

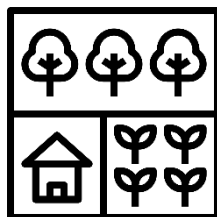
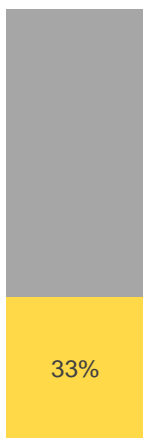
Adapting the Agribalyse Life Cycle Inventory Database to Australia

Paul-Antoine Bontinck
Lifecycles

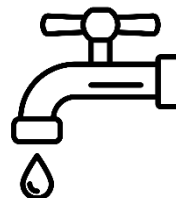
Some effects of the global food supply chain



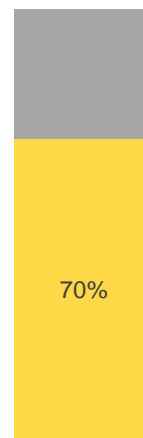
Greenhouse gas emissions¹



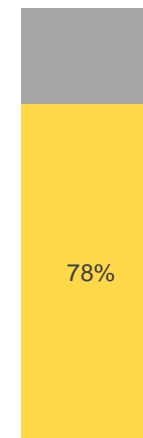
Land occupation²



Freshwater abstraction³



Eutrophication⁴



1. *Crippa et al (2021)*; 2. *FAO (2021)*; 3. *Dougmanee (2016)*; *Poore & Nemecek (2018)*

The role of LCA



Global food demand to increase by 35-56% between 2010 and 2050¹



Impacts of food vary widely between commodities and production practices



Life Cycle Assessment can be used as a tool to support good decision making



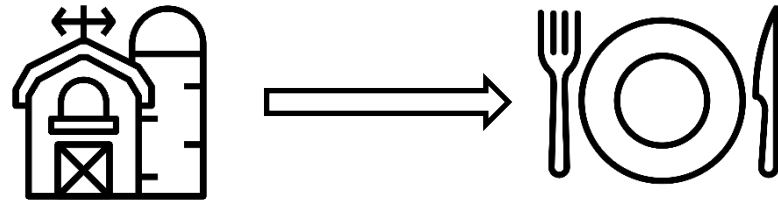
In Australia, primary production is well represented, but other steps of the supply chain are typically not included

1. *Van Dijk et al. (2021)*

Introducing Agribalyse



French program dedicated to produce public LCIs of agricultural and food products



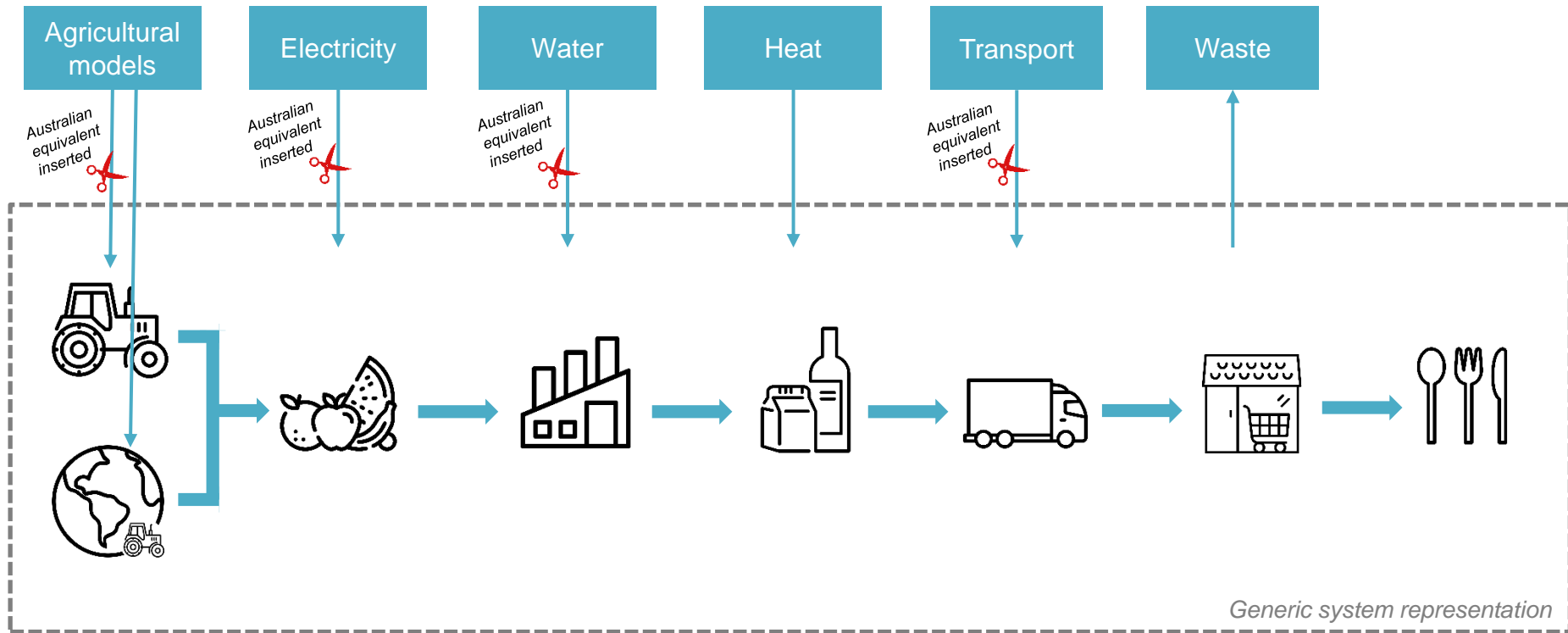
+2,500
finished
food products

+200
primary agricultural
commodities

Aim of Agribalyse

- Influence production systems (improve supply chains)
- Influence decision makers and consumers

Our high-level approach



Updated agricultural models

Category	Sub-category	Inventories used	Source of inventories
Horticulture	Fruits	Avocado, banana, oranges*, watermelon*, pineapple*, strawberry	AusLCI *Gross Margin Tools
	Vegetables	Broccoli, capsicum, carrots*, lettuce, onion*, sweet corn*, pumpkin*, tomato, potato, zucchini*	AusLCI *Gross Margin Tools
	Nuts	Almonds	AusLCI
Livestock	Meat product	Beef, lamb, pork*, chicken*	AusLCI *Published literature supplemented with data from the national inventory report.
Fisheries	Fish	N/A	
	Crustaceans	N/A	
	Molluscs	N/A	
Broadacre crops	Grain	Maize, oat, wheat	AusLCI
	Pulses	Chickpeas, faba beans, field beans, lentil	AusLCI
	Oil crops	Canola, soybean, sunflower	AusLCI
	Other	Sugarcane	AusLCI
Animal products	Animal products	Eggs, milk	Published literature, supplemented by industry data and data from the national inventory report.

Reviewing transport assumptions

Import of raw commodities

- Australia produces a large proportion of its raw food commodities
- Import considered if >5% of a commodity is imported

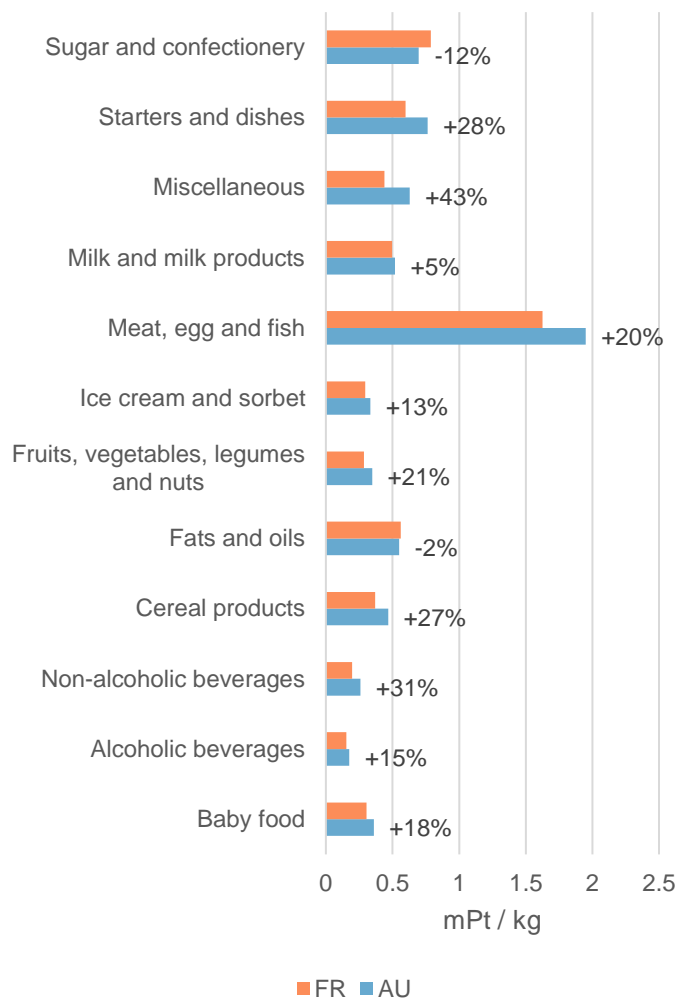
Domestic transport of raw commodities

- Domestic transport of raw commodities reviewed, differentiating intra- and inter-state travel.

Transport of processed commodities

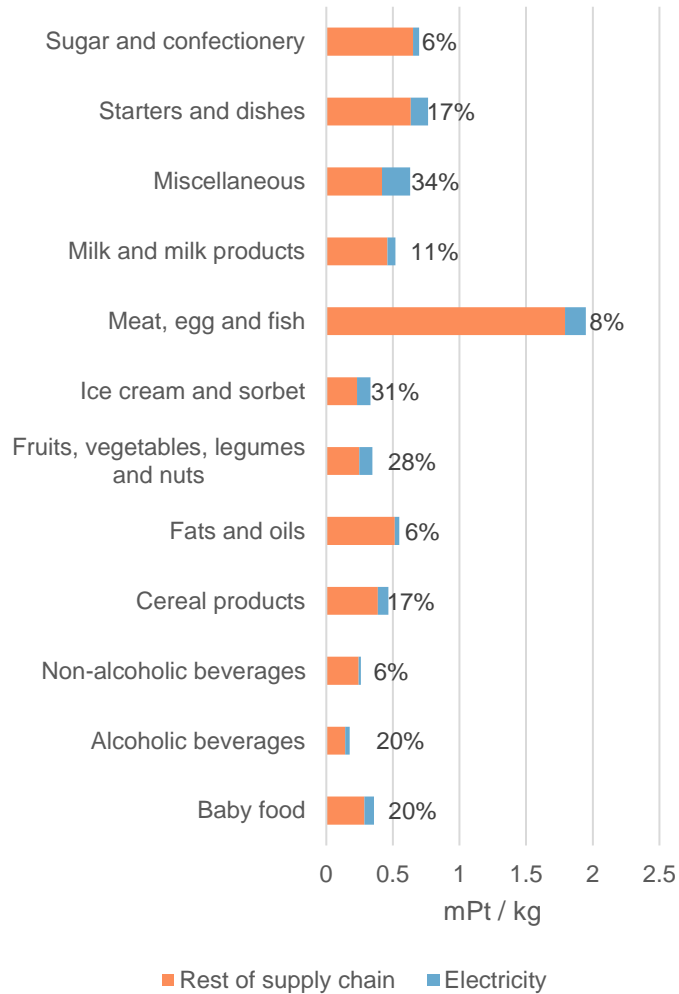
- Transport of processed commodities along the supply chain is not changed.

Overall results



- Impact assessment used is EF 3.0, single score for all 2,500 food commodities.
- Impacts are, on average, ~15-20% higher. Lower impacts observed for sugar and confectionery (-12%) and fats and oils (-2%).
- Most significant variations are in miscellaneous (+43%), starters and dishes (+28%) and cereal products (+27%).

Factors of influence - electricity

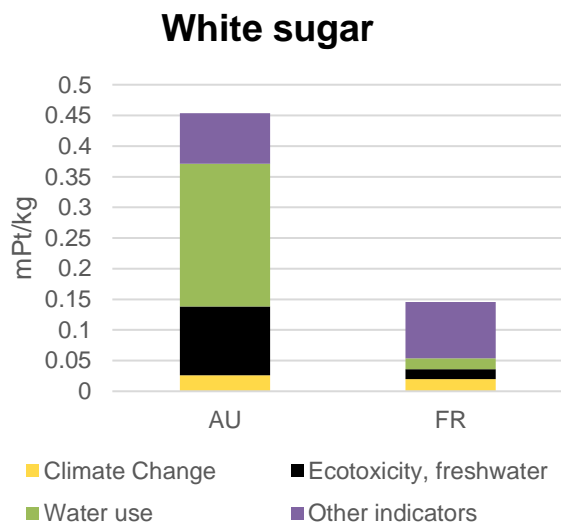


Single score of French grid is 58% lower than Australia

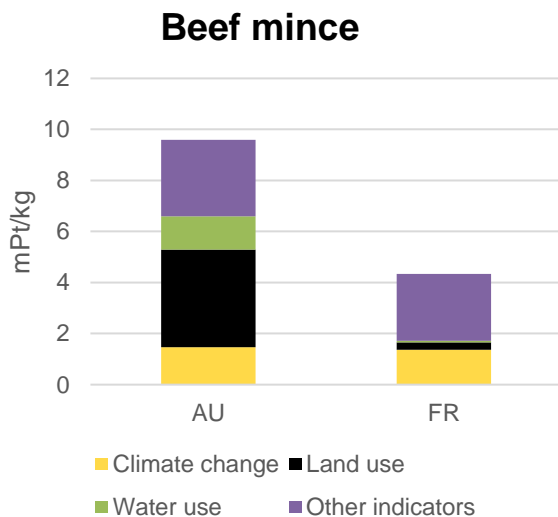
Impacts of electricity can be significant for

- chilling/freezing
- food processing
- retail

Other factors of influence



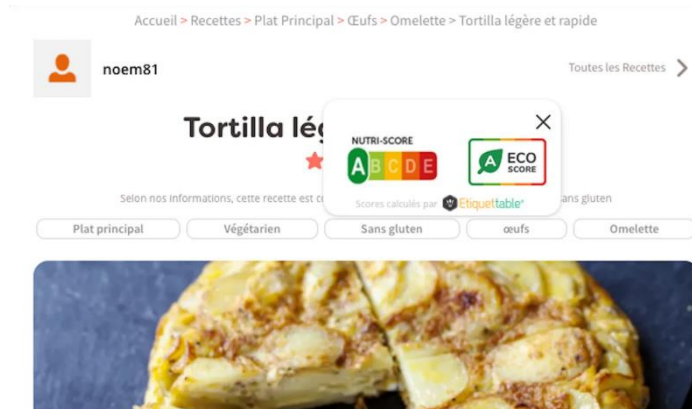
- Indicator specific results
 - **Water use:** irrigation requirements can be higher in Australia and effects on water scarcity more significant (e.g. sugar).
 - **Land use:** can become highly significant for cattle grazing, driving variation for meat products.



Future improvements

- Packaging scenarios updates
- Transport along the processed food supply chain
- Food waste
- Australian food processing models
- New primary commodities models
- ...

Recipe labelling



In-store product labelling



Other applications:

- Catering / hospitality sector (menu design)
- Use as a source of generic inventories for LCA work

- Solid infrastructure to build upon
- Substituting Australian data allows to develop a database that is more representative of the Australian context
- Lots more work to be done!
- Potential applications are broad, from labelling systems at retail to supporting LCA work

Lifecycles. Get the whole picture.



Lifecycles acknowledges the Traditional Owners and Custodians of the land on which we work. We pay respects to Elders past and present, and recognise their connection to the land. Sovereignty was never ceded.

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