

ECOINVENT V3 – AN INTRODUCTION TO THE NEW FEATURES & DATA

FRUIT AND VEGETABLE DATA AND AN EXAMPLE OF APPLICATION

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33 new horticultural products in ecoinvent v3



Motivation

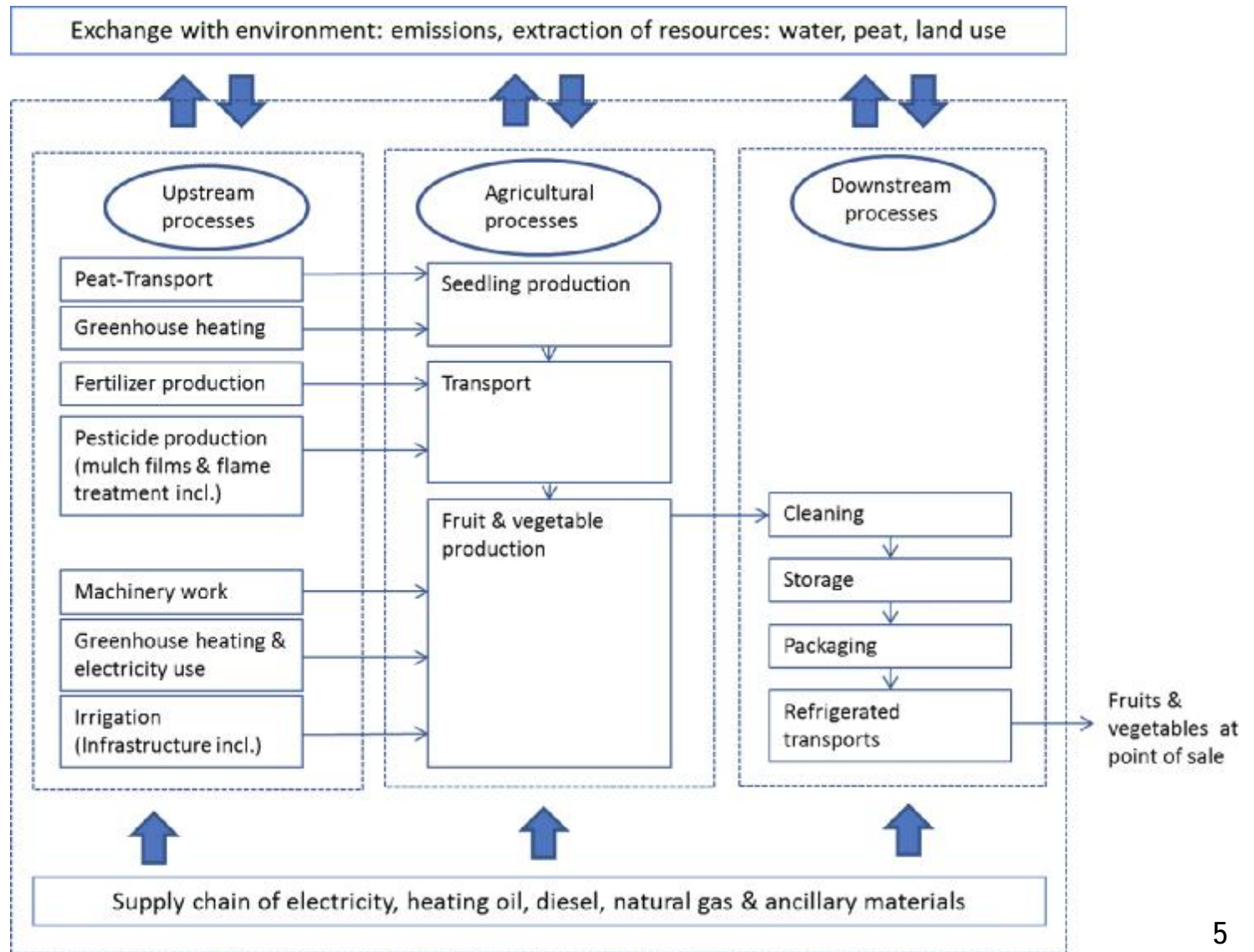
- Food production and consumption are responsible for 10–30% of an individual's total environmental footprint
- Policy makers and companies have recognized the need to quantify these environmental impacts
- Some of them use this information for internal decision making regarding products and supply chain management

Goals of the study

- Consistent and up-to-date LCI of a large range of fruits and vegetables
- Process-based LCA do allow to support different decisions
- Show selected LCIA results → decision guidelines for producers, retailers, policy makers and consumers

Materials and methods

- FU: 1 kg of fruit or veg at the point of sale
- Different countries of origin
- Heated & non-heated
- Background data from ecoinvent

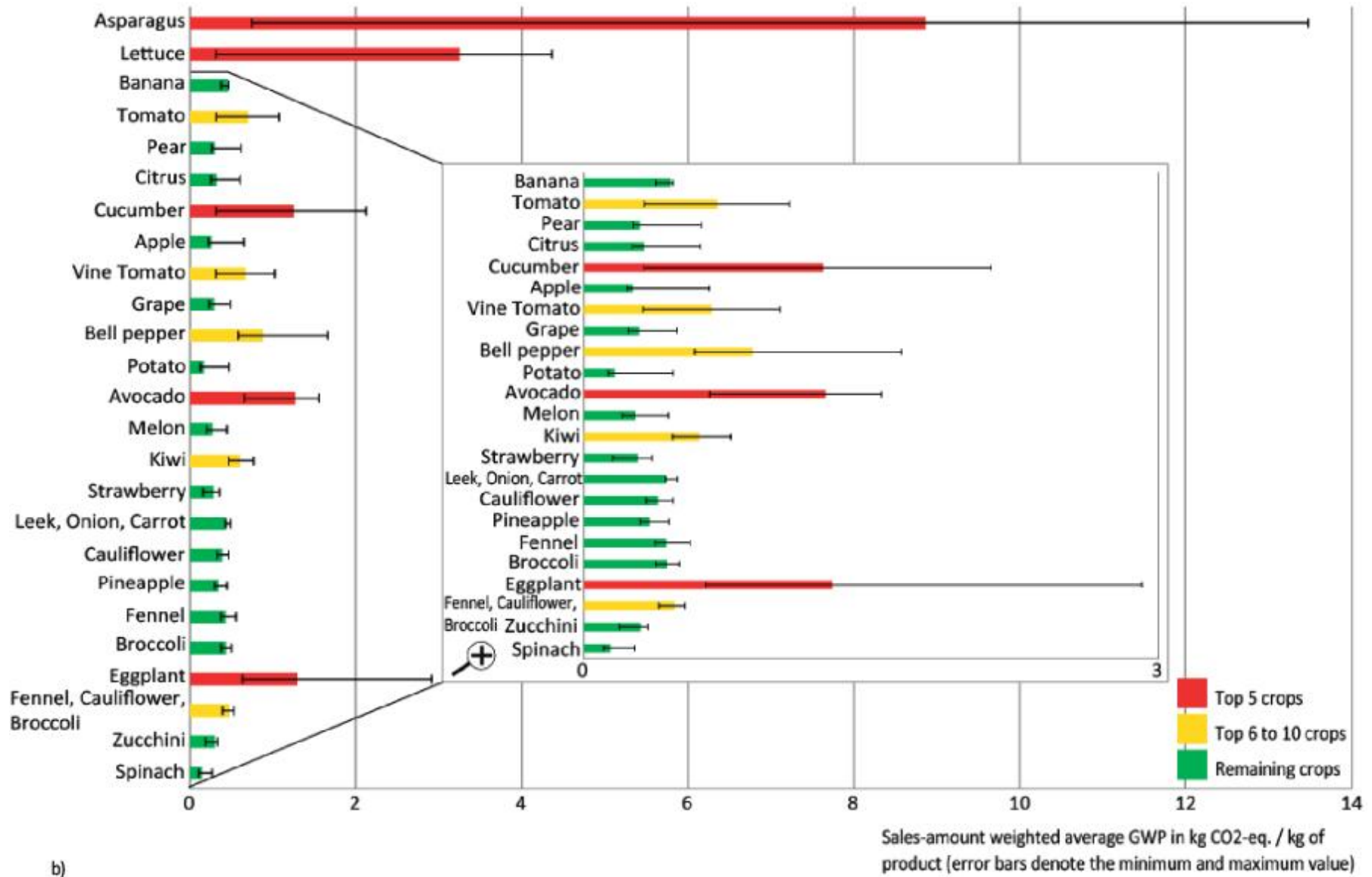


Additional information in the LCI for ecoinvent v3

- Transformation processes
 - Heavy metal emissions to the soil (Cd, Cr, Cu, Pb, Hg, Ni, Zn)
 - Pesticide emissions
 - N-emissions adapted to the standards of ecoinvent
 - Uncertainty information
 - Market information
- BUT**

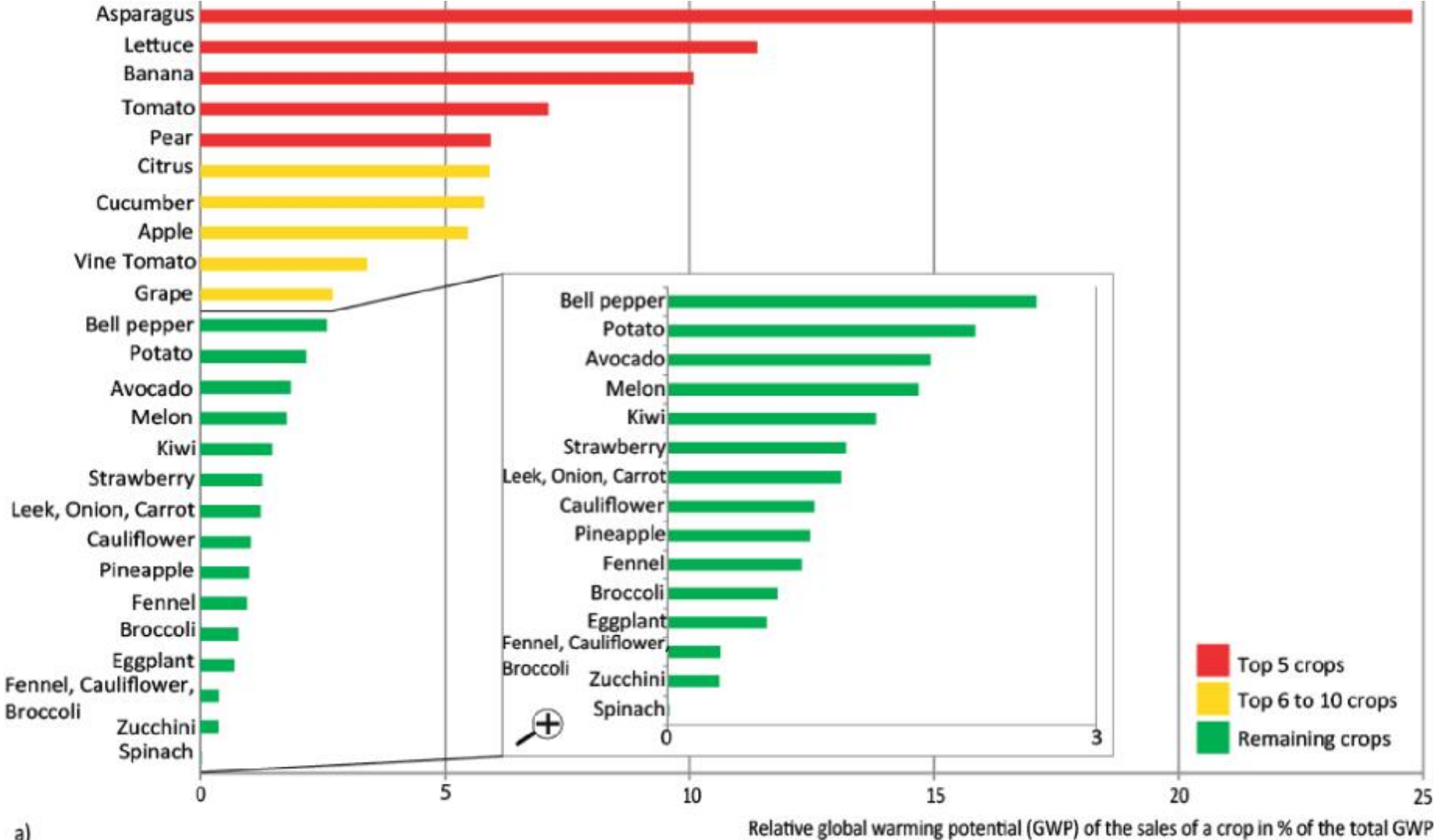
- The transport scenarios are excluded
- Concentration on one production in one country per crop

Example of an application: GWP

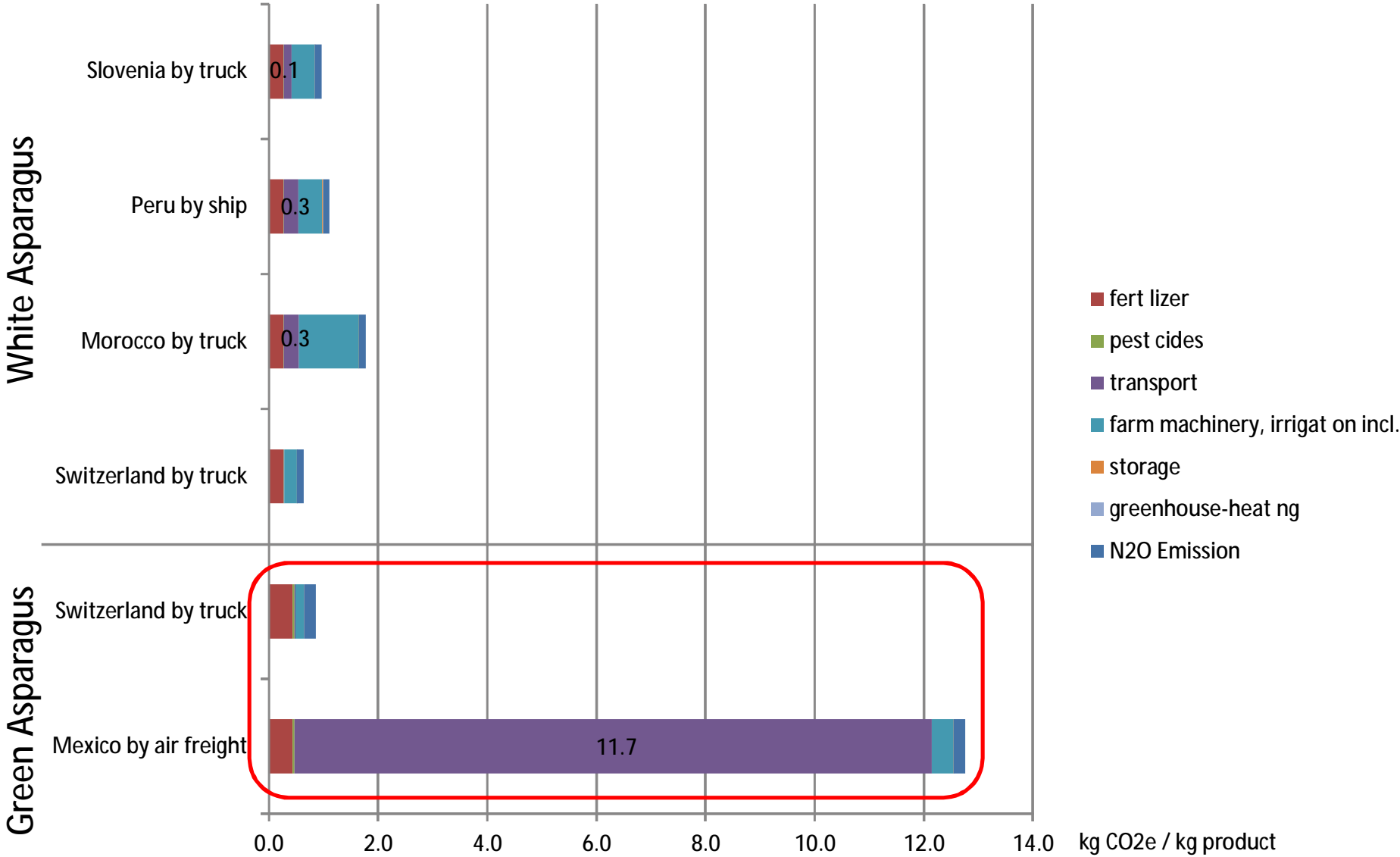


b)

GHG of 83 % of fruits and vegetables sold at the retailer's stores



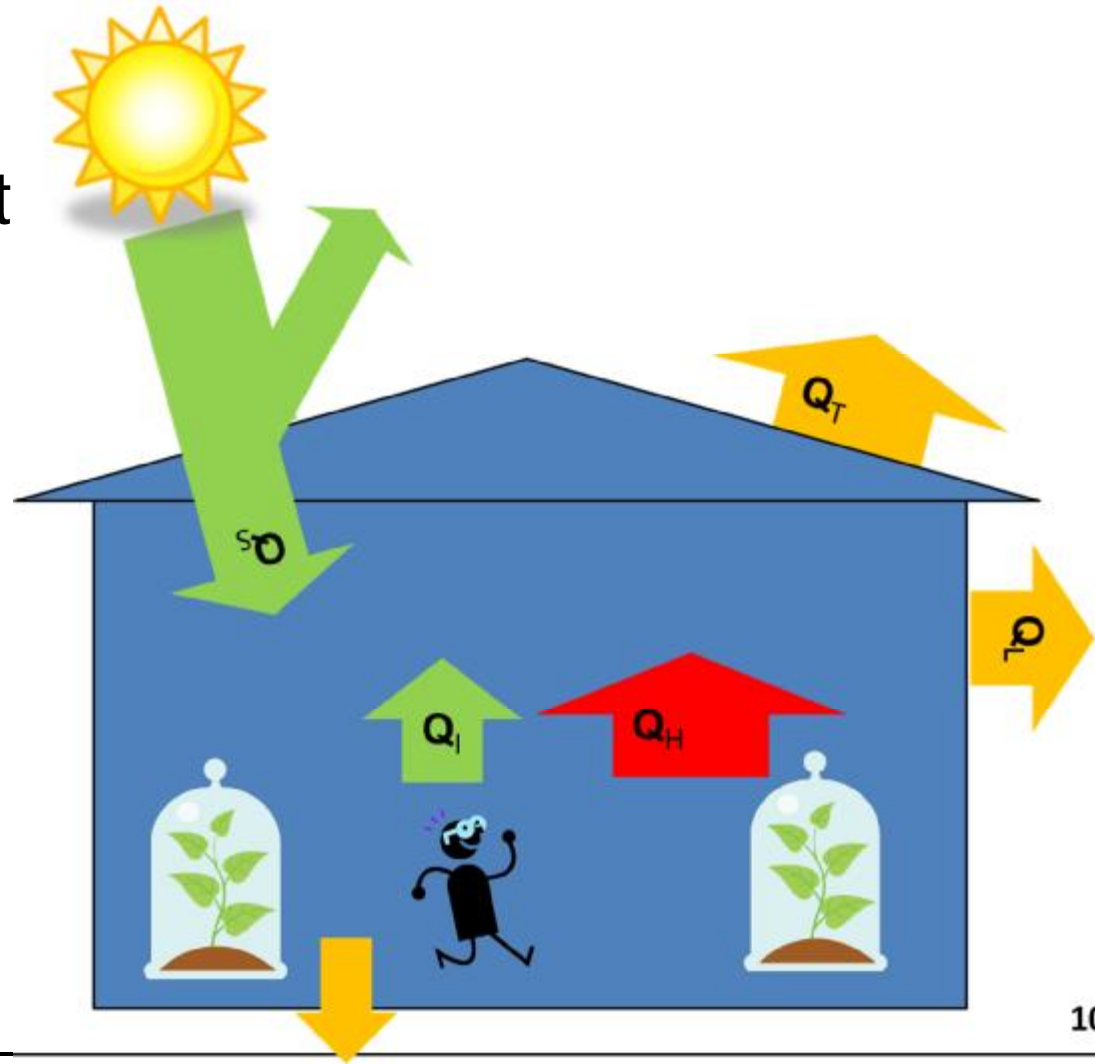
GWP of Asparagus from different locations



Greenhouse heating model

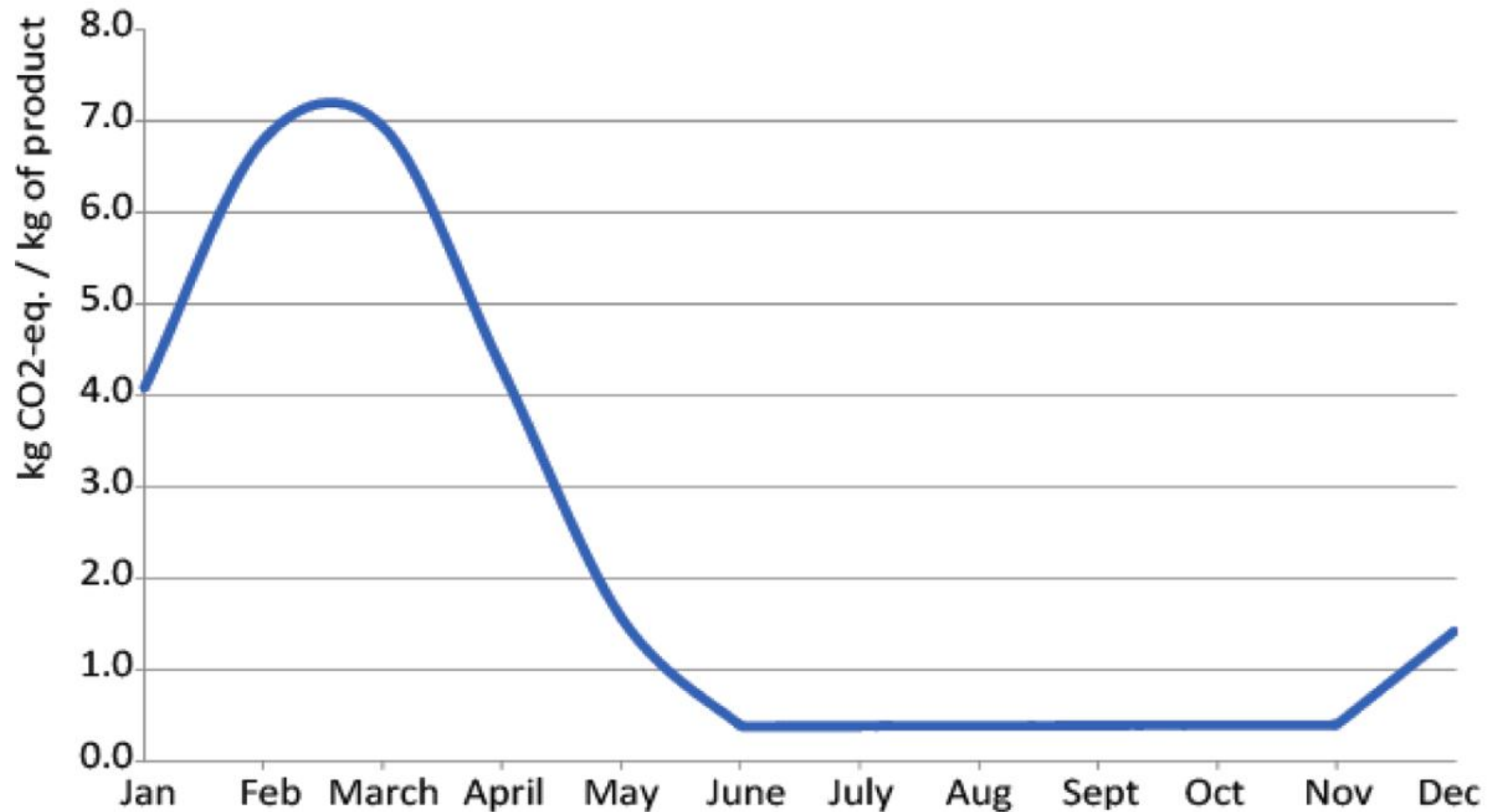
The model considers e.g.:

- Heat transfer coefficient
- Transmissivity of glass
- Greenhouse geometry
- Ventilation rate
- Yield
- Optimum temperature
- Growing period
- Outside temperature
- Solar radiation



Seasonal salad

(b) lettuce



Conclusions

- Fruit and vegetable data, implemented in ecoinvent v3 can be used for various purposes
- They can easily be adapted if data of a specific production are available, e.g. irrigation strategy for productions in different countries

Thank you for your attention.

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Reference:

Life Cycle Inventory and Carbon and Water FoodPrint of Fruits and Vegetables: Application to a Swiss Retailer

Stoessel, Franziska; Juraske, Ronnie; Pfister, Stephan; Hellweg, Stefanie
Environmental Science & Technology 2012, 46, 3253-3262

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