ecoinvent user meeting, Basel

ecoinvent Centre

Introduction to the ecoinvent version 3.1 database

What is ecoinvent?

- ecoinvent is a **not-for-profit** association created by 5 Swiss research institutes
- ecoinvent **started out** as the Swiss national LCI network
  - Publishes the **ecoinvent database**
  - Version 1 published in 2003, version 2 in 2008
- Publish **useful** and **relevant** life cycle **inventory data** in a centrally organized form

ecoinvent - Quality Features

- **Consistent**
  - Fully interlinked database
- **Reliable**
  - Independent expert review for all data
  - Continuously developed and improved over 15 years
- **Transparent**
  - Full access to both unit process data and all calculation results
  - Individual documentation of each dataset

ecoinvent – a global LCI database

- Used by more than 6000 users in more than 40 countries
- Included in or available for the leading LCA and eco-design software tools
  - SimaPro, Umberto, Team, OpenLCA, CMLCA, GaBi, KCL-Eco, Regis, Emis, ecobilan, Green-e, and others

version 3 – technical aspects

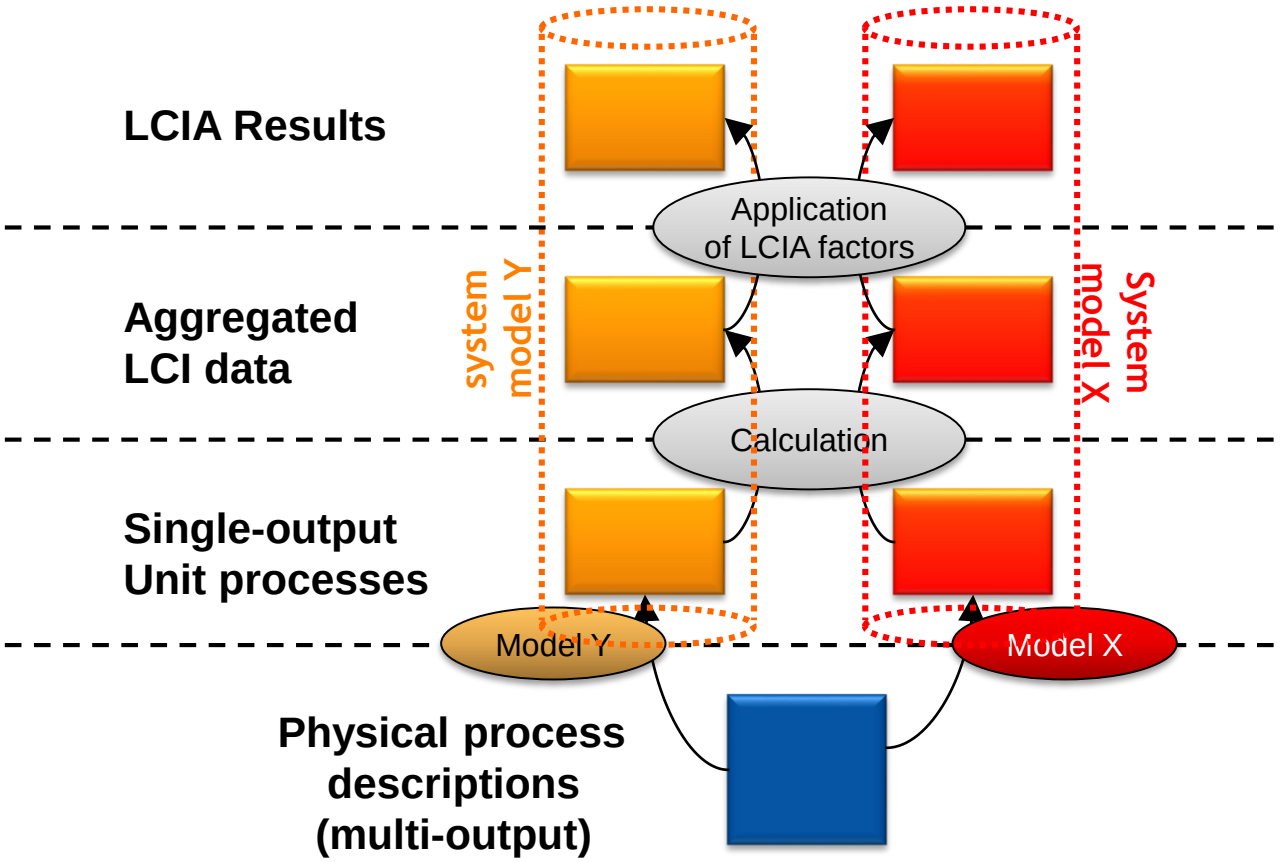
- Improve the quality and reach of the database
- Allow more flexibility for the users

- Modernize the infrastructure
- Be ready for future developments

System models in version 3

- A **system model** is a collection of modeling choices made for the database
  - Solving the allocation problem
  - Recycling and waste streams
  - Handling constraints in suppliers
- In version 3, **multiple system models** are possible
  - Different perspectives at the same database

System models in version 3

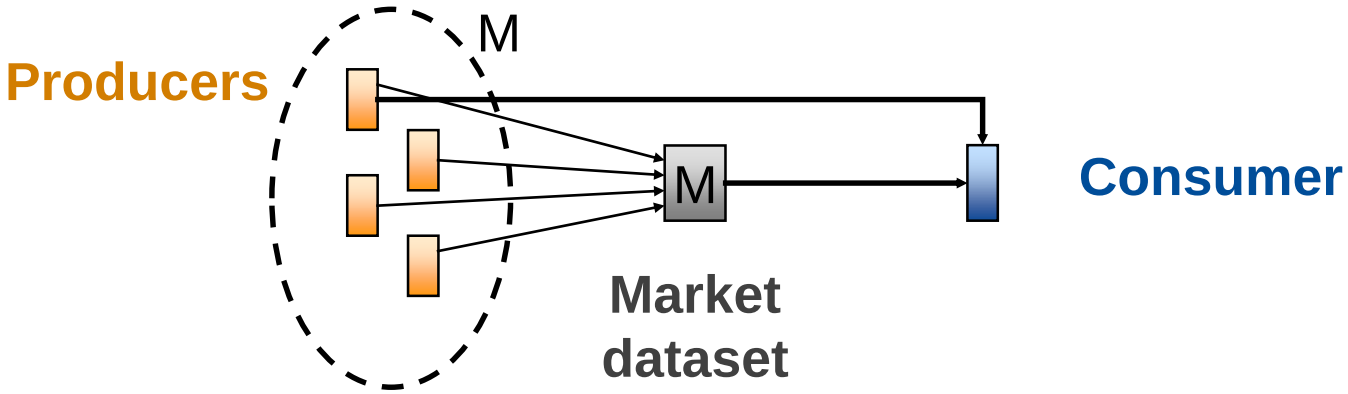


System models in ecoinvent v3

- Allocation at the point of substitution
- Allocation, Recycled Content cut-off (out now)
- Consequential (long-term, small-scale)
- Other models possible
  - Waste/Recycling system models
  - Other allocation choices
  - Integration with specific standards
  - Complete mass- or carbon-based allocation (Mass Flow Analysis)

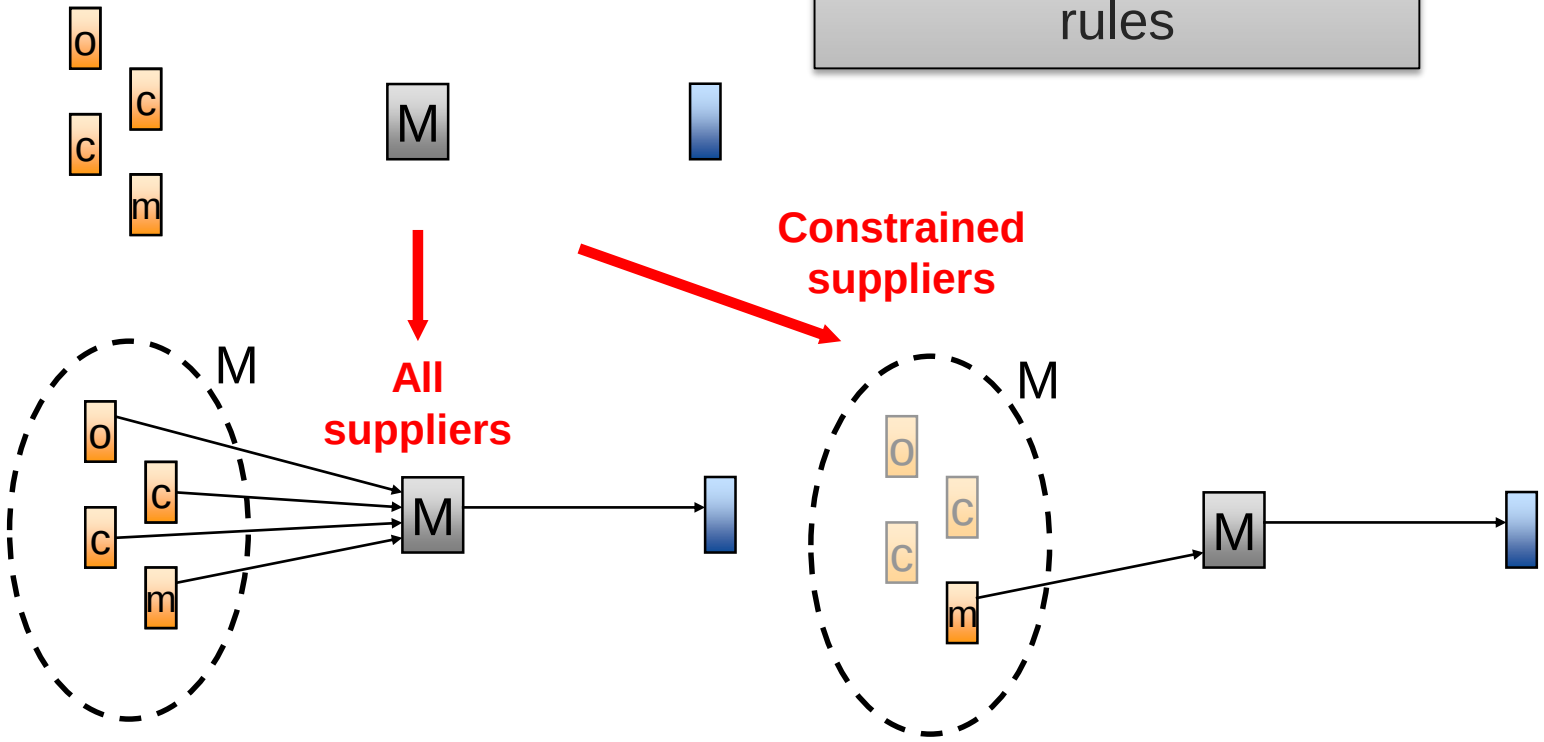
Market datasets

- **Separation** of product and activity names
  - More that one activity can produce the same product
- **Market datasets** are available for all products
- Markets describe the **consumption mix** for a product and region



Market datasets

System models may have different linking rules



Market datasets

- **Market datasets** provide consistent consumption mixes of a product for a region
- **Additional information** is included
  - Transport, losses during transport
  - …
- Linking rules can be **modified** to create **multiple system models**
- **Consistent availability** of consumption mixes
  - Always a choice between the individual producers or the market average

Global supply chains

- In v2.2, **local** datasets served as **placeholders** for global activities
- All processes now have a **global** counterpart
  - Often extrapolated from regional data
  - Uncertainties increased
  - Distributes supply chains and impacts for regionalized LCIA
  - Serves as a foundation for regional data projects
- Global update of **freight transport data**
  - Based on better data, sector-specific values

Methodology goals

- More **flexibility**, more **applications** for users
  - Database can adapt to user requirements
- "**Simple**" use still possible
  - Not forced to use the new format options
- Easier **maintenance**, easier **updating**
  - Foundation to grow into a global database

ecoinvent version 3.1

- Returning system model (already released for 3.01)
- New data

ecoinvent version 3.1 – new data

- Wood and forestry sectors (Empa)
- New and improved basic industial data (CIRAIG)
  - Diverse list of sectors and products
- Road freight transport update
- Improved consistency in water consumption assessments
- Renewable energy uptake flows included again
- Improved transport distance modeling
- Updated LCIA methods

…and more!

Recycled content cut-off

- Cut-off modeling approach of version 1 and 2
- Implemented as a new **system model** in version 3
  - "Allocation, cut-off by classification"
- Based on a **product-level** classification
  - *Ordinary, allocatable by-products*
  - *Recyclable materials*
  - *Wastes*
  - All products are **classified consistently** throughout the database

Recycled content cut-off

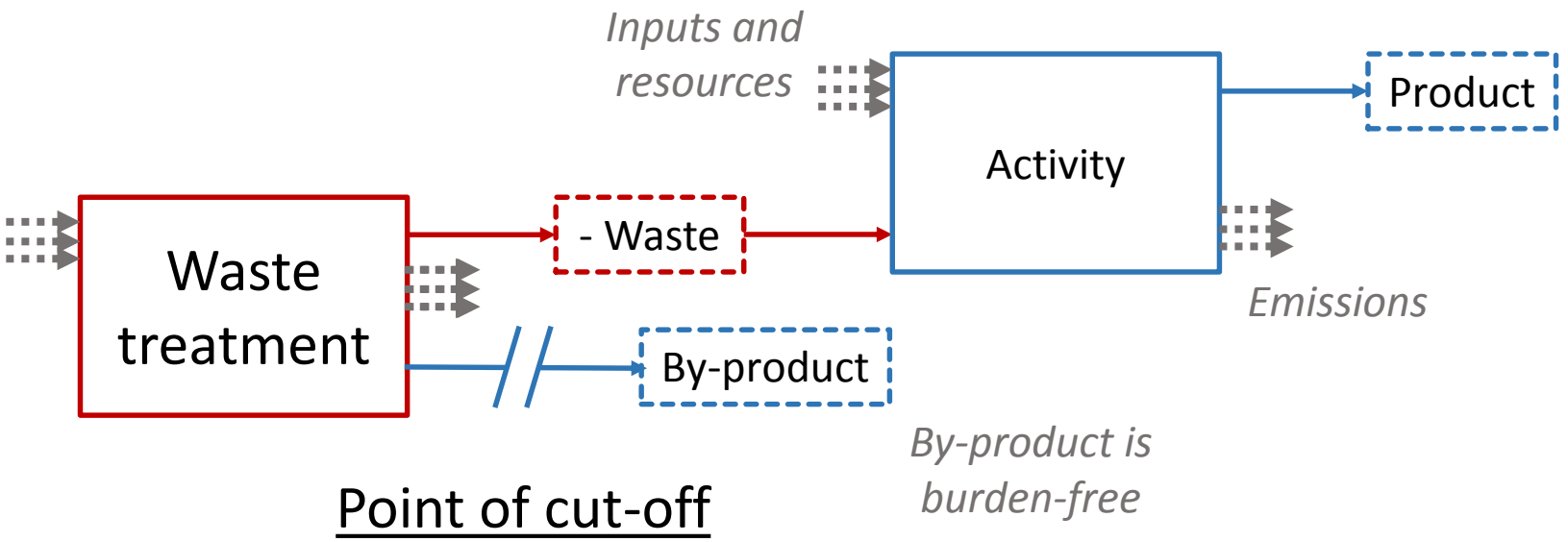
- Fundamental concept:
  - **No credit** for recycling or waste treatment by-products
  - **Full burdens** for waste treatment, but **no burdens** for recycling
- Uses a **cut-off** to separate primary and secondary use phases
- Consequence: Burden of **primary production** is completely with the **first use** of the product
  - Use of recycled products is encouraged
  - Waste treatments with beneficial products is **not** encouraged

Recycled content cut-off

- Ordinary by-products
  - Allocated directly
  - Most products in the database (~90%)
  - Allocated according to values chosen by the data provider to reflect the ISO hierarchy

Recycled content cut-off

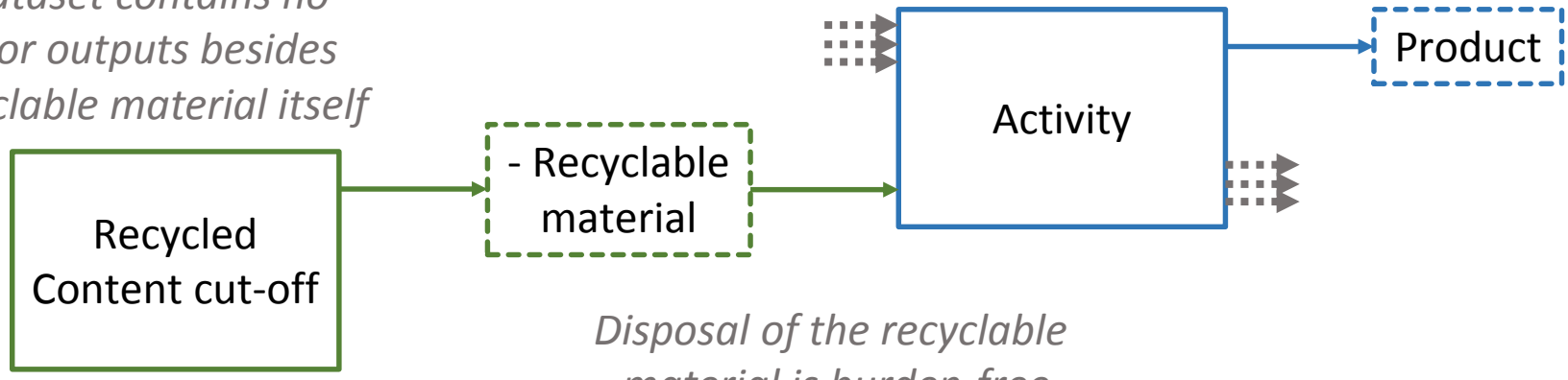
- Wastes (~8%)



Recycled content cut-off

- Recyclable Materials (~2%)

This dataset contains no inputs or outputs besides the recyclable material itself

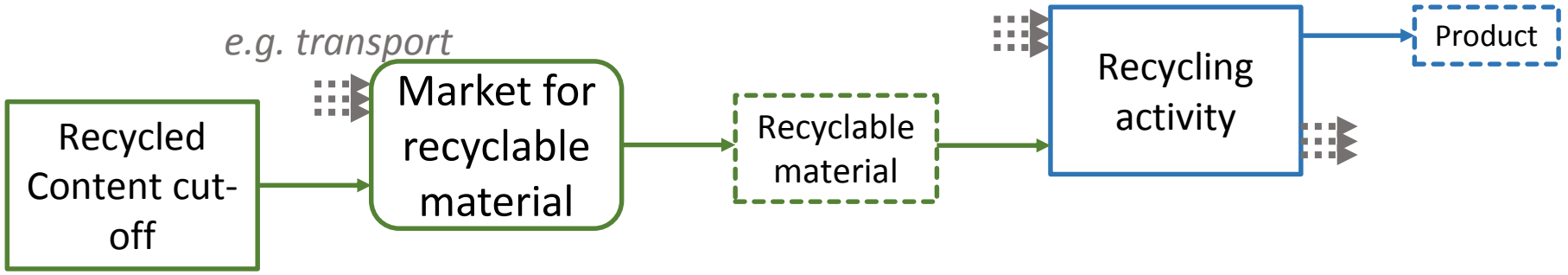


Disposal of the recyclable material is burden-free

Point of cut-off

Recycled content cut-off

- Recyclable Materials

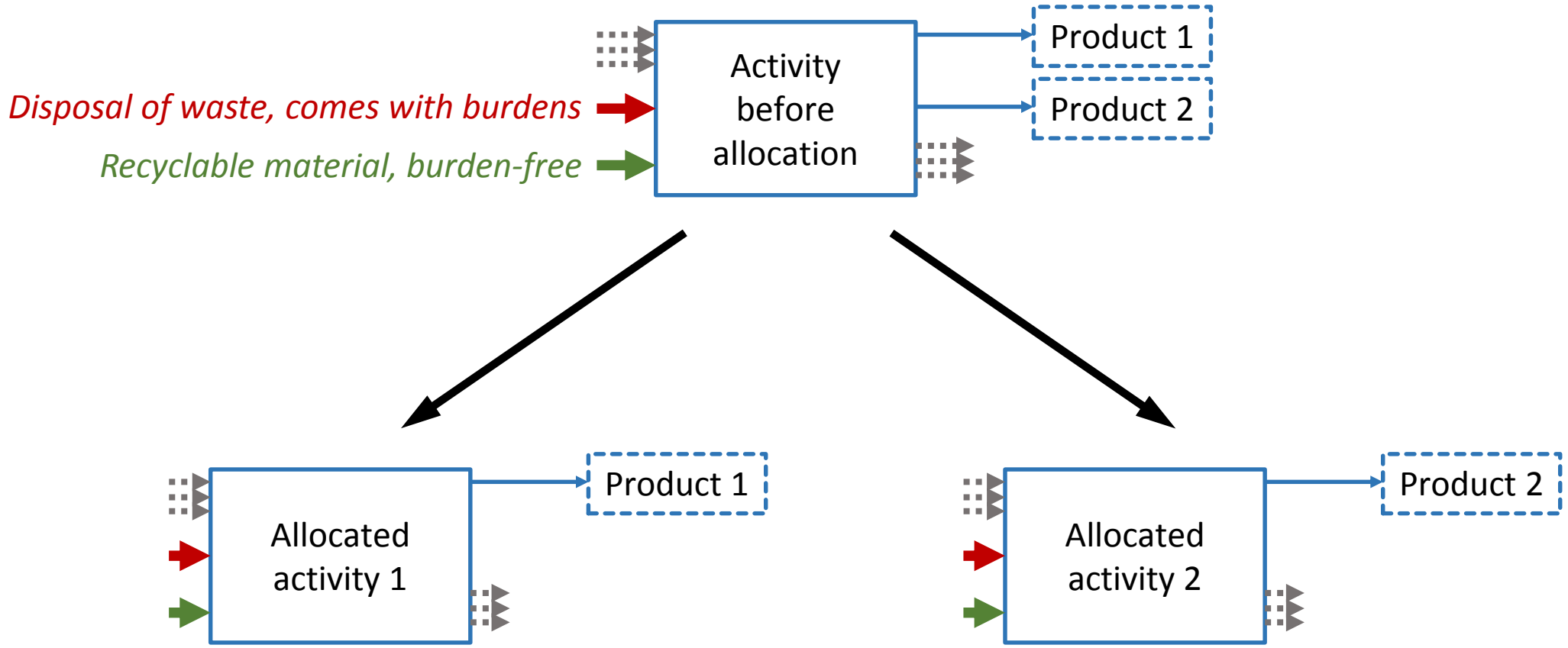


Point of cut-off

- Recycling chains are **not** cut off more than once

Recycled content cut-off

- Overview of allocation



Recycled content cut-off

- Consistent application of the cut-off
- Consistent process structure based on product classification
- Flexible application through product choice
- Simple allocation process to follow and reproduce
- Clear datasets to modify or adapt

Thank you for your attention!

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Questions and Discussion

www.ecoinvent.org

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