

Agroécologie et satisfaction des besoins alimentaires

Enjeux économiques et politiques

Présentation au MARS

14 juin 2022

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Introduction & Content

- Long lasting concerns about the potential impacts of F2F
- ... recently fuelled by the Ukrainian crisis and the “feed the world narrative”
- Four points to drive home
 1. Targets of the F2F are ambitious, yet unavoidable to increase the resilience and sustainability of the EU food system
 2. Lack of political support to the F2F are fuelled by inadequate, *market equilibrium* modelling tools
 3. Alternative modelling shows these targets are realistic
 4. They point towards three policy levers: dietary changes, industrial & innovation strategies, trade policy

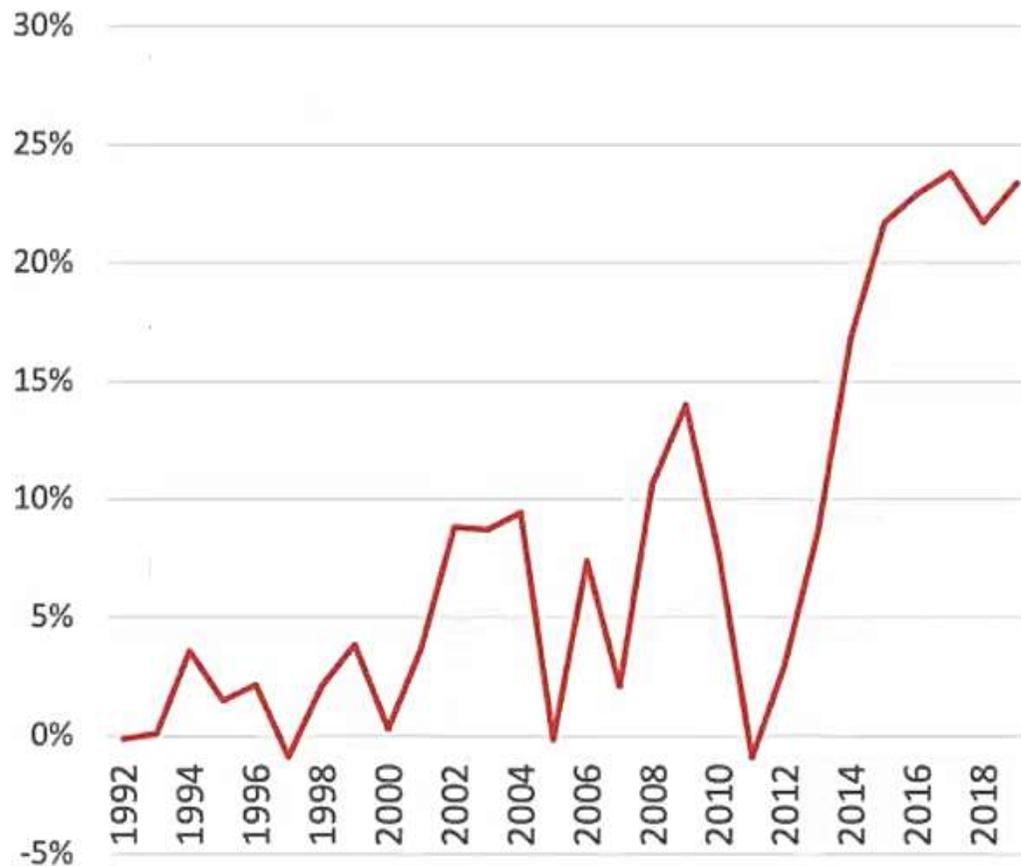
1. The F2F targets, resilience and sustainability questions

The F2F targets

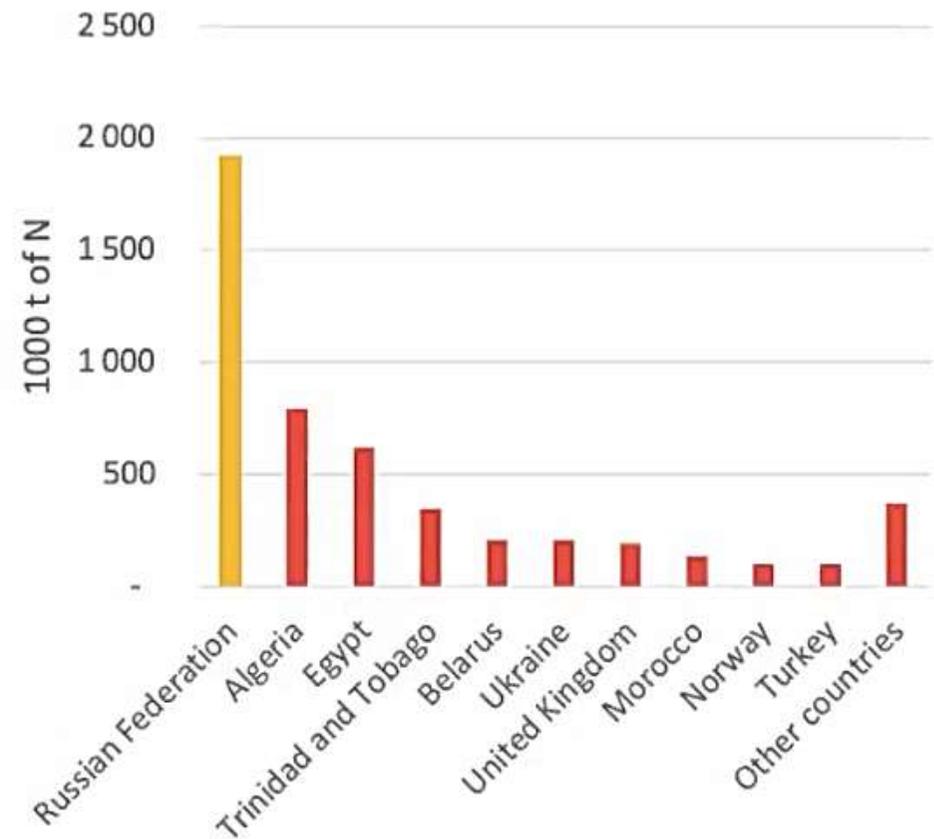
- A systemic approach to food system sustainability,
- Supply & demand sides measures + specific references to trade
- Ambitious targets, yet coherent with the need to foster the resilience and sustainability of our FS
- N and feed as illustration
 - On N: Surplus –50%, Application –20%
 - On feed: reducing red and processed meat consumption

N management: dependence...

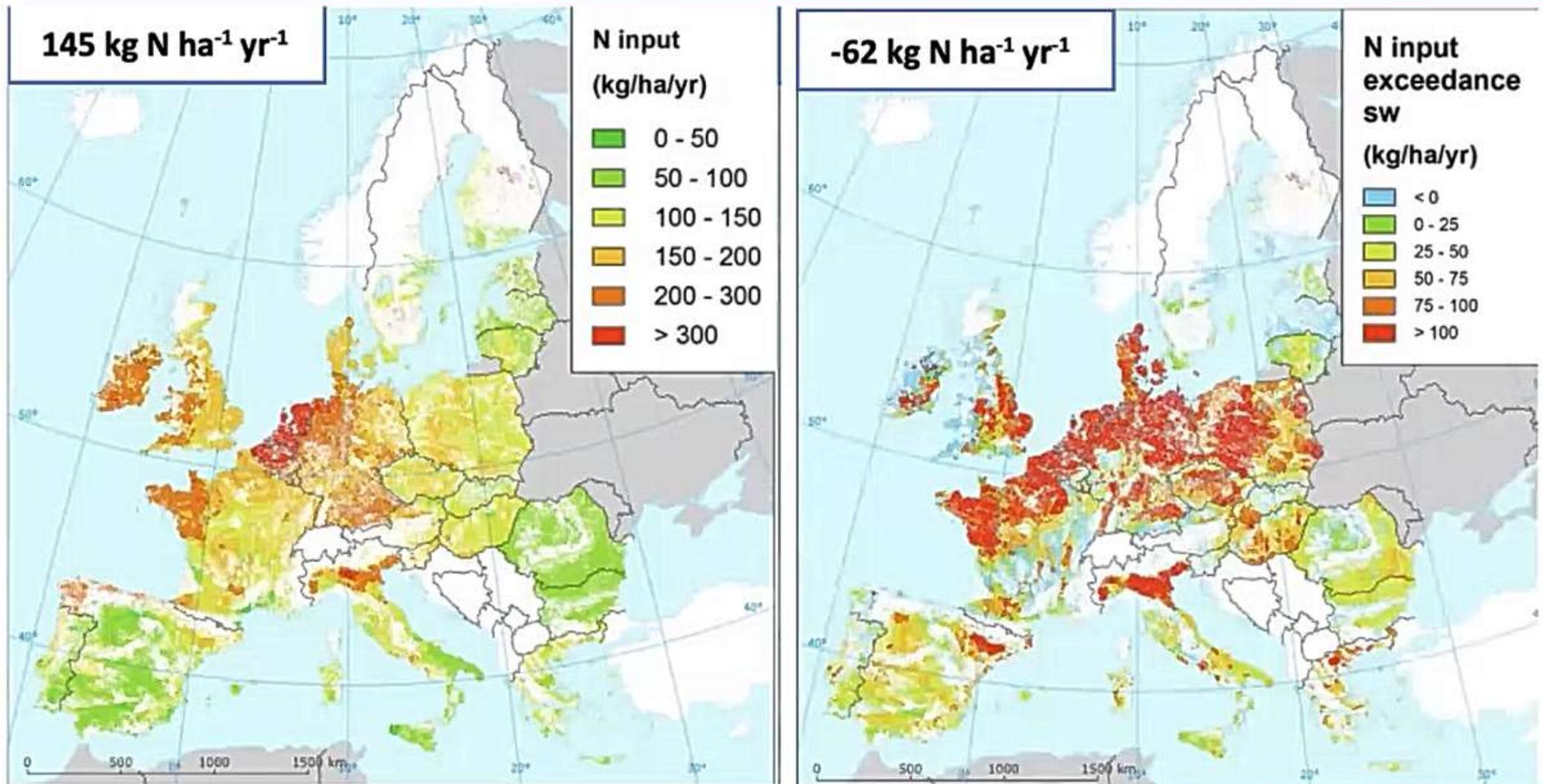
EU net import dependence on synthetic N fertilizers



EU main trade partners for synthetic N fertilizers imports



... and overuse

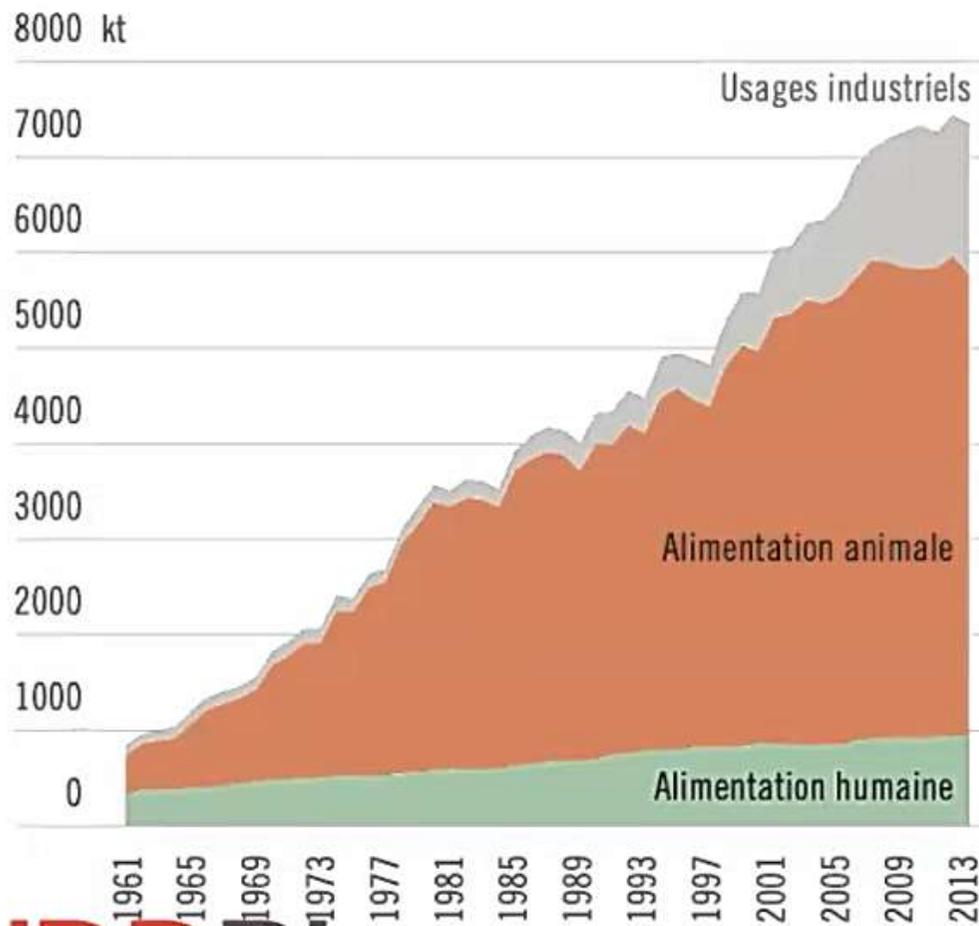


Actual N application vs required N application at constant NUE in view of the protection of surface water (DeVries, 2020)

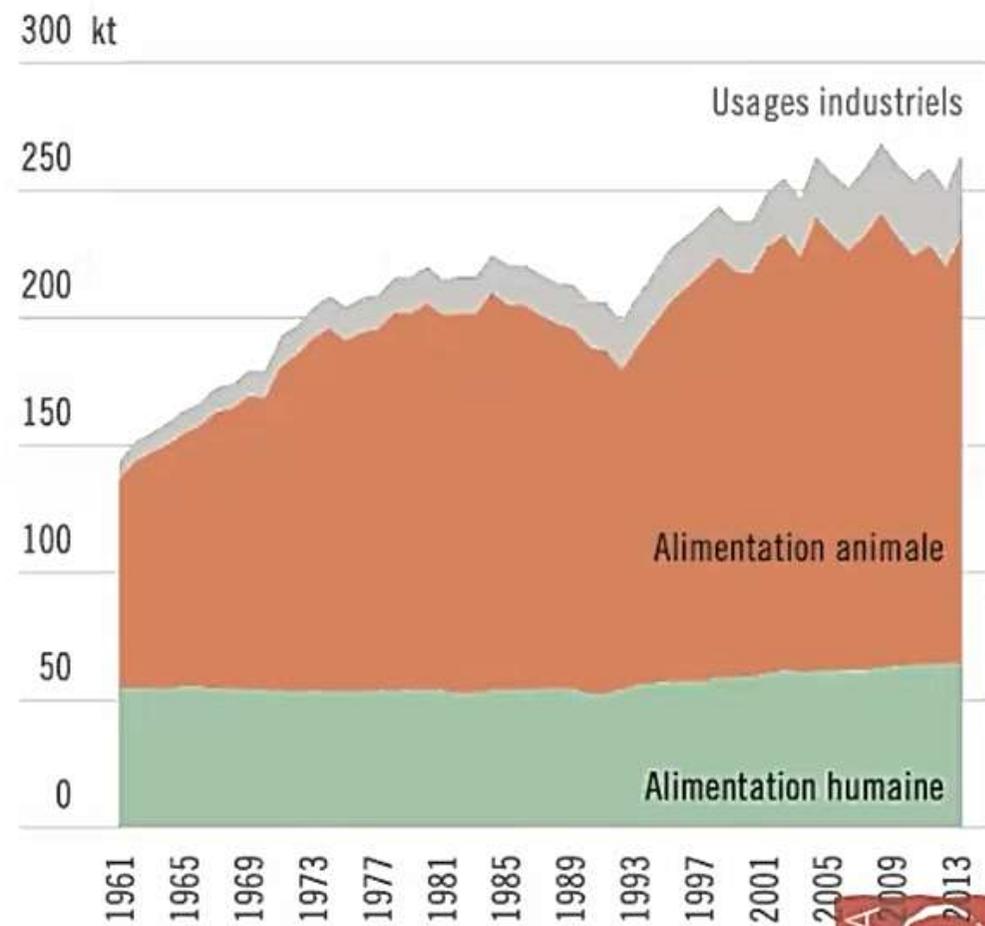
Feed: a major use of vegetal products in the EU...

Figure 8. Évolution des usages des oléagineux et des céréales en Europe

8.a. Oléagineux, EU, 1961-2013

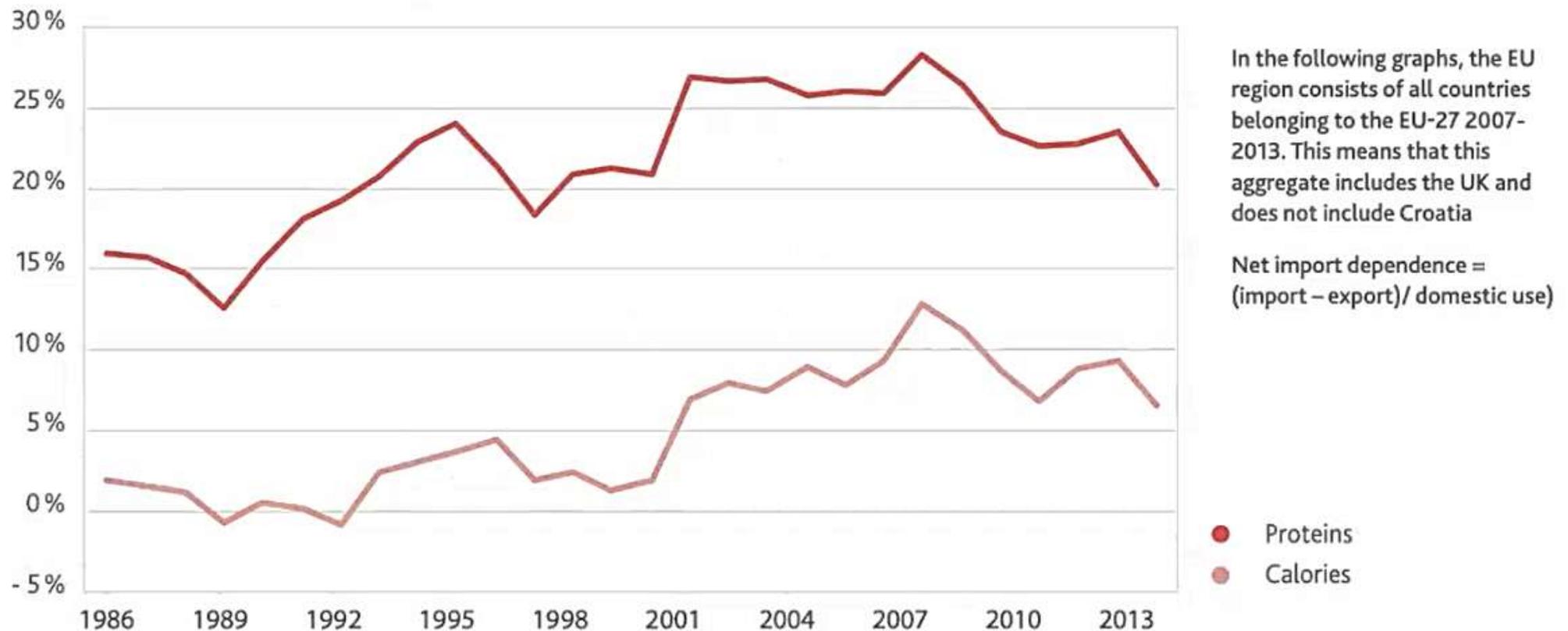


8.b. Céréales, EU, 1961-2013



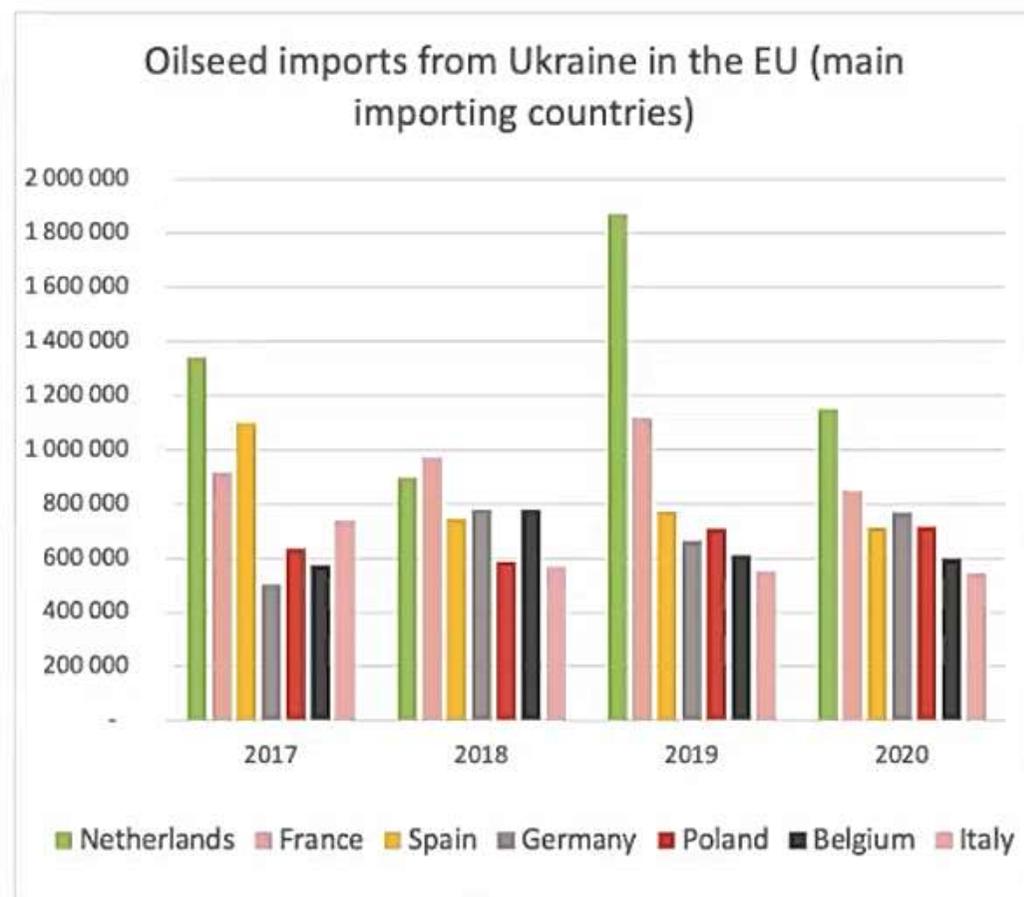
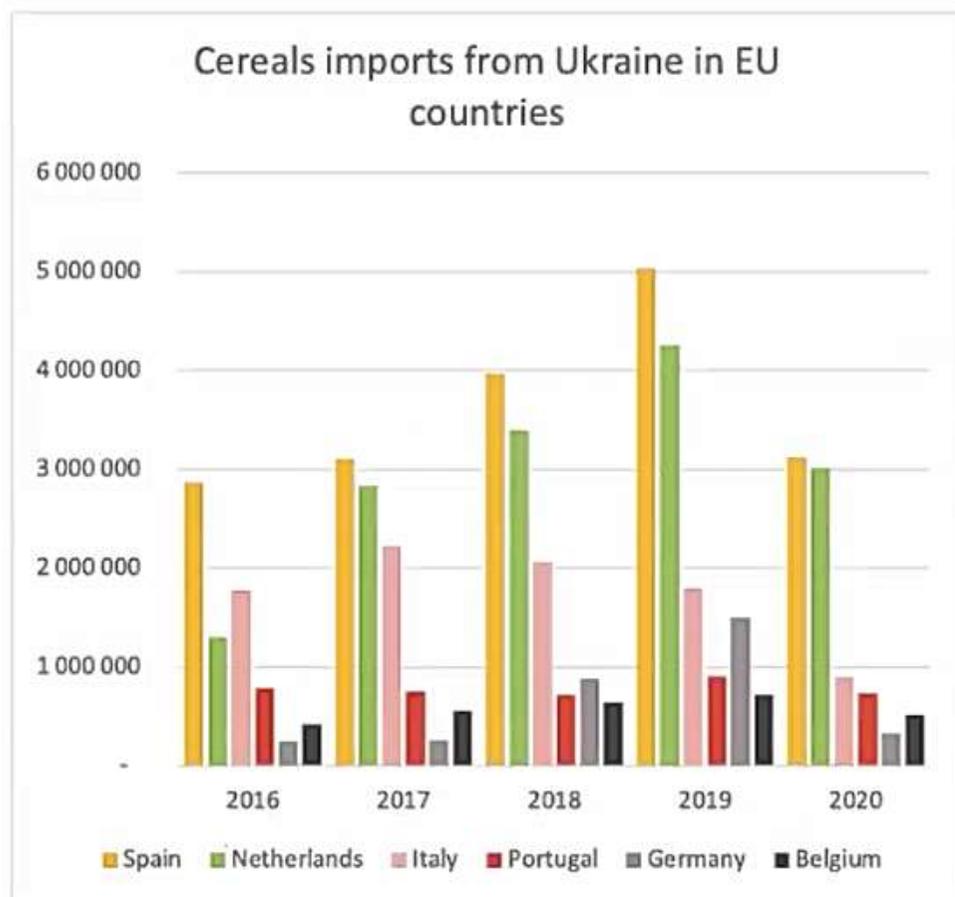
... that depends on protein and cereal imports for many countries

FIGURE 3. EU-27 Net import dependence in calories and proteins (1986-2013)



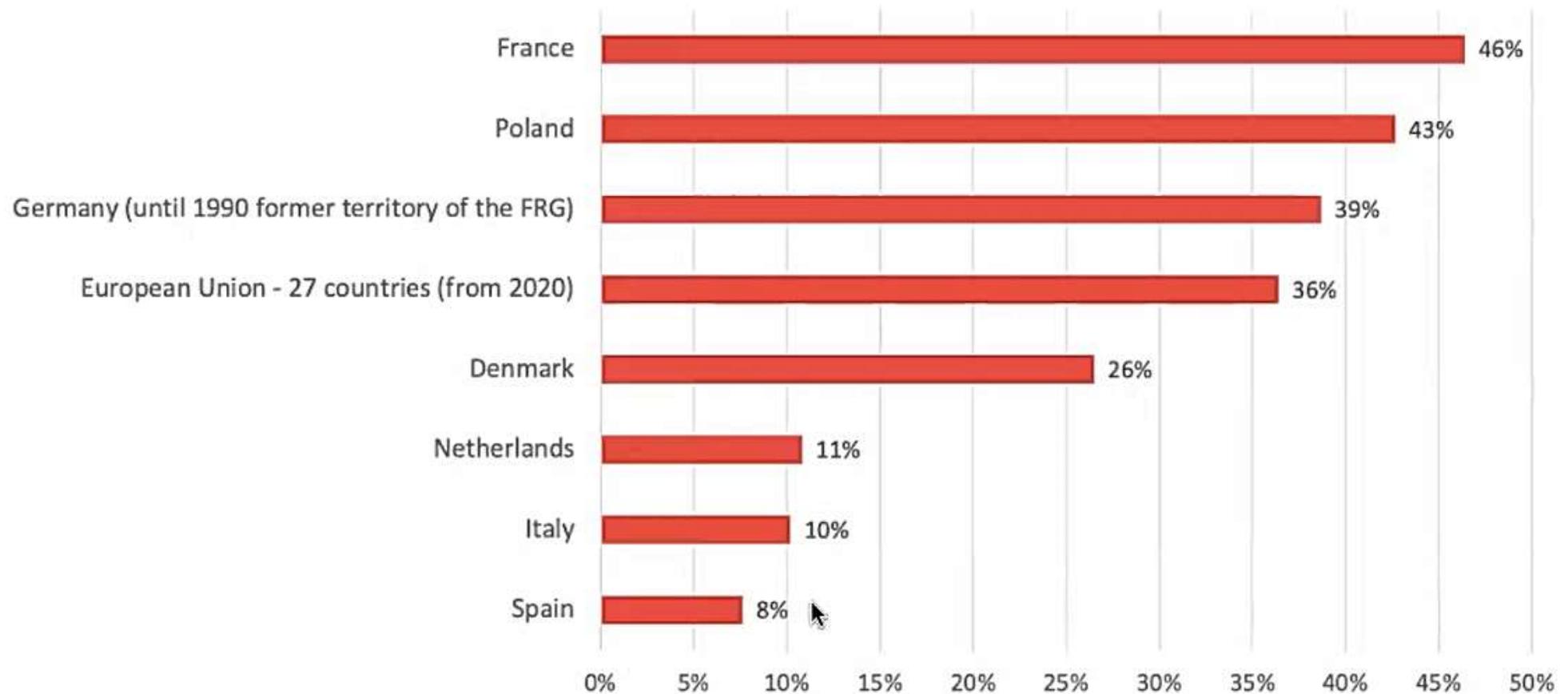
Source: FAOSTAT, IDDRI treatment

... in particular from Ukraine – revealing fragilities of our food system



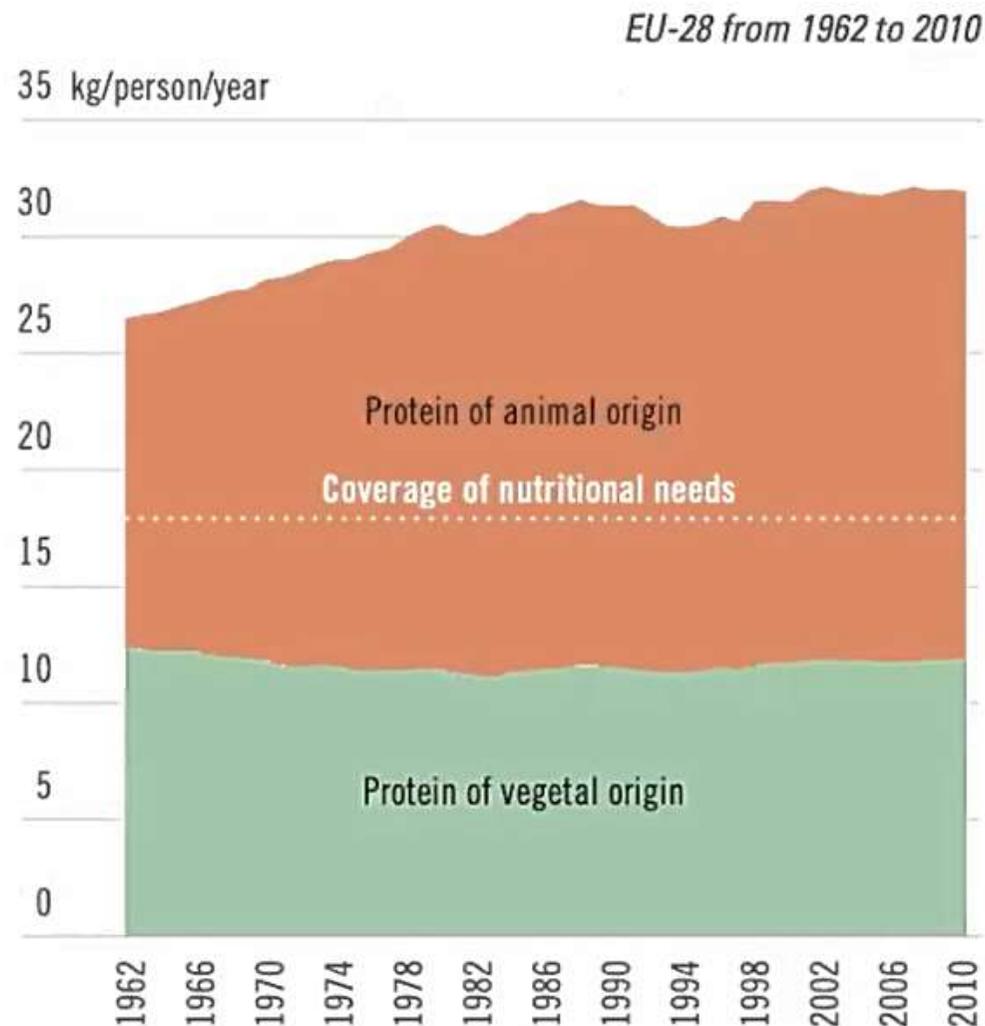
... most notably highly heteronomous livestock systems

Share of feeding stuff produced on the farm in total feed use in 2019
(Production value at basic price)



... associated with an overconsumption of animal proteins

Figure 2. Annual protein consumption



Source: author, according to FAOstat.

A strategy

RESEARCH

CLIMATE CHANGE

Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets

Michael A. Clark¹, Mina G. G. Domingo², Kimberly Colgan², Sumil K. Thakrar², David Tilman^{3,4}, John Lynch⁵, Inés L. Azevedo^{6,7}, Jason D. Hill⁸

The Paris Agreement's goal of limiting the increase in global temperature to 1.5° or 2°C above preindustrial levels requires rapid reductions in greenhouse gas emissions. Although reducing emissions from fossil fuels is essential for meeting this goal, other sources of emissions may also preclude its attainment. We show that even if fossil fuel emissions were immediately halted, current trends in global food systems would prevent the achievement of the 1.5°C target and, by the end of the century, threaten the achievement of the 2°C target. Meeting the 1.5°C target requires rapid and ambitious changes to food systems as well as to all nonfood sectors. The 2°C target could be achieved with less-ambitious changes to food systems, but only if fossil fuel and other nonfood emissions are eliminated soon.

IDDRI



ISSUE BRIEF

8th 15th SEPTEMBER 2018

An agro-ecological Europe: a desirable, credible option to address food and environmental challenges

Xavier Poux (ASCA, IDDRI), Pierre-Marie Aubert (IDDRI)

Social expectations regarding healthy diets, the protection of natural resources and biodiversity are becoming increasingly apparent at the European level. Effectively managing these expectations implies generalising an agro-ecological model, in other words one that uses no pesticides and maximises ecological processes. In Europe, this kind of agriculture is less productive on average, and is therefore considered incompatible with tackling other crucial challenges: producing enough for Europe and the world while developing bioeconomy sectors to combat climate change.

The TYFA project (Ten Years for Agroecology in Europe) addresses this apparent dilemma by examining how much food/food/fuel and material the agricultural sector could and should produce to tackle, with equal priority, challenges associated with climate change, health, the protection of biodiversity and natural resources, and the provision of a sustainable and healthy diet to Europeans—without affecting global food security. Top scientific experts helped to build a quantitative model simulating the agricultural functioning of the European food system in order to examine the current situation and to develop an agro-ecological scenario for Europe in 2050. This is the first component of a foresight exercise that will successively deal with the socio-economic challenges and the policy levers for an agro-ecological transition.

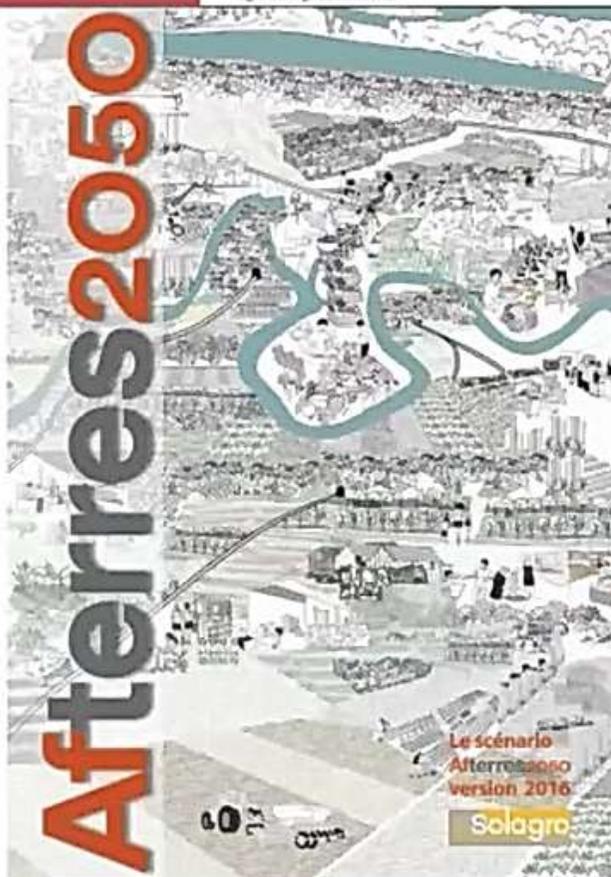
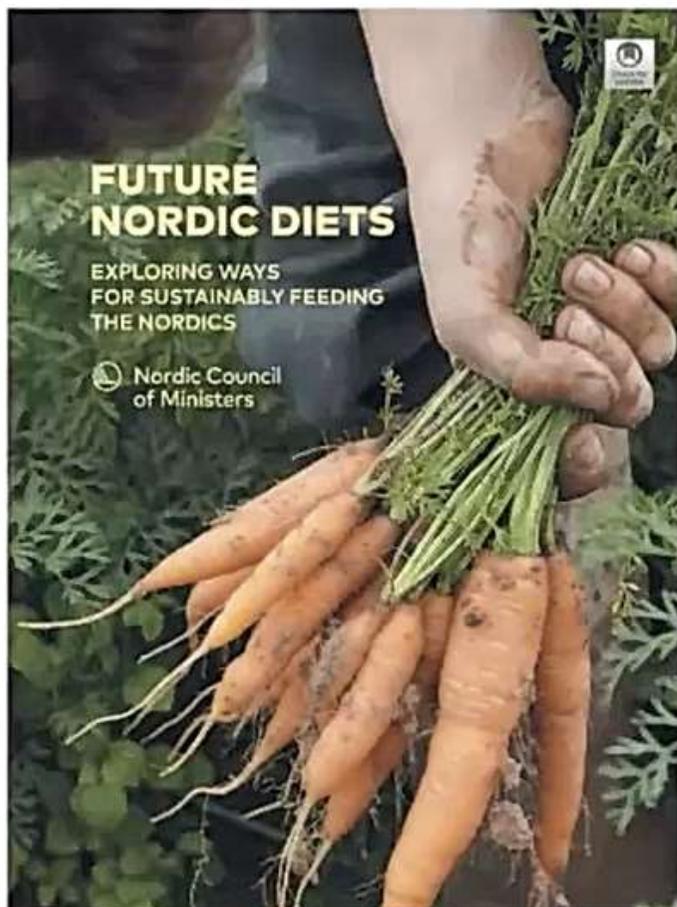
THE LANCET

Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems



“Food in the Anthropocene represents one of the greatest health and environmental challenges of the 21st century.”

A Commission by The Lancet



A strategy coherent with most food system scenarios

- Changing patterns of animal source food production and consumption
- Reducing food waste and losses
- Reducing the use of external inputs through a rediversification from farms to landscapes

2. A lack of political support because of economic risks?

The three risks associated to the F2F

- Putting food security at risk by reducing the production?
- Reducing farmer incomes and destroying jobs – in particular in the livestock sector?
- Increasing the cost of food for poor consumers?



United States Department of Agriculture

Economic
Research
Service

Economic
Brief
Number 30

November 2020

Economic and Food Security Impacts of Agricultural Input Reduction Under the European Union Green Deal's Farm to Fork and Biodiversity Strategies

Jayson Beckman, Maros Ivanic, Jeremy L. Jelliffe, Felix G. Baquedano, and Sara G. Scott



The three risks associated to the F2F

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

€1,090 billion
turnover

€212 billion
value added

4.25 million people
direct employment

285,000 SMEs account for:

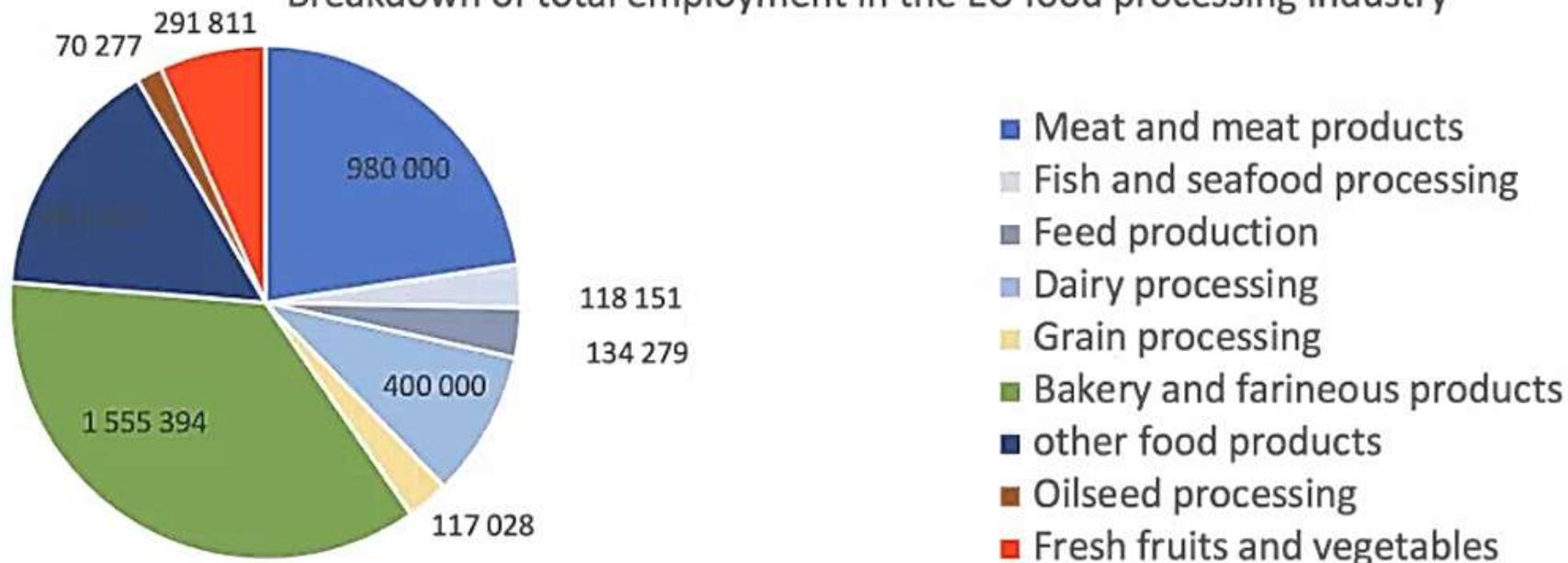
49.4%
of food and drink
turnover

48.1%
of food and drink
value added

62.8%
of food and drink
employment

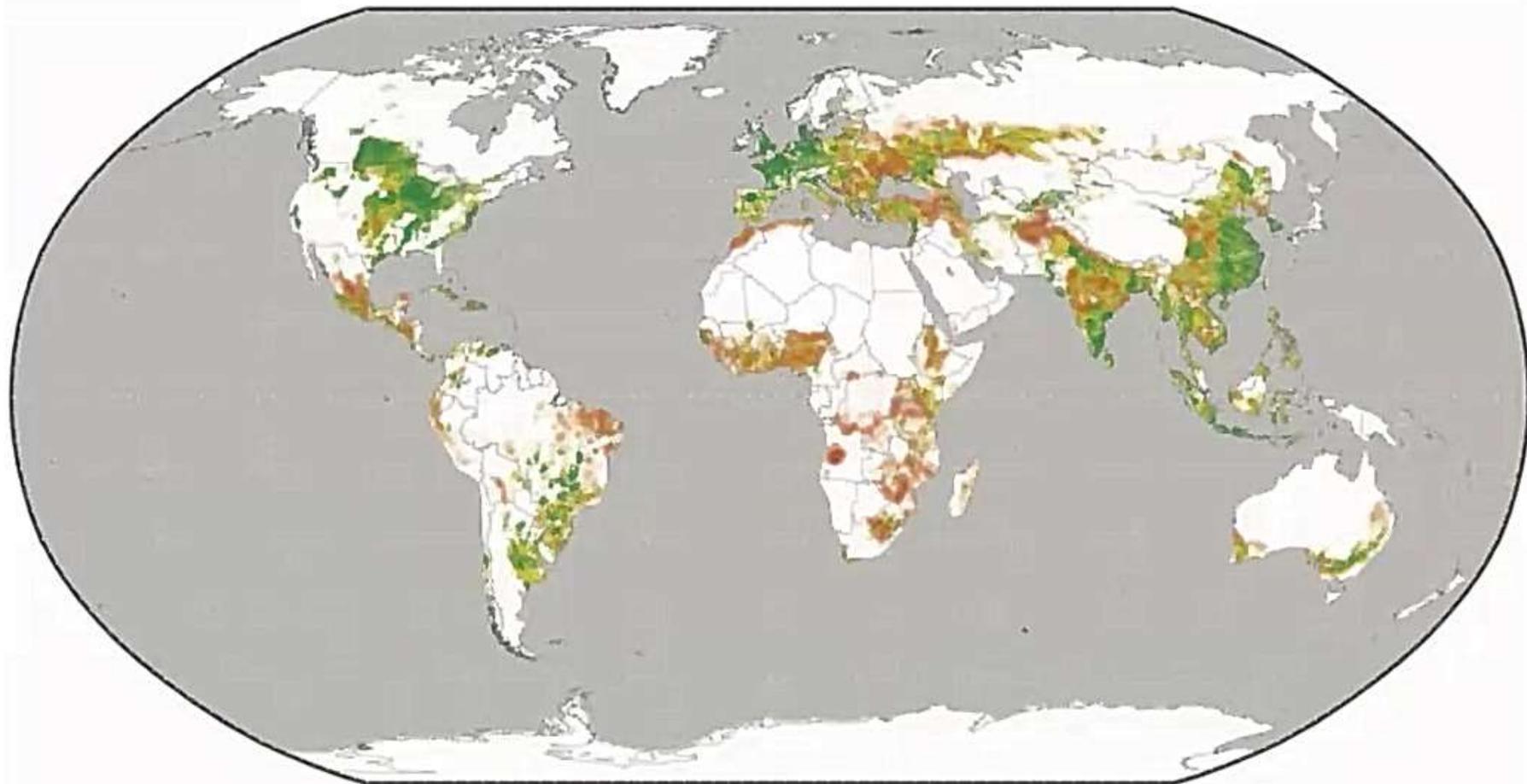
99% of food and drink companies are SMEs

Breakdown of total employment in the EU food processing industry

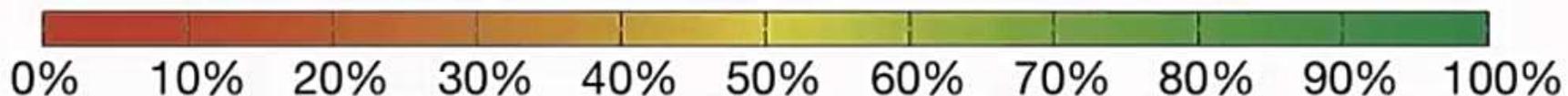


How were these risks assessed?

- Market-equilibrium models and biomass-balance models
 - Market-based models: difficult to apprehend the effect of *systemic changes* as models reproduce the functioning of current systems
 - Biomass-balance models: no prices in the model, only physical rules – but robustness in apprehending env. Issues
- The case of F2F assessments:
 - No change in EU demand
 - Limited to no innovations in the EU supply – and a BAU assuming yields can still increase *significantly*
 - Same targets in the rest of the world – while contexts are so different
- The need to take the results with cautions!



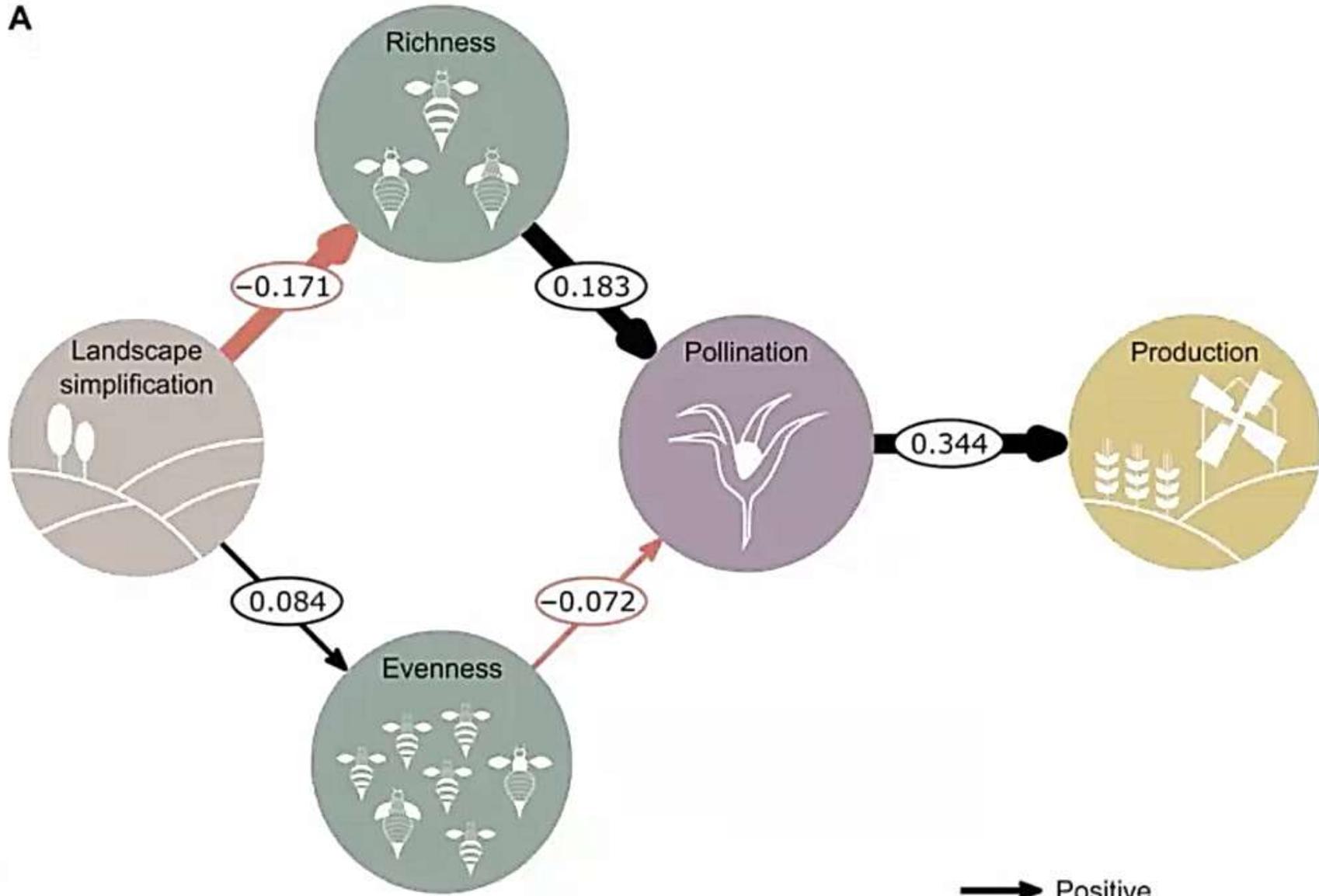
Major cereals: attainable yield achieved (%)



Muller & al, 2012

Figure 1 | Average yield gaps for maize, wheat and rice. These were measured as a percentage of the attainable yield achieved circa the year 2000. Yield gap in each grid cell is calculated as an area-weighted average across the crops and is displayed on the top 98% of growing area.

A



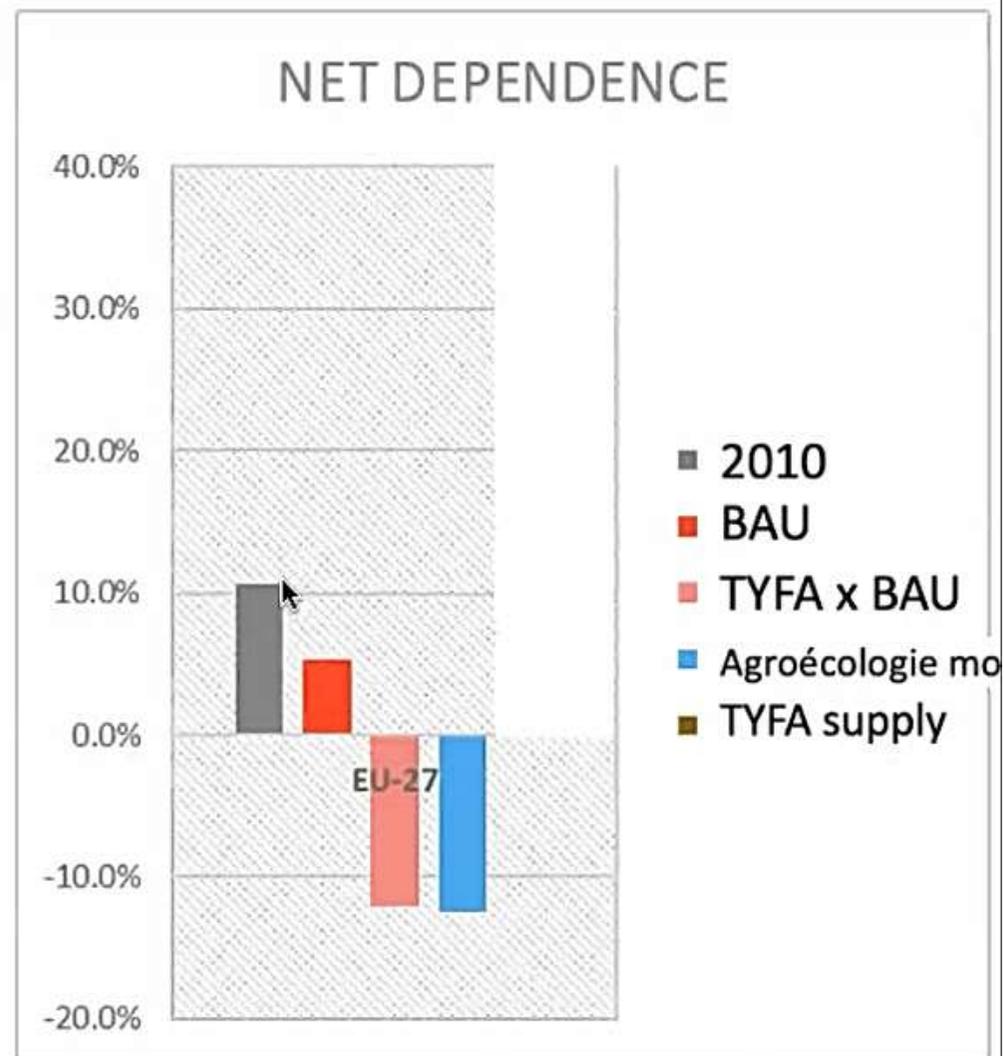
Dainese et al, 2019

IDDRI

3. Alternative approaches show the targets are realistic – but challenging!

On food availability: the TYFA scenario

- *Ten Years For Agroecology* : a biotechnical modelling by 2050
- A set of assumptions aligned with the F2F targets
 - Fertility management and N cycle closing
 - Phase out of pesticide
 - 10% landscape features
 - Resilient livestock systems
 - Healthy and balanced diets
- Results: changes in diets, feeding strategies, and increases in NUE **outweigh production reduction!**



Import dependency of the EU under different scenarios compared to the baseline (source: INRAe & Iddri, 2021)

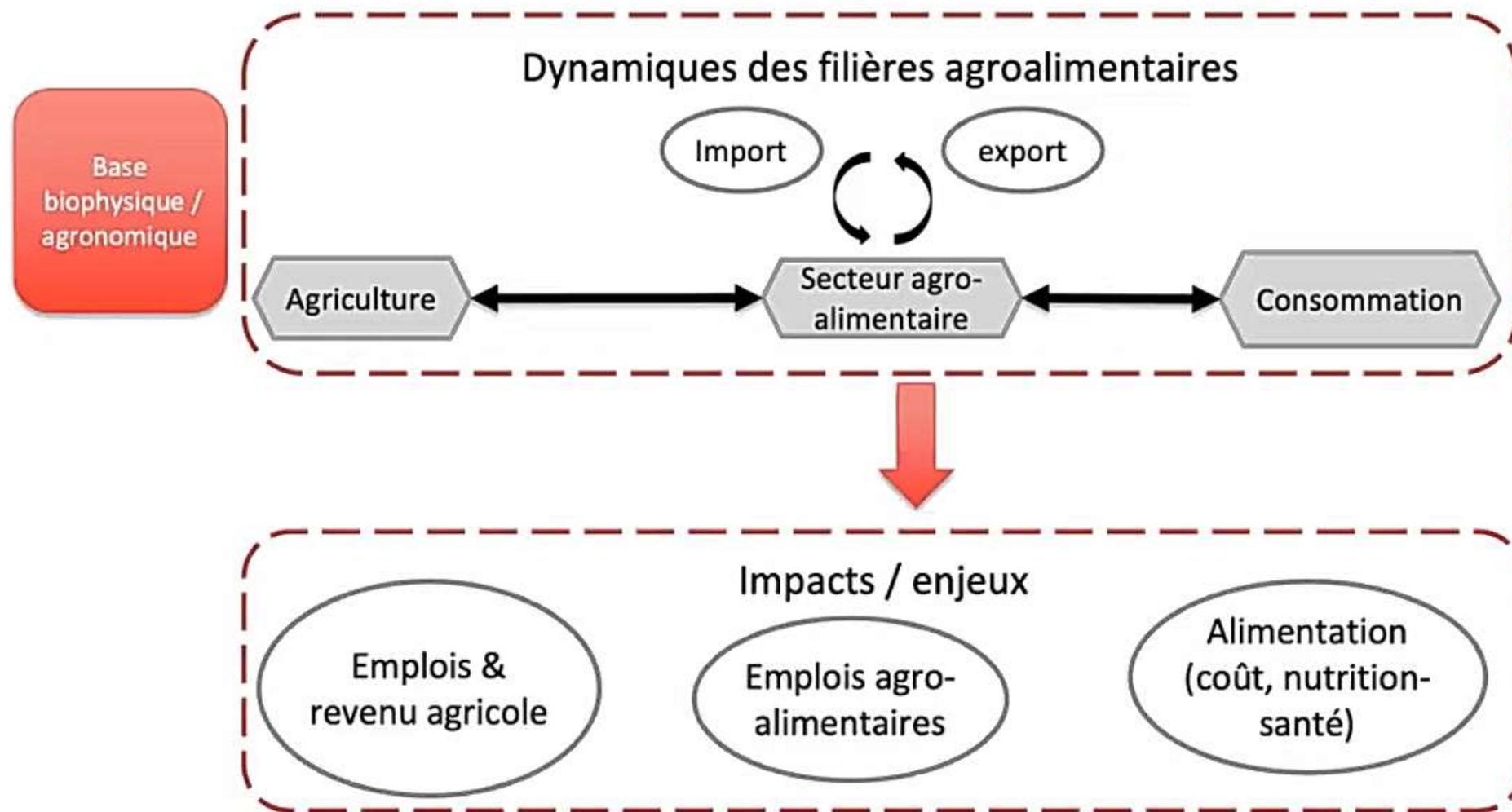
On jobs and farmer incomes

MARS 2021

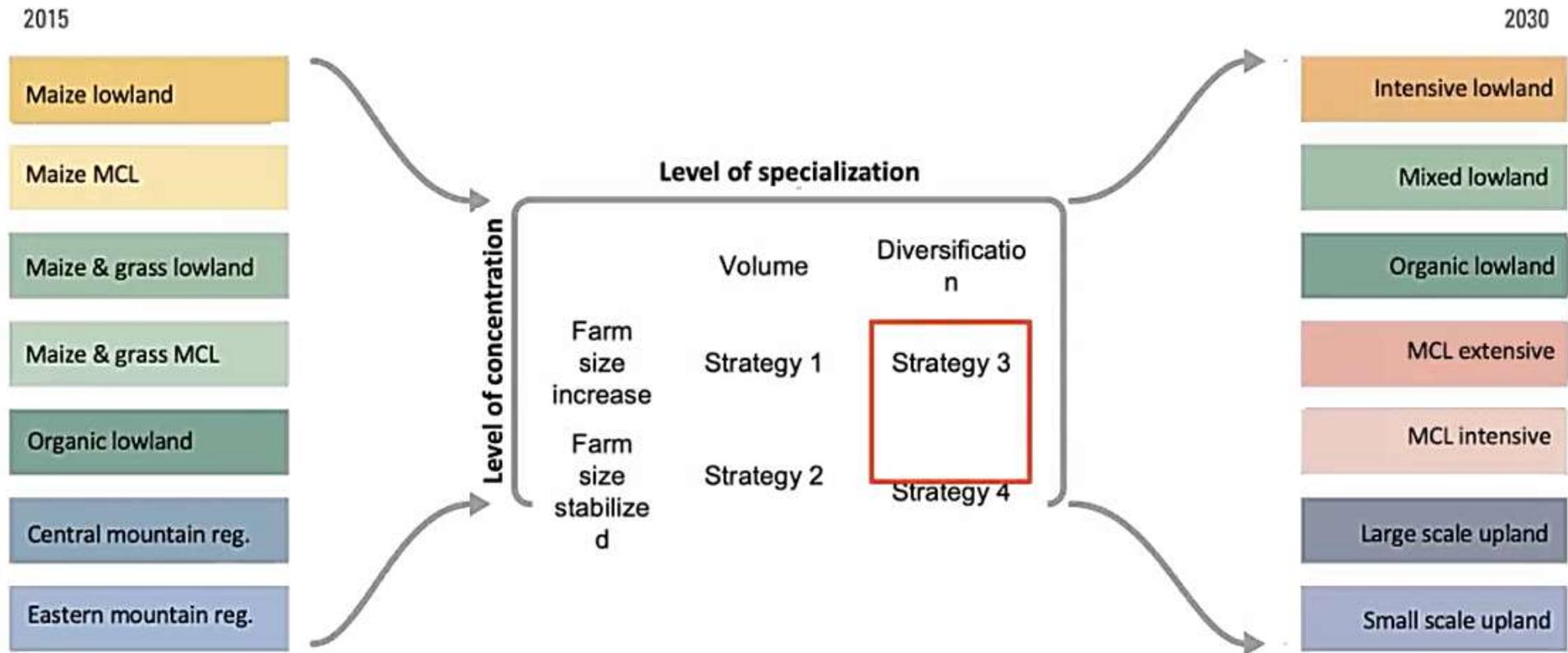
TOWARDS A JUST TRANSITION OF FOOD SYSTEMS **Challenges and policy levers for France**

Pierre-Marie Aubert, Baptiste Gardin (IDDRI) & Christophe Alliot (BASIC)
With contributions from Éric Huber (IDDRI), Théobald Fennel & Valérie McAdam (BASIC),
Xavier Four (ASCA), Christiane Cauter & Sylvain Boubist (Solagro)

Coupler dynamiques physiques et socio-économiques, explorer les trade-offs : le projet Transition Juste

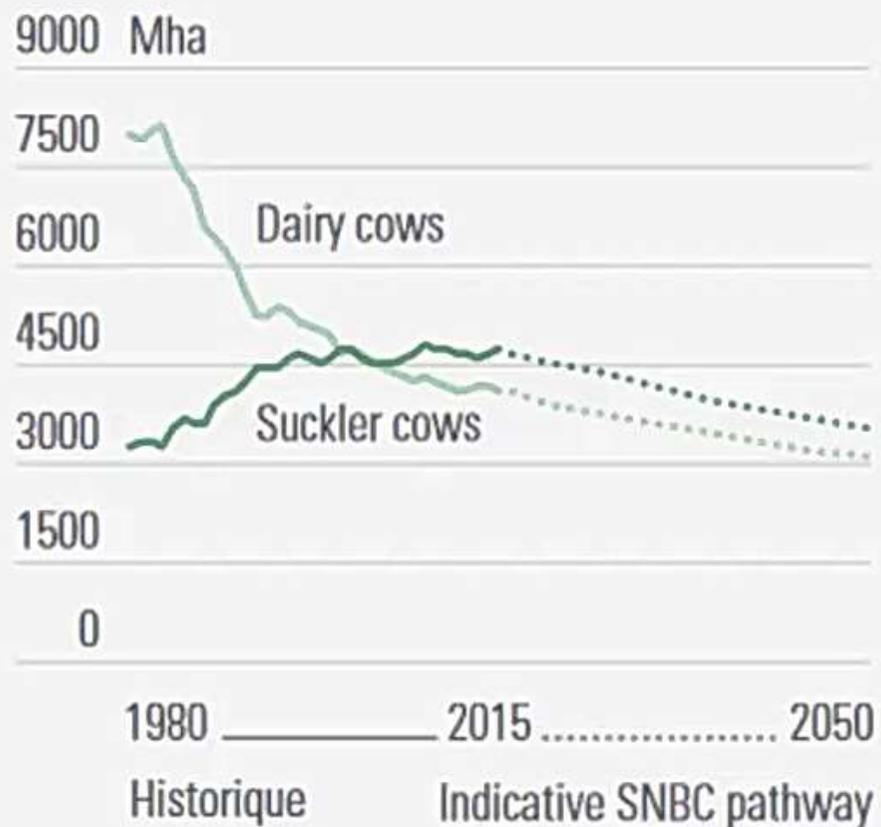


1. Agriculture – emploi

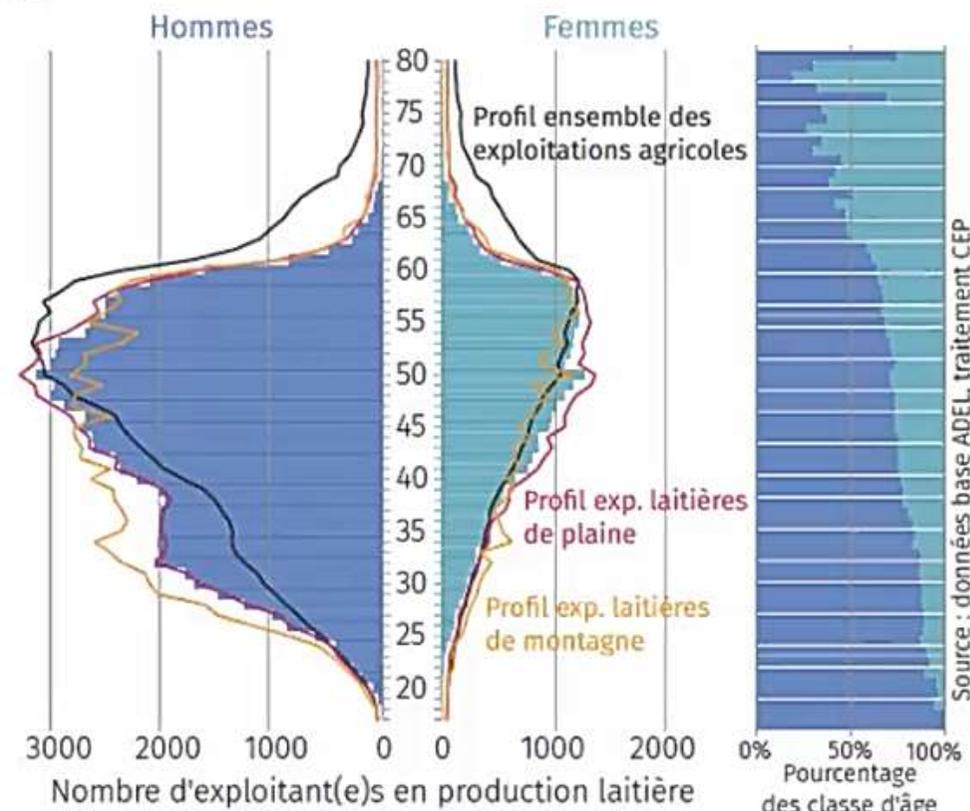


$$ET_{2030} = \sum_i (IE - SP_{2030\ i} \times n_{SP-2030\ i})$$

Les contraintes de modélisation



Âge et sexe des exploitants et coexploitants en production laitière en 2014, en nombre d'actifs et en pourcentage de chaque classe d'âge

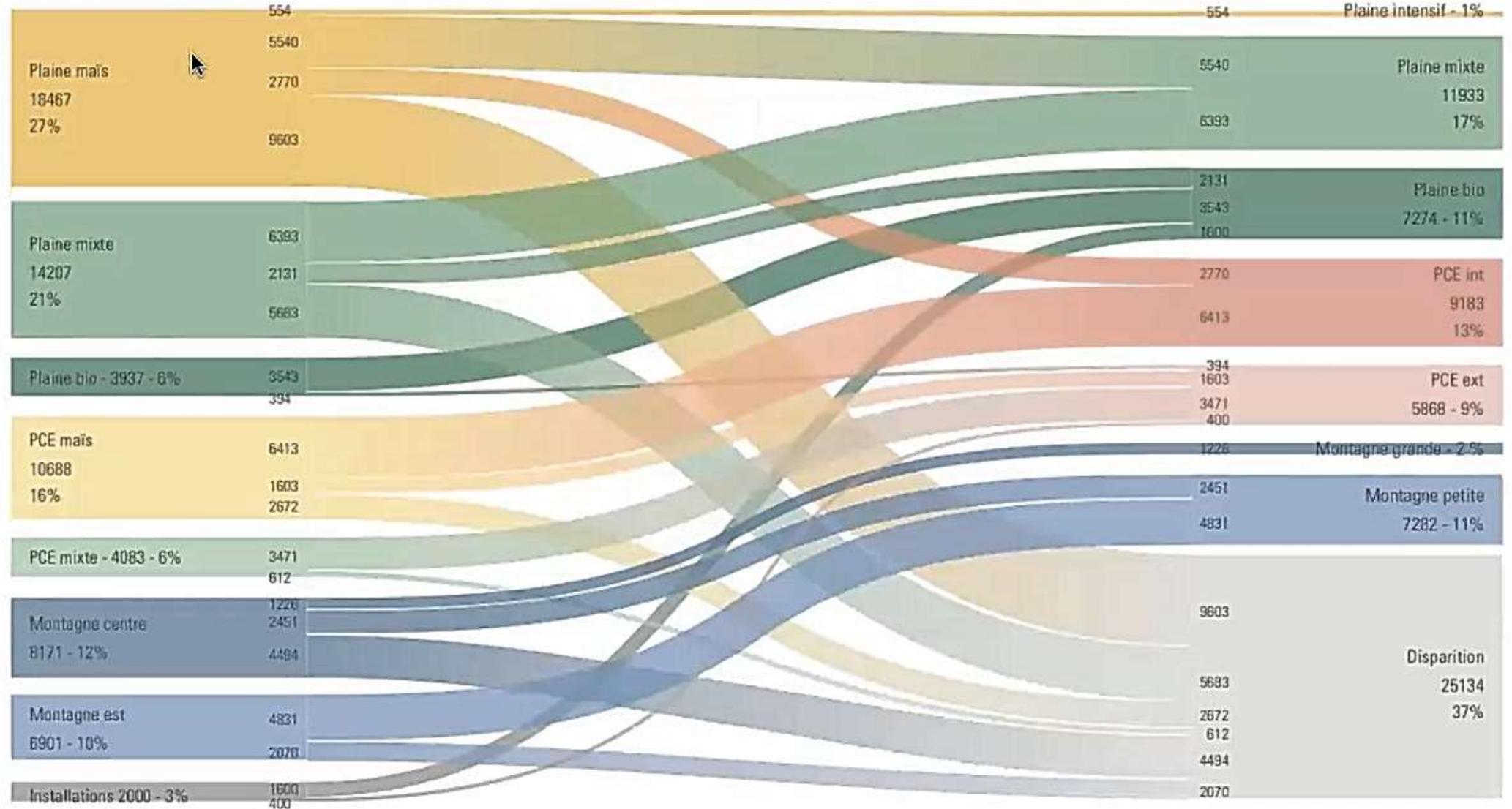


Les courbes noire, rose et orange figurent des profils de référence ramenés à la même base de population, respectivement pour les producteurs laitiers de plaine, de montagne et pour l'ensemble des exploitants agricoles, tous secteurs confondus.

1. Agriculture – emploi

2015

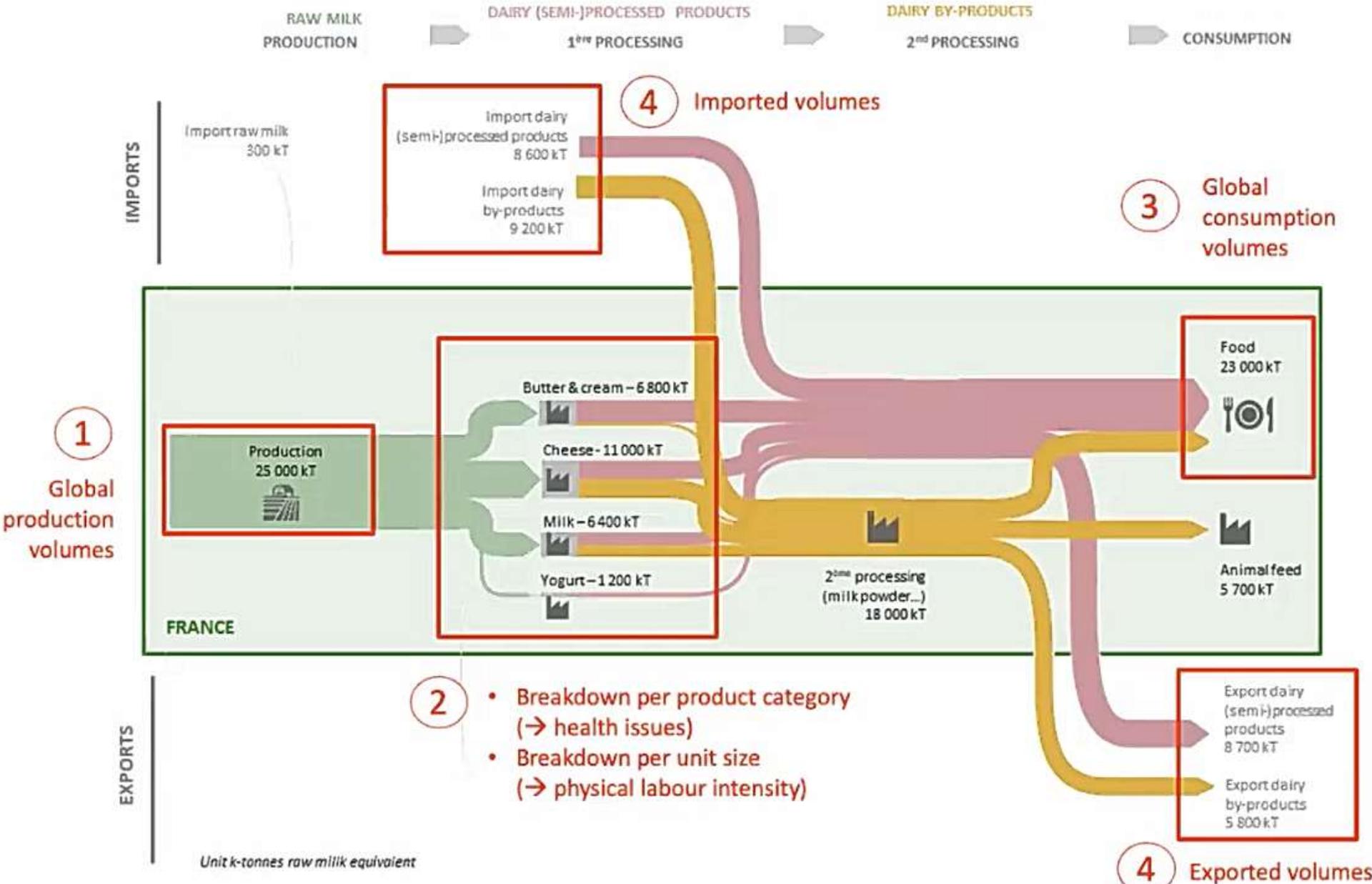
2030

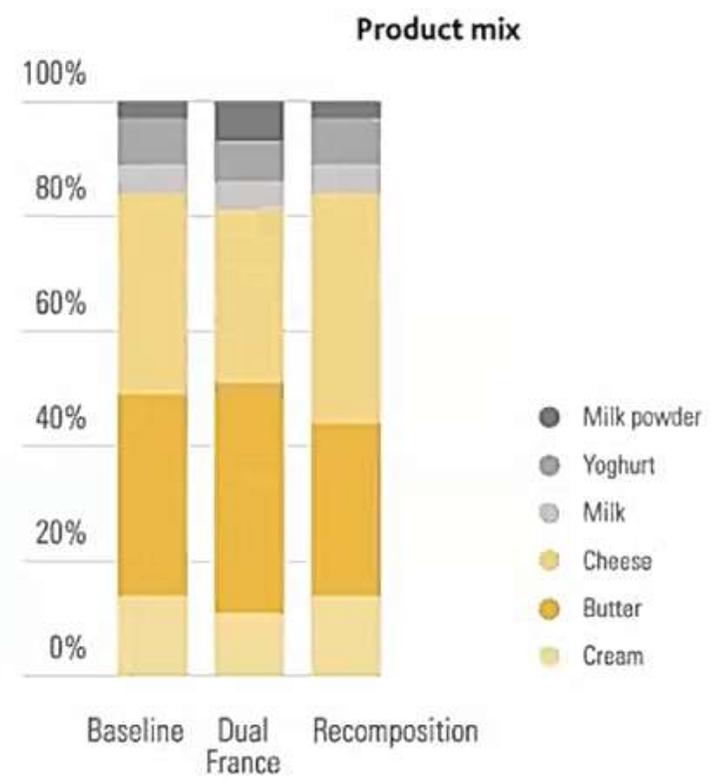
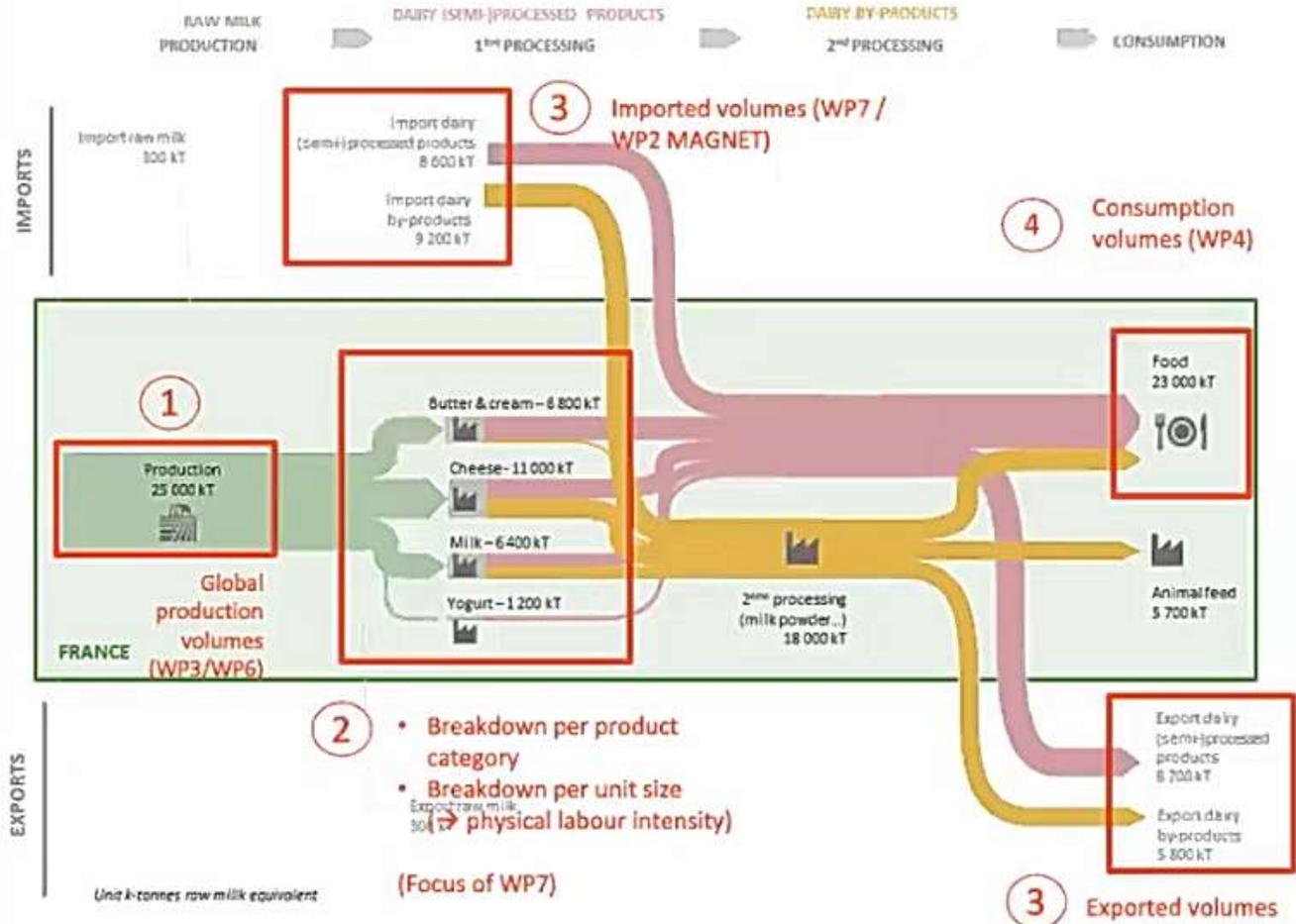


PCE : Polyculture-élevage.

Source : Iddri.

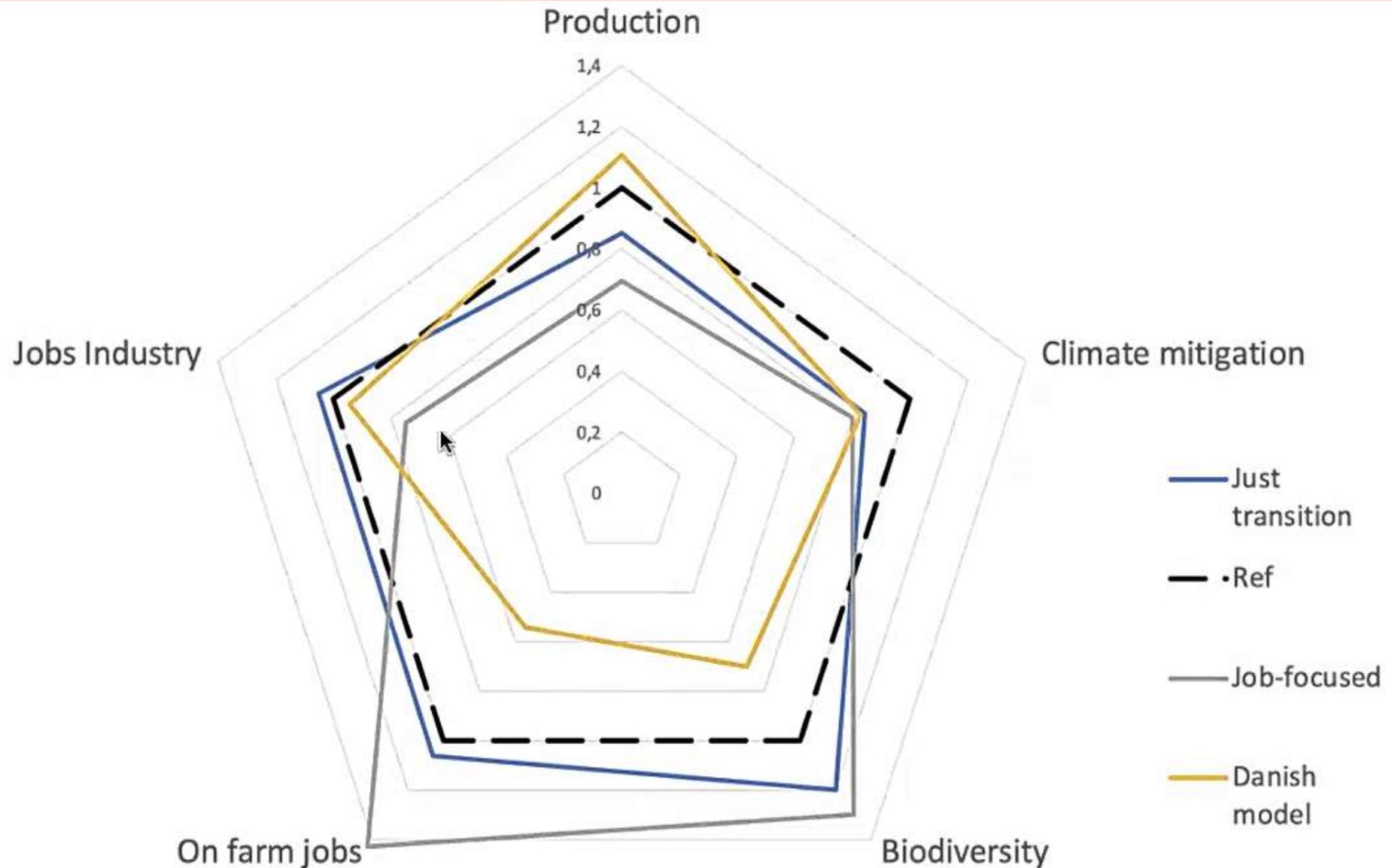
Maillon IAA



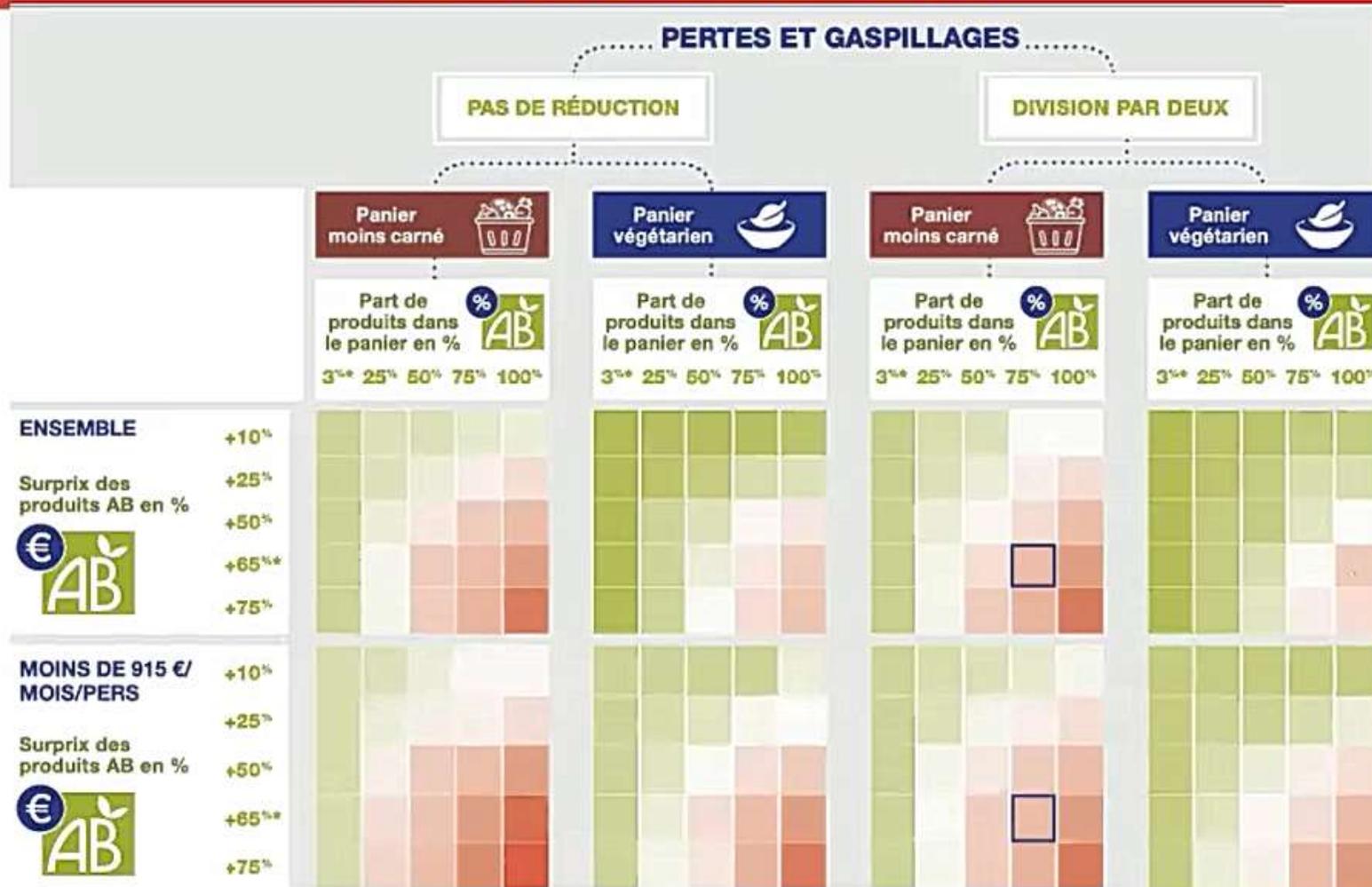


Source: authors

Quelles options pour une transition juste ?



La question du coût de l'alimentation



Conclusions

- Organiser la discussion sur la transition en intégrant l'ensemble des dimensions (sociales, éco, envi) pour co-construire les solutions
- Une dimension systémique : offre, demande, organisation des marchés
- Accompagner la transition de l'offre :
 - Des enjeux techniques pour des itinéraires robustes pour les exploitants
 - Dé-risquer les investissements de transition, accompagner sortie des actifs échoués
 - Des enjeux d'installation / renouvellement des générations
- Dépasser les tabous pour accompagner la demande :
- Un projet Européen pour assurer un marché juste et loyal
 - Un marché et une politique agricole véritablement commune
 - L'Europe, premier marché alimentaire : des ambitions pour le commerce mondiale
- Une redéfinition de l'agriculture et du système alimentaire ?
 - Vers des systèmes intensifs en emploi et porteurs de sens...
 - Pourvoyeurs de biens et services écosystémiques au-delà de la production
 - ... et soumis à des impératifs de « compétitivité » cohérents avec ce projet