New data in ecoinvent version 3

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Content

- The ecoinvent version 3 – methodology changes

- The ecoinvent 3.0 and 3.1 – new datasets already available

- The ecoinvent 3.2 – new datasets which will be released this year

- Database – wide updates
  - ‣ Prices
  - ‣ Properties
  - ‣ Production volumes

- Documentation

ecoinvent version 3 - timeline

- Dates of release of different versions of the ecoinvent database

  - ecoinvent 2.2

  - ecoinvent 3.0 was released in May 2013

  - ecoinvent 3.1 was released in July 2014

  - ecoinvent 3.2 will be released this year

2013

2014

2015

Type of updates

- Methodology changes and update

- New datasets

- Update of existing datasets

- Error correction

- Database – wide updates

- *LCIA methods use update*

New in ecoinvent 3 - methodology

- The methodology changes and updates have been done mainly to be able to use **more than one system model**

- Three system models are currently available
  - allocation, cut-off by classification
  - allocation, ecoinvent, default
  - substitution, consequential, longterm

New in ecoinvent 3 - methodology

- Renaming and merging of some datasets using systematic rules in order to achieve consistency

- Division of processes as known in ecoinvent v2 into activities and products

- Creation of global datasets (GLO) for all activities

- Systematic and consistent generation of markets (consumption mixes)
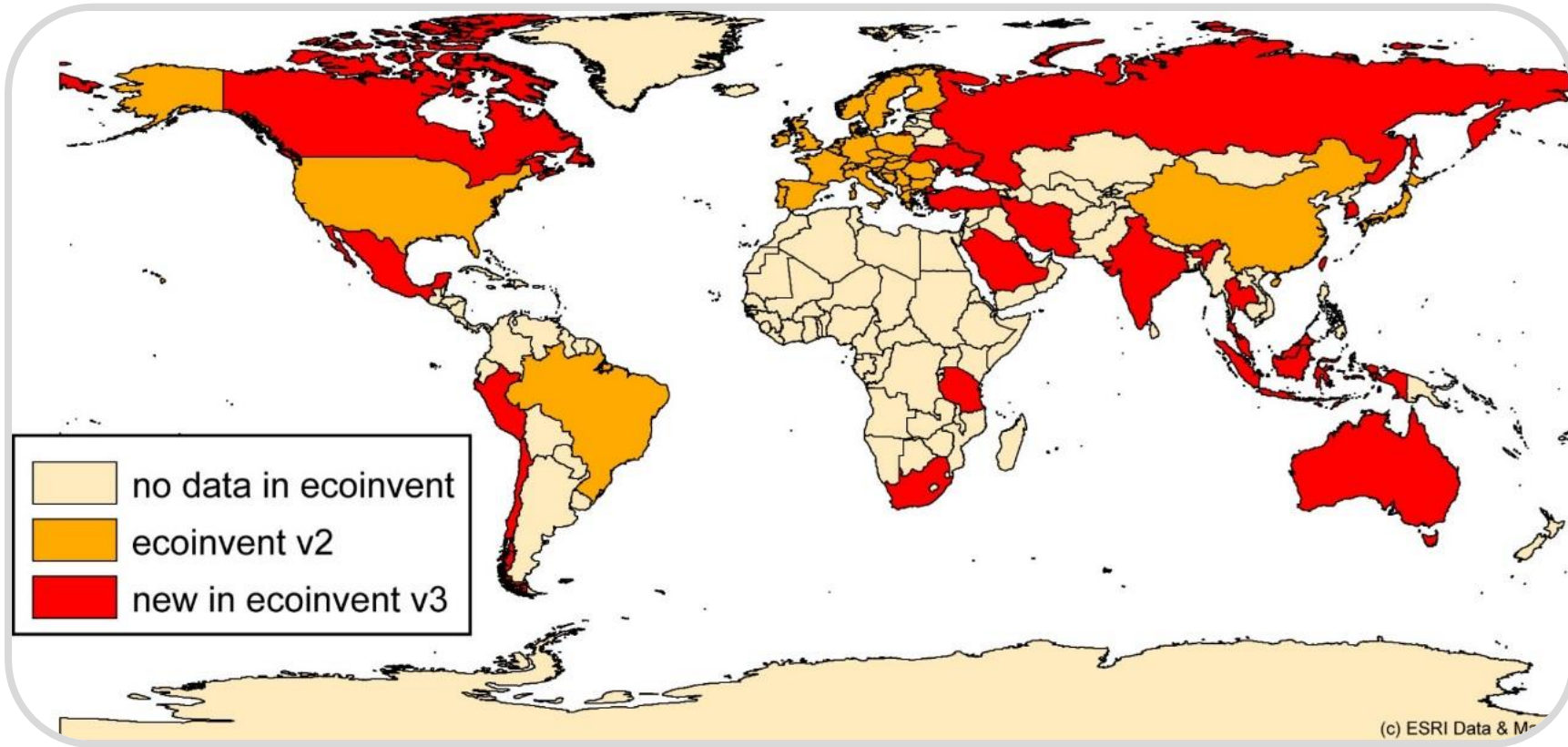
- *... and many more*

NEW in ecoinvent 3.2 - methodology

- Market groups

  ‣ Market groups are datasets which combine markets of smaller geographic areas into a bigger one (e.g. market for electricity / RER)

  ‣ Created for selected products and geographies

New data in ecoinvent v3.0 and v3.1

ecoinvent

- New electricity data in v3: 90% produced electricity in the world

no data in ecoinvent
ecoinvent v2
new in ecoinvent v3

(c) ESRI Data & M⁻

Graph: PSI

New in 3.0 and v3.1 - electricity

- Extension of country specific electricity mixes, covering 90% of global electricity production

- Update of existing electricity mixes

- National specific production technology mixes

- Numerous Canadian electricity production datasets

New in v3.0 and v3.1 – passenger car

- Combustion engine cars (petrol, diesel, natural gas) update – infrastructure and operation

- Different Sizes "small", "medium", "large" of cars, different European Norms (3, 4, 5).

- Electric car – infrastructure and its operation

Passenger transport (road)

New in v3.0 and v3.1 – freight transport

- Freight transport

    ‣ Update of existing EURO 3, 4, 5 classes

    ‣ New datasets on EURO 6 class

Freight transport by road

New in v3.0 and v3.1 - biofuels

- Biofuels - new and updated data for different types of biofuels in different countries

    ‣ Sugar cane, CO

    ‣ Alfalfa-grass mixture, CH

    ‣ Miscanthus, DE

    ‣ Willow, DE

    ‣ Oil palm, CO

    ‣ Jatropha, IN, East-Africa

Biofuels

New in v3.0 and v3.1 – chemicals

- Chemicals – more than 80 new chemicals, for example;
  - ‣ glycine
  - ‣ sodium amide
  - ‣ lactic acid

- Building materials, for example;
  - ‣ concrete – different types
  - ‣ cement
  - ‣ *... and many more*

Chemicals

Building materials

New in v3.0 and v3.1 – fruits and veg.

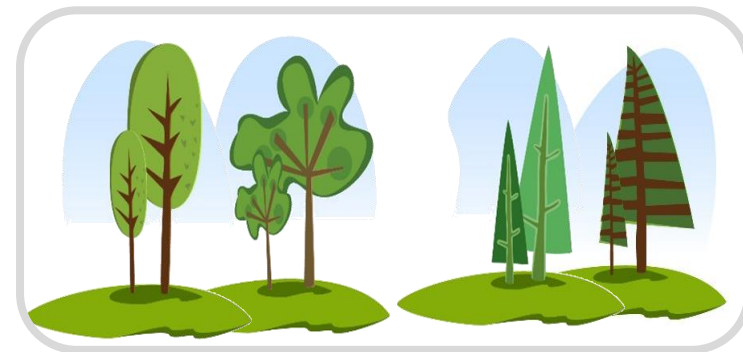- Fruits and vegetables – more than 30 new datasets, for example production of;

  ‣ banana
  ‣ strawberry
  ‣ carrot
  ‣ pineapple
  ‣ kiwi
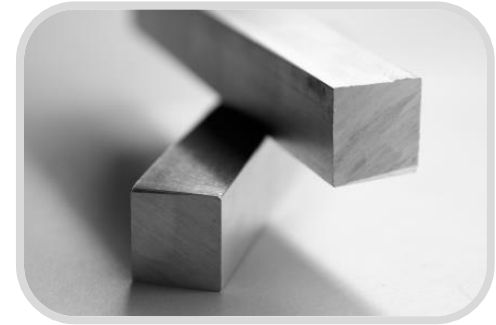 ‣ *... and many more*

Fruits and veggies

New in v3.0 and v3.1 – forestry

- Forestry – updated, extended and completely new datasets, for example;

    ‣ Forestry (mainly sustainable management)

    ‣ Different types of infrastructure: forwarder, sawmill, skidder, chipper

    ‣ Operation of the infrastructure

    ‣ Wood based products and wood preservation
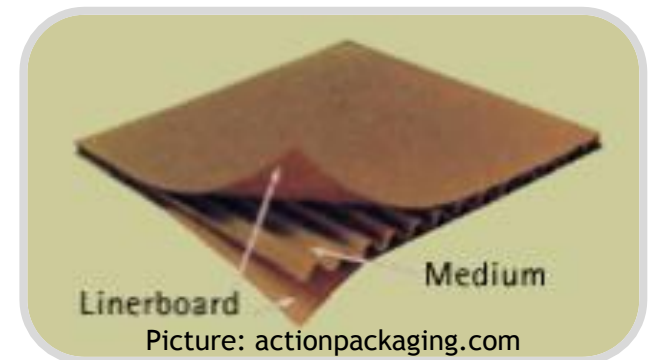
    ‣ Regional datasets for Canada

New in v3.0 and v3.1 – aluminium & cardboard

- **Aluminium production**
  - ‣ supply chain update and new datasets submission – primary and secondary aluminium production
  - ‣ electricity production for the aluminium industry

- **Cardboard**
  - ‣ fluting medium
  - ‣ linerboard
  - ‣ corrugated board box

Aluminium supply chain

Picture: actionpackaging.com

Cardboard

New in v3.0 and v3.1 – milk and soy

- Dairy production, for example;
    - ‣ Milk
    - ‣ Buttermilk
    - ‣ Butter
    - ‣ Cheese

- Soy production and its derivates;
    - ‣ Soy beans
    - ‣ Tofu
    - ‣ Soy drink

Dairy; Soja derivatives

New in v3.0 and v3.1 – tap water and incineration – heat production

- Tap water production and regionalization;

  - Conventional treatment
  - Ultrafiltration treatment
  - Seawater reverse osmosis
  - *… and many more*

- Incineration and heat production;

  - State-of-the-art operation of heat production
  - Heat production from wood

Tap water production

Incineration,
Heat production

NEW in ecoinvent version 3.2 - electricity

- Update of the whole electricity sector

  - More than 2000 datasets updated and many new added

  - Data from 2008 replaced by data from 2012

  - Efficiency of electricity production

  - Production volume -> updated national consumption mixes (markets)

  - More regionalization
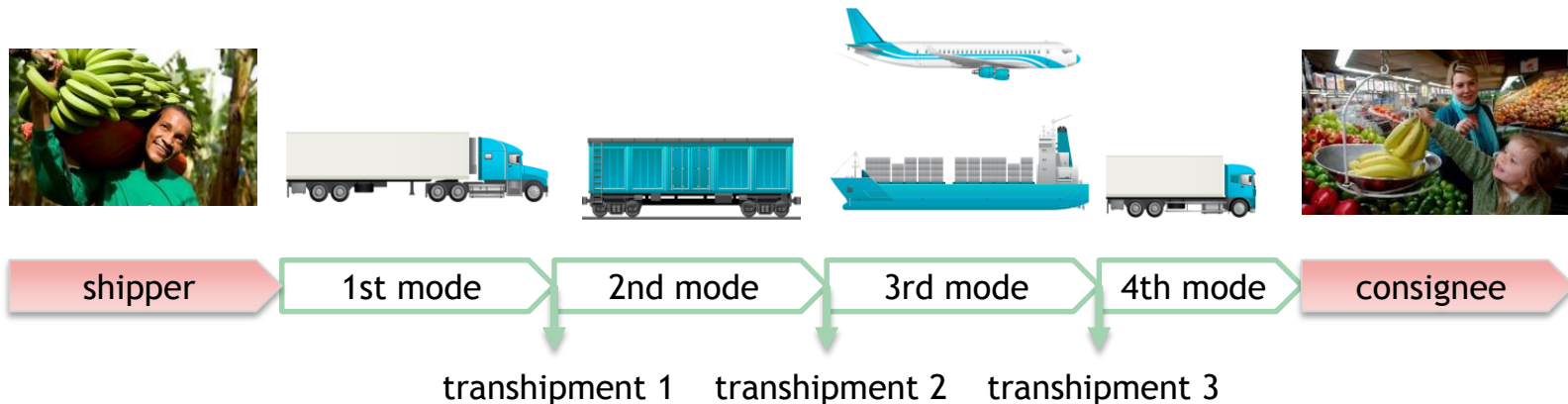
2008

2012

NEW in ecoinvent version 3.2 – electricity production in China

- Regional datasets on electricity production in China

  ‣ Data present for 32 regions of China

  ‣ Two markets; China Southern Power Grid (CSG) and State Grid Corporation of China (SGCC)

  ‣ Market group for the whole China

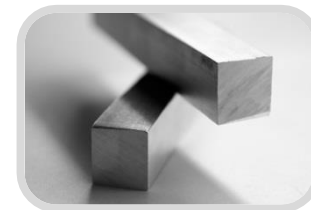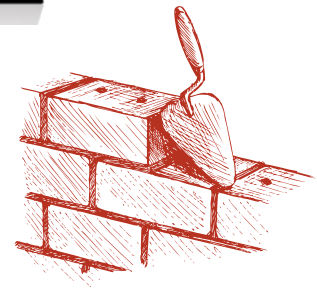# NEW in ecoinvent version 3.2 – refrigerated transport

- Transport of goods in need of atmosphere control   *Poster 297*

  ‣ Infrastructure (refrigeration machine, reefer, containers, small lorry, etc.)

  ‣ Operation of the infrastructure

  ‣ Transport of goods including refrigeration – small lorry, truck, train, transoceanic ship, barge, etc.

  ‣ Exemplary modelling of transport in selected markets – fruits and vegetables

| shipper | 1st mode | 2nd mode | 3rd mode | 4th mode | consignee |

transhipment 1   transhipment 2   transhipment 3

NEW in ecoinvent version 3.2 – forestry, concrete, aluminium

- Other important updates;

  ‣ Forestry – disintegration of the generic sawmilling process providing more detail

  ‣ Concrete, clinker and cement production – update, new datasets and more detail

  ‣ Aluminium – update, new datasets, more regionalisation

  ‣ Plastics – processing (extrusion)

NEW in ecoinvent version 3.2 – Canada

- New and updated datasets specific for Canada;

    ‣ Agricultural production (barley, hey, oat, etc.)

    ‣ Wood production and processing (lath, beam, board, etc.)

    ‣ Other (synthetic rutile, aluminium, etc.)

Database – wide updates

- Database – wide updates are updates of data on one single issue related to all or significant amount of datasets
  - example; prices of the products

ecoinvent version 3 database

Database – wide updates; prices and production volumes

- Prices

  ‣ Needed for economic allocation

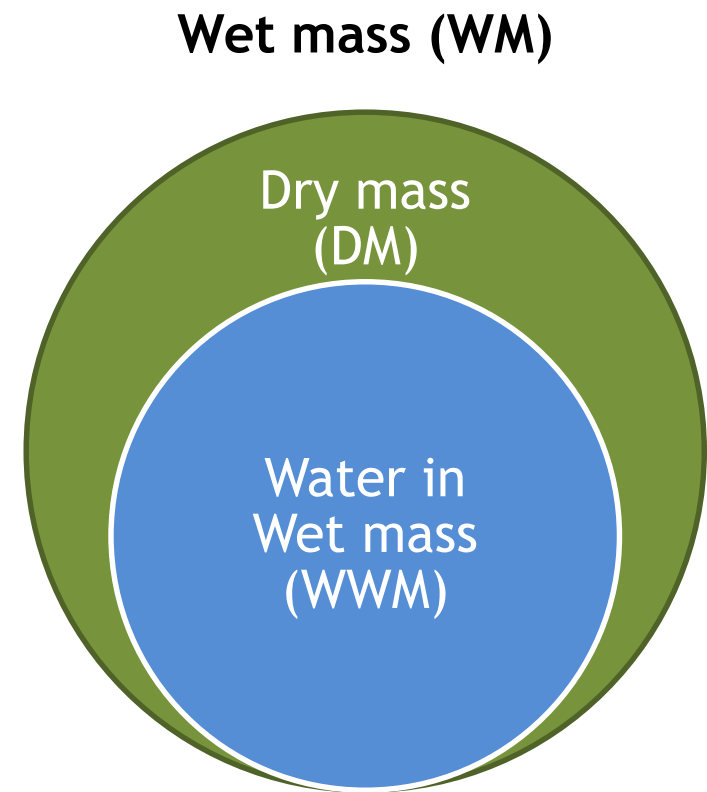 ‣ Currently more than 1200 products in the database have price

- Production volumes

  ‣ Needed to be able to generate consumption mixes (markets)

market

Database – wide updates; properties

- Mandatory properties for products which have mass;

  ‣ Dry mass
  ‣ Wet mass
  ‣ Water in wet mass
  ‣ Carbon content, fossil
  ‣ Carbon content, non-fossil

- Other properties

  ‣ Weight
  ‣ Lifetime and lifetime capacity
  ‣ *... and many more*

Wet mass (WM)

Dry mass (DM)

Water in Wet mass (WWM)

Database – wide updates; water use

ecoinvent version 2 ➡ ecoinvent version 3.0 ➡ ecoinvent version 3.1

water balance of the LCI

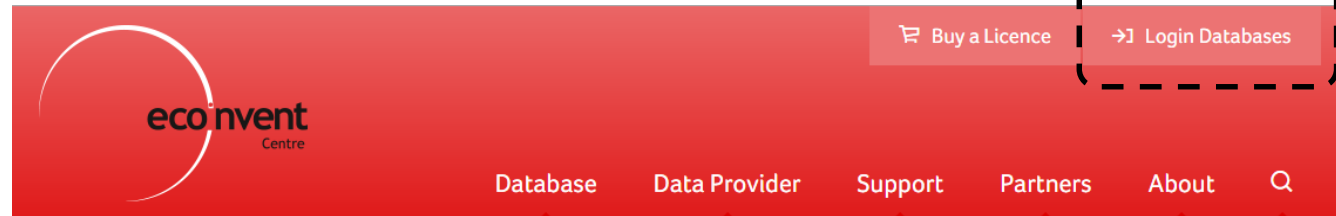ecoinvent version 3 database

water IN ➡

water OUT ➡

Documentation

- New website!

  ‣ www.ecoinvent.org

  ‣ Support section; documents, FAQ, forum, glossary of terms, webinar

  ‣ ecoQuery; direct access to the ecoinvent database

Documentation – most important documents

- Data Quality Guidelines

  ‣ Methodology behind ecoinvent version 3

- Change Report and the Comparison File

  ‣ Published every time when new version of the database is released

- Correspondence file

  ‣ Intermediate exchanges
  ‣ Elementary exchanges

- *... and many more*

Thank you for your attention!

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