Life cycle inventory databases: importance and challenges

GreenCo summit

24 -25 June 2015

Amir Safaei

International Project Manager

ecoinvent

Agenda

- sustainability and LCA

- what is LCI dataset/database?
  - ‣ Importance of using correct LCI data
  - ‣ Case-study: chair production in Turkey vs. Germany

- good practices in constructing LCI databases– ecoinvent experience

- Sustainable Recycling Industries (SRI) project

- window of opportunity for collaboration

In a survey of American enterprises...*

A third of companies said sustainability is contributing to their profits

More than two-thirds of companies have placed sustainability on their management agenda

* Kiron, D., Kruschwitz, N., Haanaes, K., Reeves, M., & Goh, E. (**2013**). The innovation bottom line. ***MIT** Sloan Management Review, 54*(3).

Sustainability & business competitiveness*

Is pursuing sustainability-related strategies necessary to be competitive?
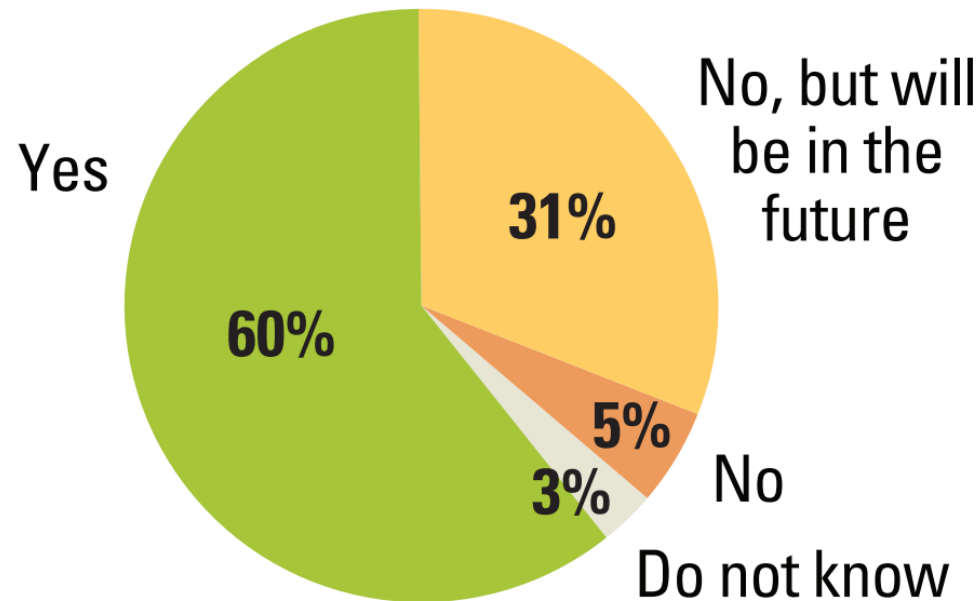
Yes 60%

No, but will be in the future 31%

No 5%

Do not know 3%

* Kiron, D., Kruschwitz, N., Haanaes, K., Reeves, M., & Goh, E. (2013). The innovation bottom line. *MIT Sloan Management Review*, *54*(3).

- Life Cycle Assessment (LCA): a <u>technique</u>
  - ‣ Address the environmental pillar of sustainability

- Life Cycle Inventory (LCI): a <u>phase of LCA</u>

- LCI dataset: LCI information of a product or service **LCI dataset of chair production**

- LCI database: An <u>organized</u> collection of LCI datasets **ecoinvent**
  - ‣ Methodology
  - ‣ format
  - ‣ review and nomenclature
  - ‣ allows for interconnection of individual datasets in application of LCA
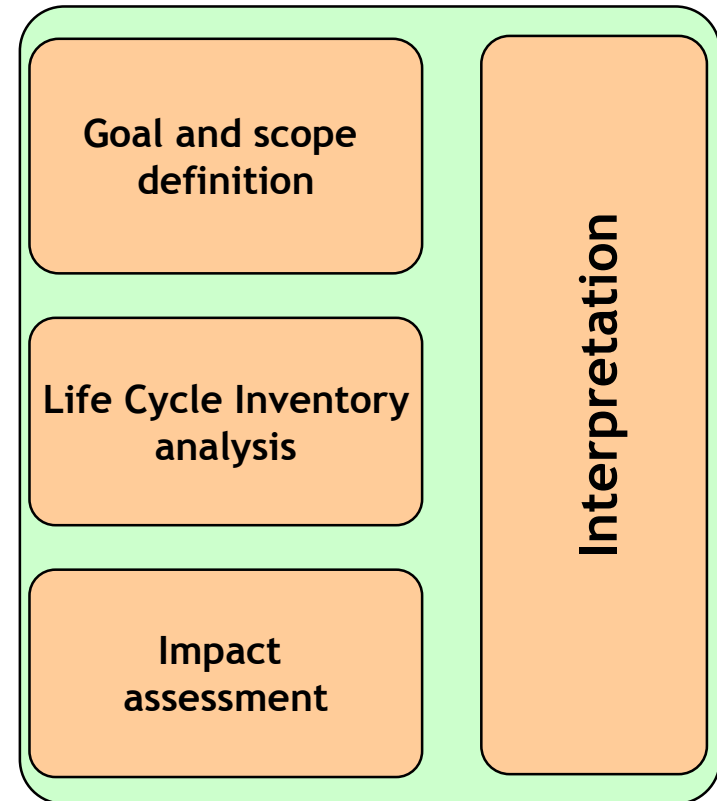
NOT an LCI dataset library

Goal and scope definition
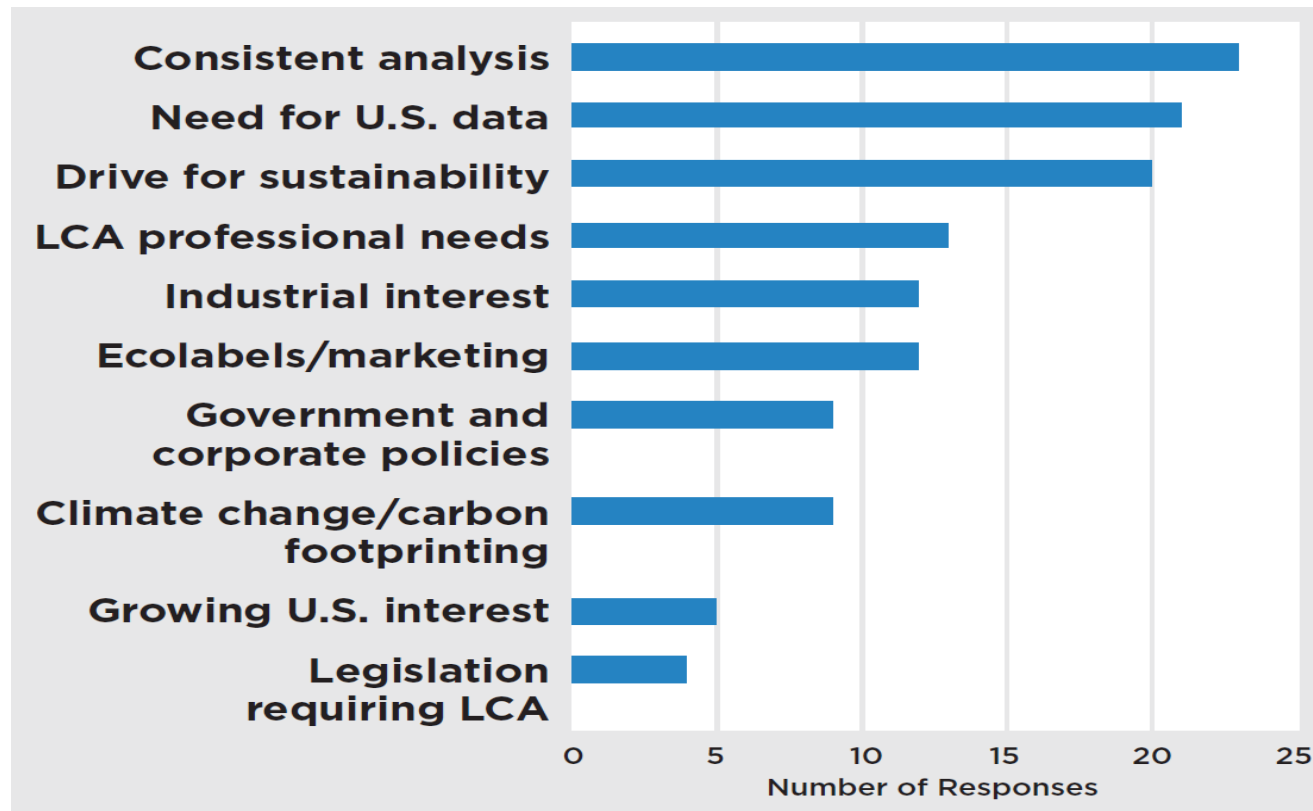
Life Cycle Inventory analysis

Impact assessment

Interpretation

More countries aim for a LCI databases...
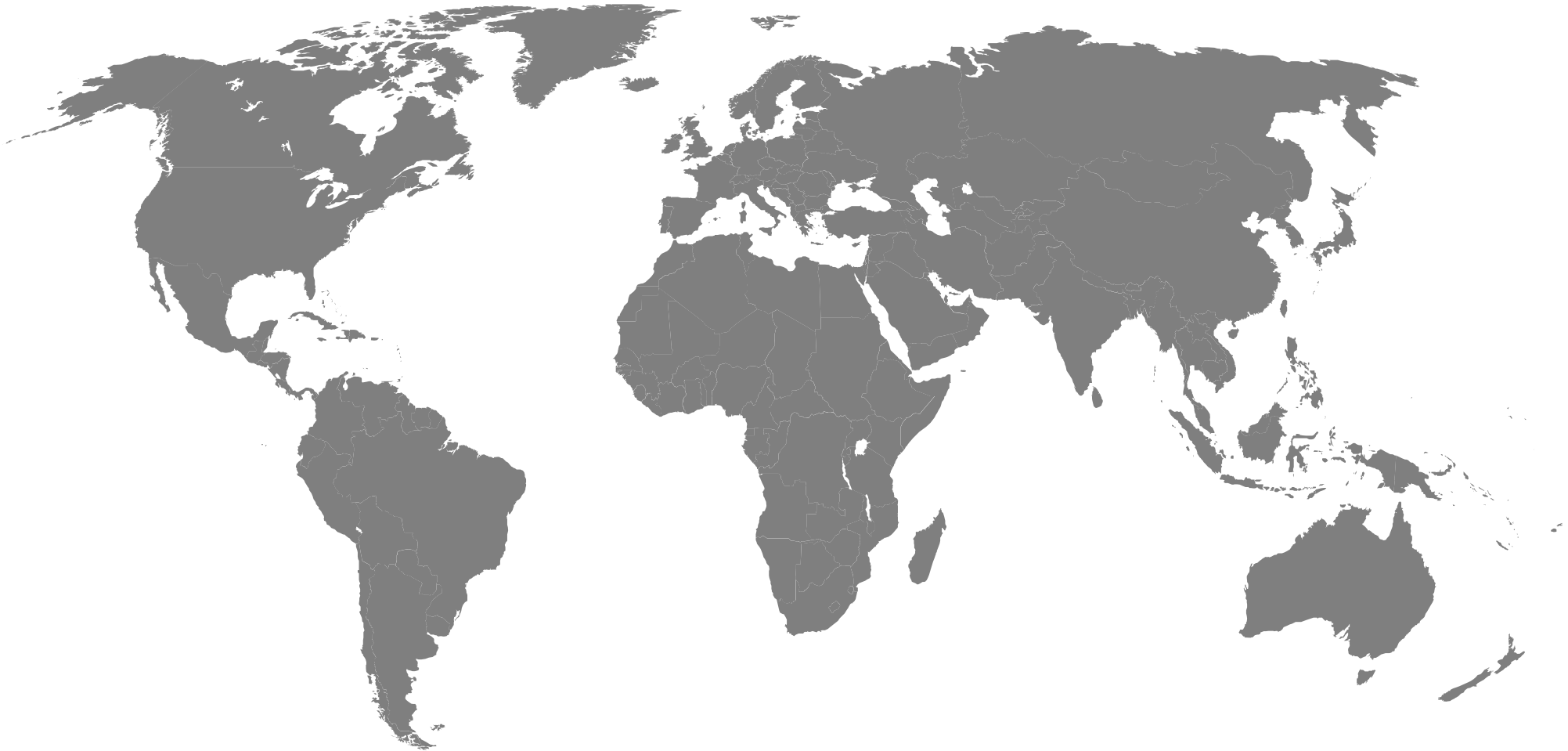
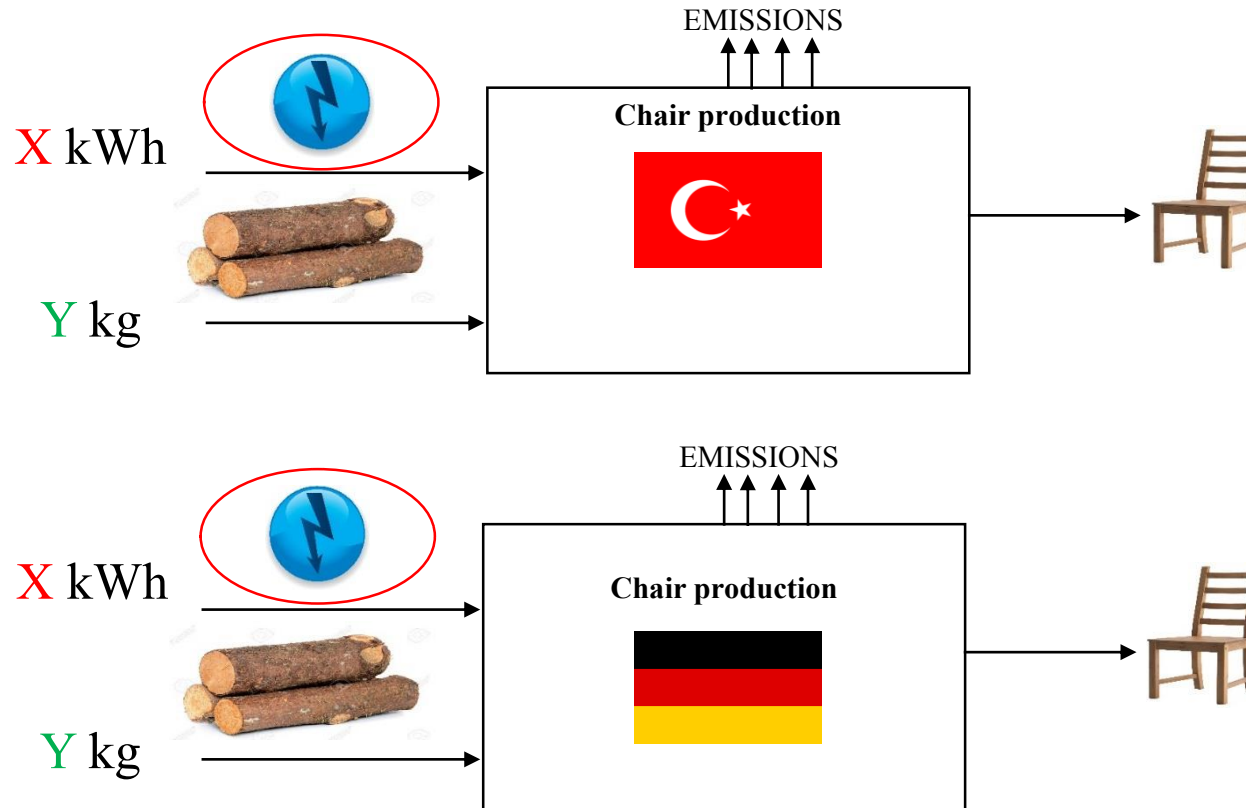# Drivers for a LCI database*

US example

* NREL. 2009. U.S. LIFE CYCLE INVENTORY DATABASE ROADMAP

LCI Data matters!
Case study of chair production

Electricity generation mix
Turkey vs. Germany

Using <u>German</u> mix to estimate the impact of chair production in <u>Turkey</u>

Germany

Germany

Turkey

Turkey

Fuel oil 1%   **Coal 18%**

Lignite 26%

Nuclear 16%

Renewables 23%

Natural Gas 9%

Hydro 3%

$g\ CO_2\ eq/kWh$

1.2

1

0.8

0.6

0.4

0.2

0

Lignite 16%   **Fuel oil 3%**   **Coal 7%**

Renewables 4%

Natural Gas 37%

Hydro 32%
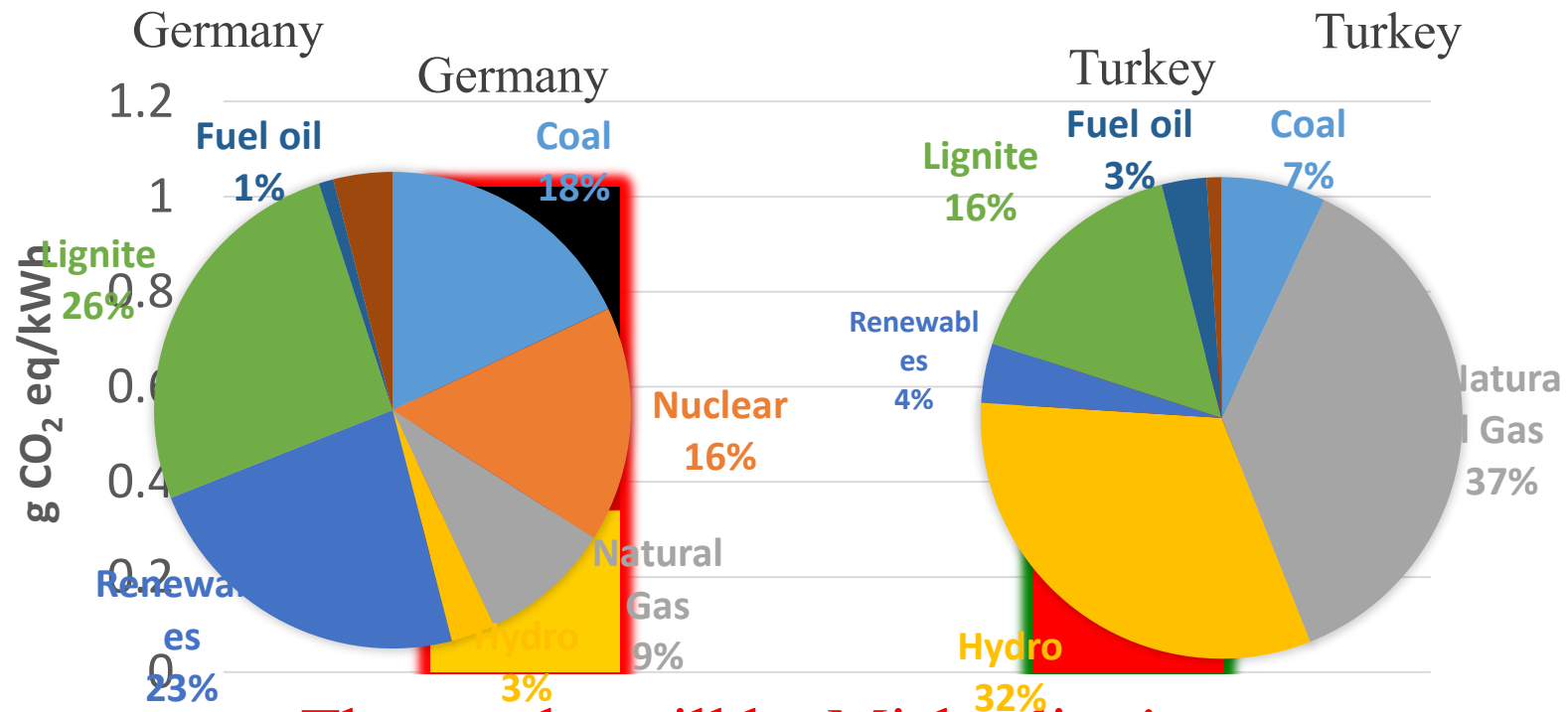
The results will be Misleading!

Participation in LCI creation initiatives

- ecoinvent started out as the Swiss national LCI network

  ‣ globally the most **comprehensive transparent** LCI database

  ‣ not-for-profit

  ‣ evolved into an international global database

  ‣ 11000 datasets from more than 40 countries

- Cooperation with emerging economies to build LCI networks

  ‣ supported by the Swiss government

  ‣ based on ongoing successful practices

SRI project motivations
LCA & LCI in emerging economies

- Environmental issues are dramatically increasing in emerging economies
  - ‣ Strong demand for life cycle-based solutions to find best approaches

- International customers demand supply chain data
  - ‣ Switzerland aims to mitigate the impact of its imported products

- Life cycle-based regulations in developed countries may cause international trade disputes

- Enterprises losing the competitive edge

Strong demand for LC-based studies and LCI data

SRI project

ecoinvent and CII through SRI project

Support the foundation of a self-sustaining free LCI database for India

The steps are

- Networking and involvement of stakeholder
  - Industrial partners, enterprises, companies
    - Policy planners
    - Academia
- building expertise on LC thinking LCA, and LCI data collection
  - creating LCI data for local (and global) databases
- Evolving into self-sustaining free regional LCI networks

Workshops are initially planned for November 2015

LCI data collection project commence this year

Conclusions [1]

- The importance of LCA and LCI for transition countries

    ‣ **LCI is not transferable**

- Indian LCI networks is moving towards providing an Indian LCI database

    ‣ Building the network

    ‣ Training, expertise building

    ‣ Setting up the foundation for a free Indian LCI database

Window of opportunity for enterprises
Benefits from participation in SRI

ecoinvent
Centre

The door is open, you are welcome to enter!

- Skills developement

  ‣ Participation in (free) LCA and LCI training by ecoinvent and CII

- LCI data developement, gathering and submission

  ‣ LCI and LCIA results

  ‣ Technical support

  ‣ Meticulous in house review by ecoinvent

  ‣ Inclusion in the largest transparent LCI database

  ‣ Make the base for the free Indian national database

  ‣ Show your commitment to Sustainability ➡ become more competitive

References

References

Kiron, D., Kruschwitz, N., Haanaes, K., Reeves, M., & Goh, E. (2013). The innovation bottom line. *MIT Sloan Management Review, 54*(3).

NREL. 2009. U.S. LIFE CYCLE INVENTORY DATABASE ROADMAP