Importance of a strong LCA database

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   Global LCA Data Access

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The need for international cooperation on data

Life cycle approaches are data-hungry!
UNEP working with others to enable life cycle knowledge and approaches

**DATA**
- Global Network of Interoperable LCA Databases
- Global Guidance Principles LCA DB management

**METHODS**
- Environmental Footprints (CF; WF; biodiversity...)
- Social
- Life Cycle Costing

**TOOLS**
- Hotspots
- Product Sustainability Information

**IMPLEMENTATION**
Decision-Making for SCP and green value:
- Public Policy
- Private Sector
- Individual Consumers
- Technology

**TOWARDS SDGs**

**CAPACITY DEVELOPMENT**
Towards international guidance and interoperability - Tools - Capacity development - Roadmapping for national DBs

Towards easy USER access by 2017 to the main LCA databases with assessment of FITNESS FOR PURPOSE

UNEP working with other in LCA databases

GLOBAL NETWORK OF INTEROPERABLE LCA DATABASES
- Easy Network access for users
- Common Nomenclature
- Common Metadata descriptors

Towards international review guidance - Methods and tools (criteria and process) - Capacity development

Towards global consensus for interoperability and user access to sound LCA data

Various LCA databases, with different formats and organization of information

LCA datasets
The Global network of interoperable LCA databases

Steering Committee

- Simon Liu
- Mohd nor Azman Bin Hassan
- Hugo Schally
- TBC
- Antonia Biggs
- Sven-Olof Ryding
- Jitti Mungkalasiri
- Raul Figueroa
- Paolo Masoni
- Yuko Saito
- Anders Gautschi
- Sylvain Chevassus
- Cecilia Leite
- UNEP
- Milà i Canals

WG 1
Network Architecture and technology
Mark Goedkoop, Sangwon Suh, Johan Tivander

WG 2
Nomenclature
Simone Fazio, Wes Ingwersen, Kiyotaka Tahara, Gregor Wernet

WG 3
Metadata descriptors
Andreas Ciroth, Bruce Vigon

And more than 50 experts involved worldwide, including public and private LCA database owners, LCA software providers, academia...
UNEP activities on LCA databases and datasets

• Database level
  – Support **Road mapping** of National LCA database implementation
  – Technical support to existing National databases in developing countries: **format conversion, international guidance**
  – Promote **interoperability** in collaboration with main international databases (ecoinvent, thinkstep...)

• Dataset level
  – Development of internationally agreed **review criteria and processes**
  – Technical support to reviewing existing datasets in developing countries
UNEP/SETAC Life Cycle Initiative activities

Co-chairs: Bruce Vigon (SETAC) and Guido Sonnemann (University of Bordeaux)

Operationalize the Global Guidance Principles (GGP) on LCA databases through:
- Capacity development of (present and future) LCA database actors and stakeholders
- Development of internationally agreed conformance criteria to GGP.

Map connections between LCA National networks and National LCA database stakeholders to better support National LCA database implementation.

Co-chairs also support UNEP in technical aspects
The importance of a strong national LCA database
Need for and expected benefits from National LCA database

• National LCA datasets are needed:
  – To build authentic inventory, using national data rather than other country data for LCA studies
  – To determine and manage social and environmental impacts of business/economic activities

• Expected benefits from national LCA datasets for industry
  – Domestic: need for ‘core’ data: electricity, transportation – used across all economic activities
  – Export: have business requirement, therefore, conducts LCA

• Strong means:
  – Metadata
  – Periodic maintenance/update
  – Involving all stakeholders (business, government, academia standards body)
Datasets review
4. Dataset review

Existing:
- PEF/OEF rules for reviewers
- EC-JRC reviewers registry (different levels of compliance Nov -15)
- databases review processes
  - CLCD
  - Ecoinvent (editorial board)
  - GaBi
  - IDEA
  - Mexicanihu...  

In progress :
- EC-JRC entry level requirement for reviewers
- EC-JRC proposal for reviewing clusters of homogeneous LCI datasets against ILCD Entry Level and PEF requirements
- LC Init GGP Conformance criteria at dataset/flow level
UNEP Dataset review effort (1)
Context

UNEP technical support to 3 developing countries databases
First-of-its-kind exercise in 2015 (time constrained over 9 months)
Development of:
- Review criteria
- Review process including NDA
- Practical independent review of 40 datasets in 3 countries TH, BR, MY (2 reviewers/DS)
- Capacity of review experts in target countries (paired reviewers)
UNEP Dataset review effort (2)

key learnings

- Provided improvements information for countries datasets
- Pairing of reviewers has been successful for capacity development
- Review criteria welcome (0.5 day for review in average) → need to be further improved
- Need for reviewers to access to underlying unit processes (UP) for proper review
- Lengthy process for legal basis (NDA)
- Accessibility of the data is format dependent → hampers review quality and loss of metadata in conversion processes
- Medium term need to reflect on sustainable economic model for reviewers work
UNEP Dataset review effort (3)
next steps

- Further consensus building needed on internationally agreed guidance for review:
  - Review process (including NDA)
  - Reviewers selection
  - Review Criteria

- Will account for/involve on-going initiatives
Initiatives around the world
New datasets (1)

- Ecoinvent and GaBi making progress on data especially in developing countries:
  - Ecoinvent 3.2 released with updated electricity production DS, and new datasets in agriculture, chemicals, metals ...
  - Ecoinvent (SECO funding) IN and BR projects launched 400-500 datasets/country over 4 years
  - GaBi recently published over 600 datasets from BR, UK, CN
  - Latest GaBi addition of ~200 Indian specific datasets on chemicals, renewables, building materials, electronics, energy and transports

- Agriculture sector: WFLDB (900 datasets published last year)
New datasets (2) - Europe

- **German Ökobaudat**: within the InData project 700 new datasets in construction products

- **Probas** (Federal Environmental Agency Germany, 8,000 datasets overall) has recently published new LCA data on ICT equipment and ~200 new datasets on raw material demands

- **Swedish Life Cycle Center**
  - Developing a national research and innovation agenda on LCA data, aim to benchmarking data for Swedish conditions
New datasets (3) – Latin America

• Brazil National Database launched TODAY – discussing collaborations with Chile and Mexico

• Chile :
  – Ecobase launched in 2015-147 datasets available on construction and food products
  – Existing datasets on electricity, steel and copper production, forestry and waste

• MEXICANIUH :
  – Web based platform for a Regional Life Cycle Inventory database compatible with Ecospold and ILCD formats.
  – 80 datasets in total including construction, electricity, gas and fuels, biofuels, steel, paper, plastics, shoes industry

mexicaniiuh
1. New datasets (3) Asia

• China (missing)

• Thailand
  – Thai National Database released (1,500 datasets)
  – Next steps:
    • Social criteria will be added in National database to support SDG along with economic and environment dimensions

• Malaysia
  – Ongoing upgrade of existing datasets as validity date expired in 2015.
  – Additional new datasets to be included in the database
2. New initiatives

Roadmaps for national LCA databases studied in 2015:
- Turkey
- Peru
- India
- South Africa

Other Initiatives:
- World Apparel & Footwear Life Cycle Assessment Database (WALDB) Quantis + sponsors Nov 2015

- Global Feed LCA Institute (GFLI): launched by FEFAC, aims to provide a freely accessible, transparent LCA database of feed ingredients (PEF perspective) – first delivery by mid 2016
3. Interoperability and accessibility (1)

Accessibility:
- Public release of ~ 2000 datasets by GaBi in LCDN

Harmonisation
- agriculture databases inventory methodologies: allocation, LUC, water (Agribalyse, Agrifootprint, WFLDB, Ecoinvent)
- EC-JRC and Brazil LCA community sector dialogue
- Chile, Mexico and Brazil dialogue
- Indata Initiative: harmonising the national activities around type III environmental product declarations (EPDs) in construction sector in Europe- the group has committed to an international data network (pilot phase)
3. Interoperability and accessibility (2)

Interoperability efforts

- **Software and data providers**, connected to the PEF pilots have started to communicate on how to solve the data conversion and nomenclature issues
- EC-JRC has been commissioning a **format converter** (Greendelta)
- UNEP efforts on format conversion and national standard development of DS in TH, MY, BR → led to the practical development of 60 datasets
3. Interoperability and accessibility (3)  
ILCD entry levels updated

**LCDN Entry Level requirements**

- **Method**
  - ISO 14040 and 44 compliance process-based LCA

- **Quality**
  - ISO quality criteria
  - Completeness, and Representativeness (technological, geographical, time-related) to be documented

- **Nomenclature**
  - Compliance with ILCD nomenclature document
  - Use of ILCD reference elementary flows

- **Documentation**
  - Minimum documentation extent
  - ILCD format

- **Review**
  - External reviewer
  - Review Documentation

**PEF requirements**

- DQR (Scores) for Time, technology and geographic representativeness, Uncertainty, Completeness, Methodological appropriateness and Consistency.
3. Interoperability and accessibility (4)

Asia

Japan
• IDEA v2 released (3,800 datasets)
  - English version: coming soon
• Mapping between IDEA and major nomenclature systems (as seen yesterday)
• Elementary flows of chemical substances emissions are being expanded
• IDEA will be released globally (SimaPro, Gabi, OpenLCA etc.)

Thailand (next steps)
- database will comply with ILCD and ISO
- National database will be internationally released in English (as soon as possible)
- Elementary flows will soon comply with ILCD (also ISO)
3. Interoperability and accessibility (5)

USA

- US efforts towards connecting LCI DB from various sectors:
  - USDA NETL, NIST, NREL
  - Towards a network of US government LCI databases called the Federal LCA Commons

With that purpose:

- USDA: expansion of the NAL Thesaurus.

- The LCA Harmonization Tool: uses advanced technology based on semantic web architecture that will semi-automate the process of harmonizing elementary flows in life cycle inventory (LCI) and life cycle impact assessment (LCIA) datasets. Using newly defined JSON-LD format for LCA (Greendelta)
3. Interoperability and accessibility (7)

"The aim of BONSAI is to make reliable, unbiased sustainability information on products – “product footprints” – readily and freely available whenever and wherever it is needed to support product comparisons and decisions."

- Global Impact assessment WG launched and working on an early deliverable in the form of a taxonomy for impact pathway modelling, to ensure completeness in coverage.
- Input /Output Framework WG to be launched; objective is to ensure completeness of data on economic activities by embedding the data in a global multi-regional input-output framework.

(source Bonsai website)
Clarification questions ?
"Although individual decisions may seem small in the face of global threats and trends, when billions of people join forces in common purpose, we can make a tremendous difference."

UN Secretary-General Ban Ki-Moon