need to use different scales for different questions, identify need and potential for increased spatial resolution, aggregate as late as possible, provide proper link to inventories, and consistently assess uncertainties.
- Regionalisation of impacts from <u>water use</u>
    - Anne-Marie Boulay et al.
    - Regionalisation is crucial in water use impact characterization.
    - Through the following parameters: Scarcity, User's distribution, Water functionality, Adaptation Capacity, Regional Compensation scenarios, and Energy Grid mix.

- **Impact assessment (ecosystems):**
- Estimation of regional characterization factors for <u>aquatic eutrophication</u>
    - Alejandro Gallego et al.
    - Demonstrate the possibility of calculating aquatic eutrophication CFs at a regional scale considering the specific characteristics of three different ecosystems: spatial differentiation and application of transport factors provide a more realistic definition of the impact
- Regionalisation of Ecosystem Sensitivity for <u>Acidification</u>: From the Local to the Global Scale
    - Pierre-Olivier Roy et al.
    - Possible to model receiving medium sensitivity using an existing model, without being limited by missing data.

Summary of regionalization @ Boston LCA IX

- Inventories can vary greatly based on region
  - Nemecek
- Spatial human toxicity characterization factors vary greatly based on region or archetype of emission and size of regions
  - Heijungs, Manneh, and Humbert
- It is possible to create and apply spatialized tools
  - McKone
- Need to use different scales and different key parameters for different questions and impact categories
  - Pfister, Gallego, Boulay, Roy
- Can also integrate scales from non-LCA methods, such as Environmental Risk Assessment
  - Ditor

Discussion tables

Windows

Software and Data Format

Biodiversity (Land and Water)

Practical Implementation

Modelling and Impact Assessment

Developing Regionalized Inventories