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Food Systems Dynamics

Final Conference Event 21/09/2021

VALUMICS H2020 PROJECT - Understanding food value chain and network dynamics

Data needs for research & transparency lock-ins

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Introduction

A clear direction of travel

… but a lot of policy / political questions

MEP: CAP is about farmers' livelihood too, not only sustainability

By Gerardo Fortuna | EURACTIV.com 21 oct. 2020

Italian MEP Herbert Dorfmann addressing the plenary. [DIEFFEMBACQ-EP]

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- the first manufacturing industry in the EU, leading in terms of turnover (15.6%), value added (13%) and employment (15.2%)

€1,090billion turnover

€212billion value added

4.25million people direct employment

285,000 SMEs account for:

49.4% of food and drink turnover

48.1% of food and drink value added

62.8% of food and drink employment

99% of food and drink companies are SMEs

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… fuelled by the limitations of existing modelling tools

A conceptual approach to identify options for the just transition of food value chains

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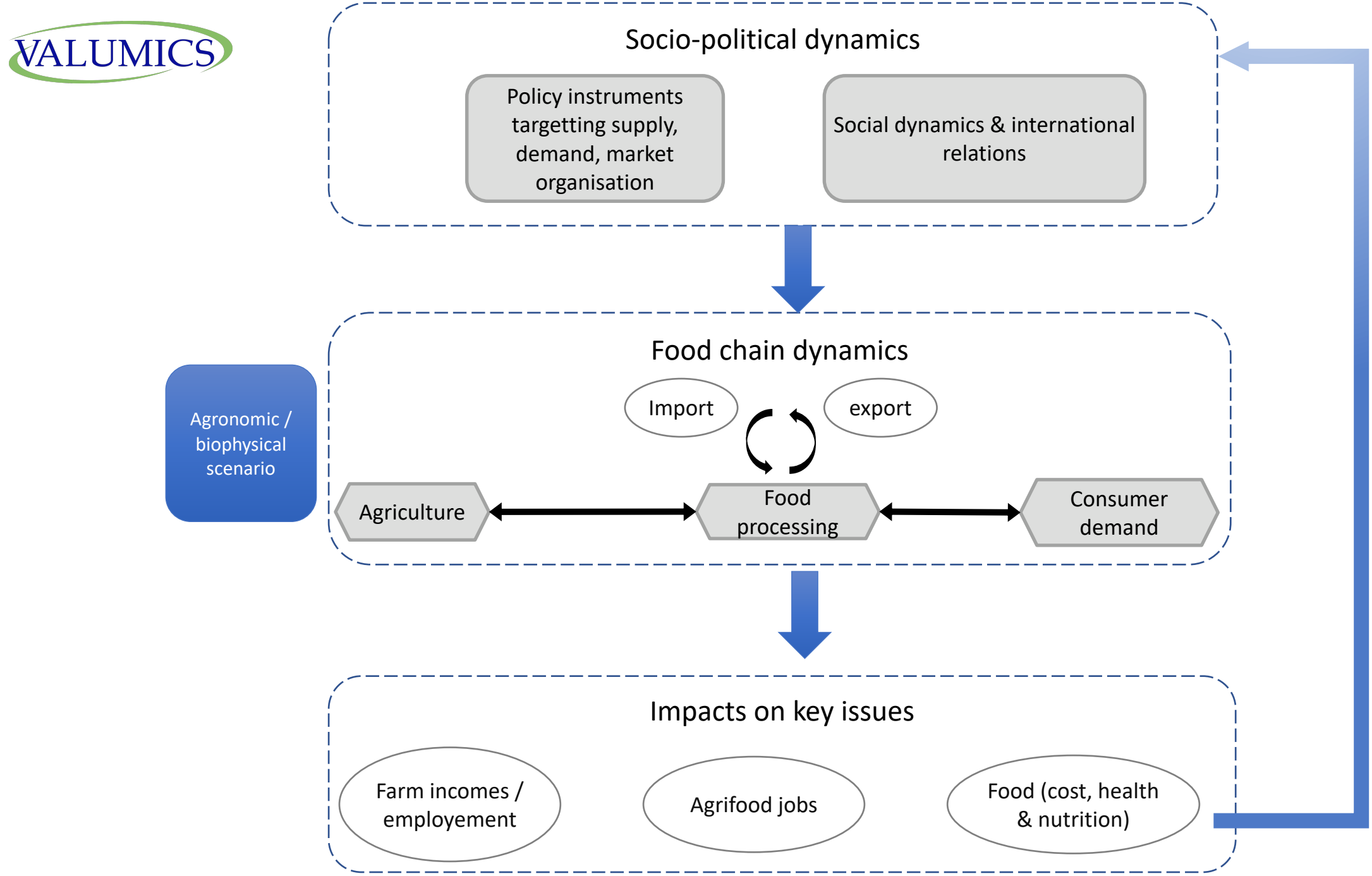
Holding together biophysical and socio-economic dynamics

- A just transition: the capacity of a transition to a green economy to sustain decent jobs and livelihoods to all
- Developing modelling tools better adapted to address just transition questions
  - ✓ Biophysical models: robust, but unable to consider socio-economic issues
  - ✓ Economic, supply-demand equilibrium models (CAPRI, MAGNET, AgLink COSIMO…): unable to apprehend **structural transformations** of food systems
- Farms, processing industries, consumer behaviours… will be structurally different by 2030 and even more by 2050
- => the need to **couple both dynamics** and to link the functioning of food value chains to the impacts we want to apprehend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Socio-political dynamics
Policy instruments targetting supply, demand, market organisation
Social dynamics & international relations
Food chain dynamics
Agronomic / biophysical scenario
Import
export
Agriculture
Food processing
Consumer demand
Impacts on key issues
Farm incomes / employement
Agrifood jobs
Food (cost, health & nutrition)

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How it works?

- L = LI x Y with
  - L: total labour force employed
  - LI: labour intensity of the production
  - Y: indicator of the production
- Income: evolution of production costs to identify conditions of viability on prices & subsidies – beyond the scope of this presentation

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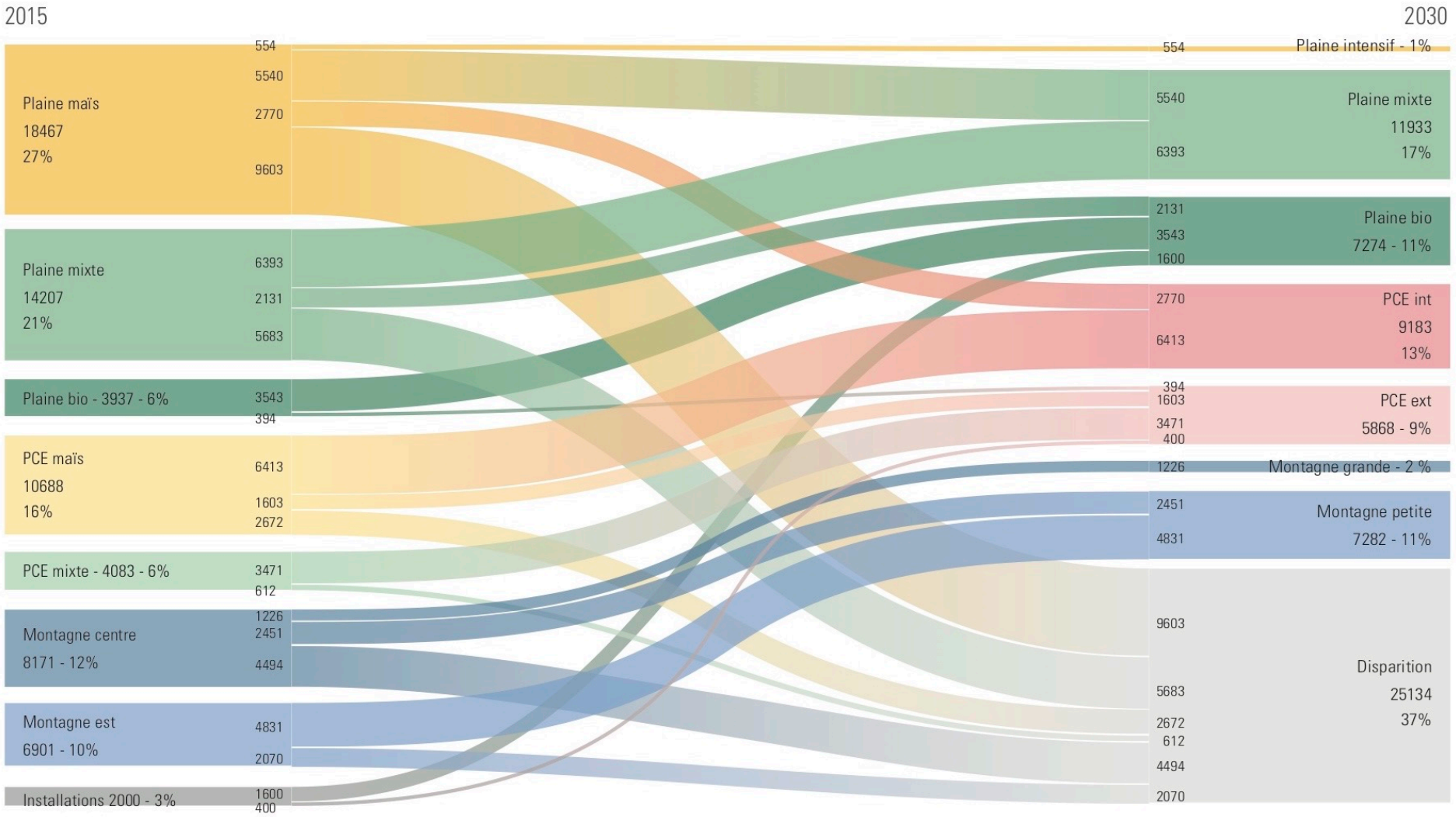
Agriculture

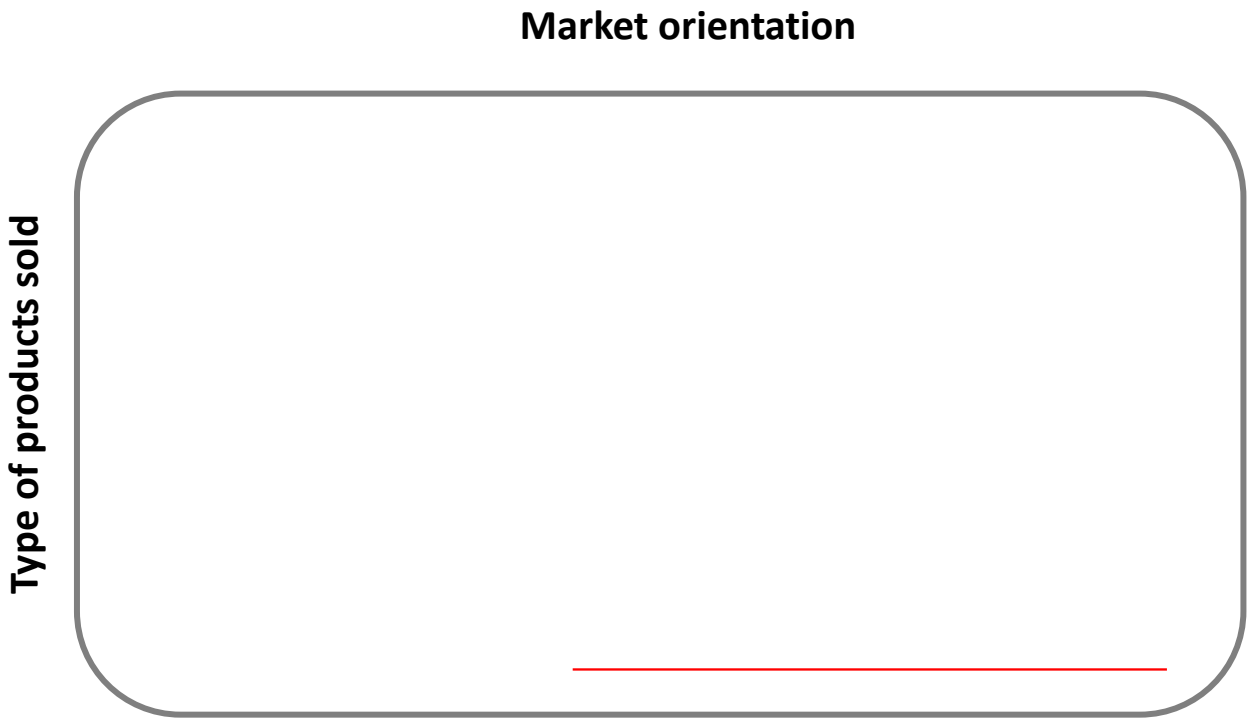
$$L_{2030} = \sum_i \left(LI - FS_{2030\,i} \times FS_{2030\,i} \right)$$

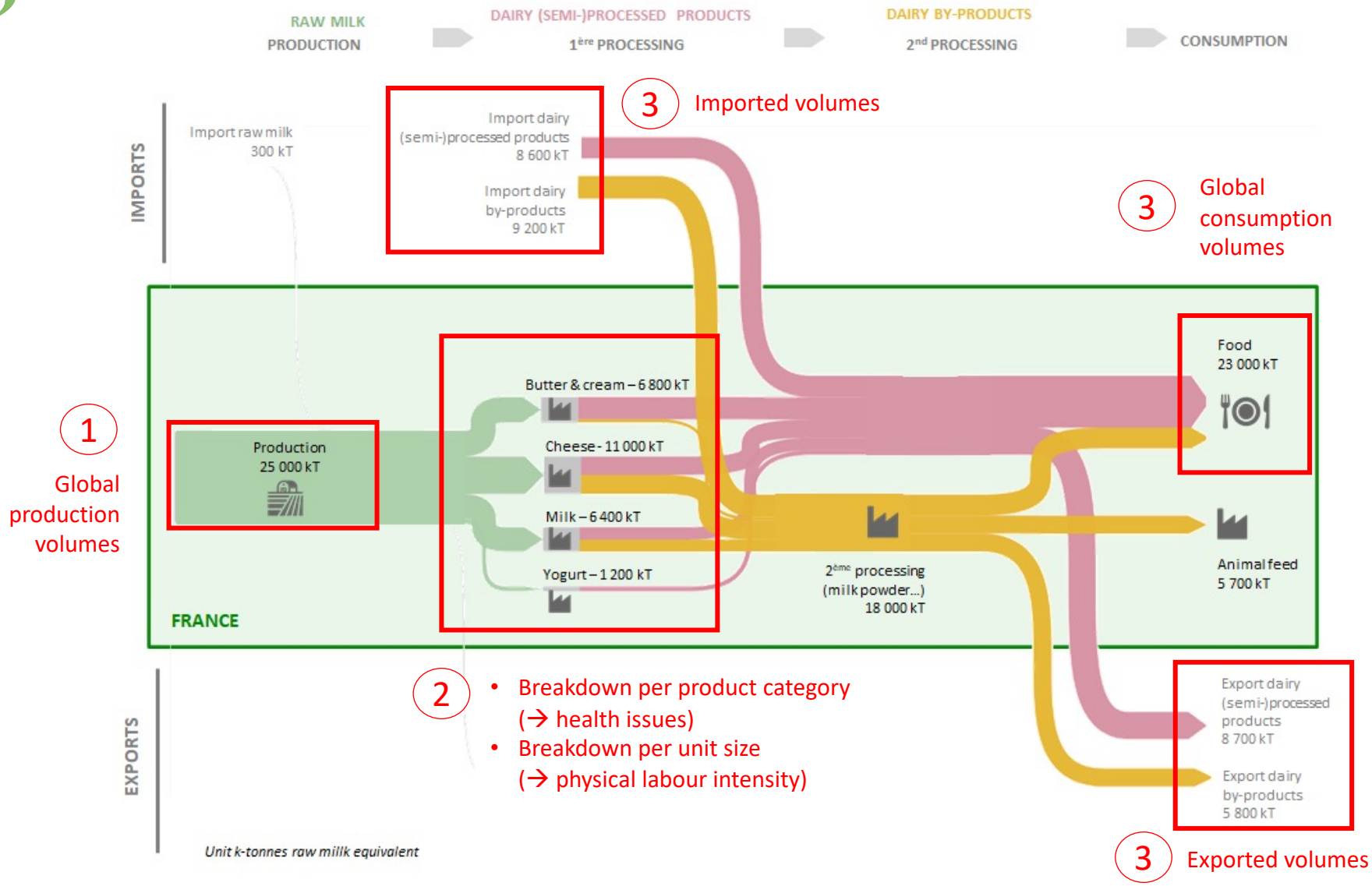


PCE : Polyculture-élevage.

Source : Iddri.

2. Food industry





2
- Breakdown per product category (→ health issues)
- Breakdown per unit size (→ physical labour intensity)

$$L_{2030} = \sum_i \left(LI_{i\,2030} \times V_{i\,2030} \right)$$

Data needs to make progress

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Data currently available

- At the farm level: FADN data => possible to reconstruct LI, KI
- At the processing industry level: data available does not account for **physical volumes passing through the processing industries**
  - ✓ difficult to link biophysical constraints and socio-economic outcomes
- Other limitations:
  - ✓ Complete data is often available only in an aggregated form at the national level (but see below)
  - ✓ No data regarding the share of differentiated vs commodified / standardized production
  - ✓ When data is available for specific firms:
    - ❑ It is often incomplete (ex. few data on business expenses)
    - ❑ Big firms are often over-represented in the sample

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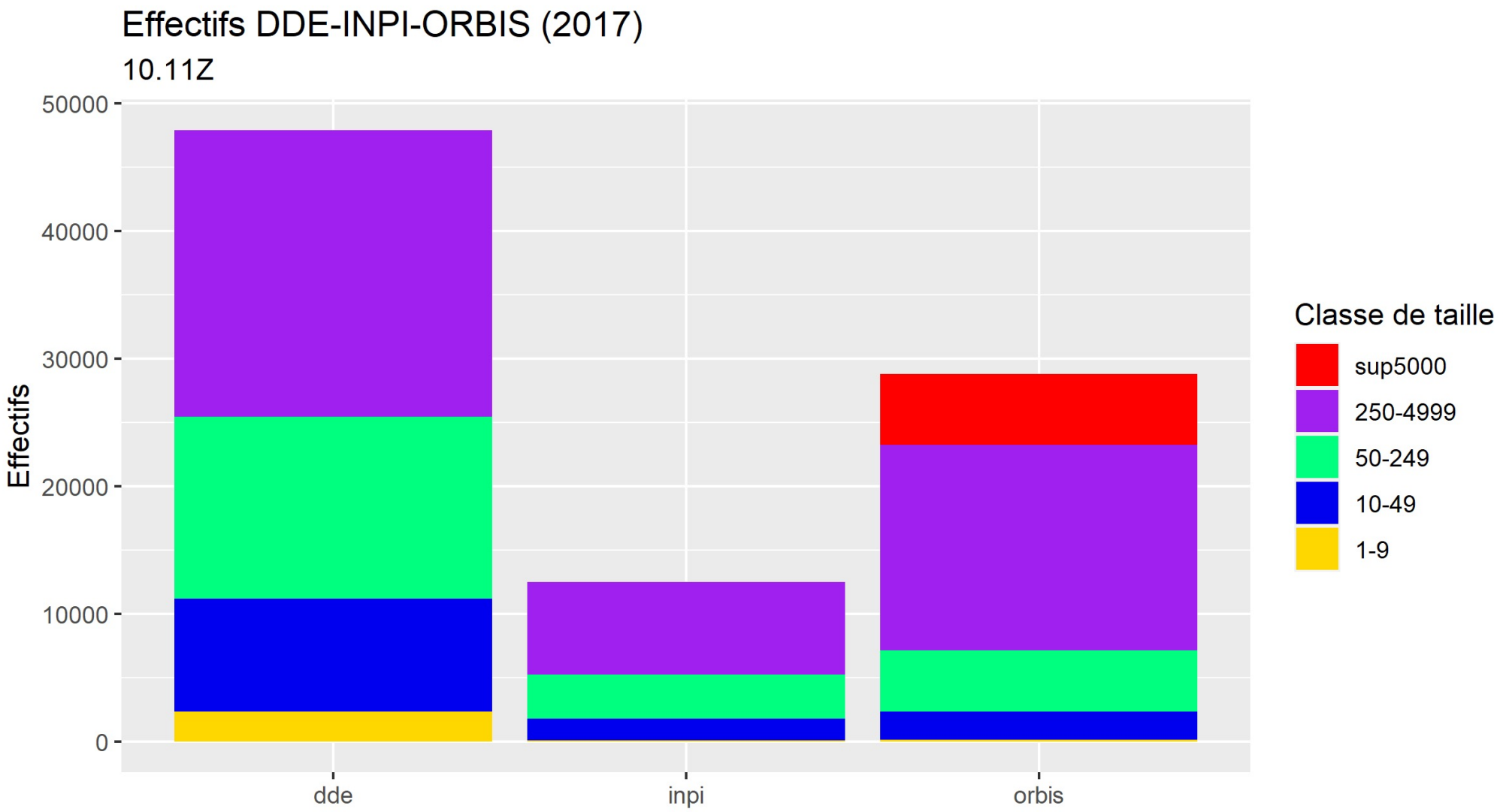
Effectifs DDE-INPI-ORBIS (2017)
10.11Z
Effectifs
50000
40000
30000
20000
10000
0
dde
inpi
orbis
Classe de taille
sup5000
250-4999
50-249
10-49
1-9

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The problem of the “legal entity” scale

- When data is available for specific firms (ex. ORBIS, DIANE, AMADEUS databases), it is provided at the “legal entity” scale (structure having juridic personality)
- This means that:
  - Difficult to reconstruct information and business strategies at the “company” scale (for firms belonging to the same company – and there are many)
  - Difficult to analyse specific production processes happening at the “facility scale” – where production happens
    - Ex. How much workload is necessary to produce a certain amount of output in a structure belonging to a firm
    - => not possible to link biophysical fluxes with socio-economic questions
  - Problem of double counting when considering turnover when production is sold to a facility belonging to the same legal entity (and is counted twice in term of turnover)

Firms operating in multiple sectors

- Firms are classed based on their sector of activity. For firms operating in various sectors, all data values are assigned to the dominant sector

- Some of the food processing is also realised by retailers (ex. Cutting and packing meat) -> Difficult to separate their main business from the processing activities

Conclusion

A key issue for further research

With these limits, it becomes difficult to :

- examine precisely scenarios of deep transformations regarding the processing sector
- create typologies of firms based on size, type of production (organic vs conventional), product mix etc.
- realise socio-economic evaluations at the “facility scale” or the “company scale”, which is the most appropriate scale when dealing with production processes
    - ❑ Company scale = scale at which the strategic decisions are taken
    - ❑ Facility scale = scale at which the production takes place (labour intensity)
- Similar issues when looking at trade!

THANK YOU

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