

**IDDRI**

# A resilient and productive EU food system supported by the Farm to Fork Strategy

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ClieNFarms Public Policy Workshop

8 July 2022

Nathalie Bolduc, Research Fellow, Agriculture & Food Policy Programme,  
Iddri

# Introduction and key messages

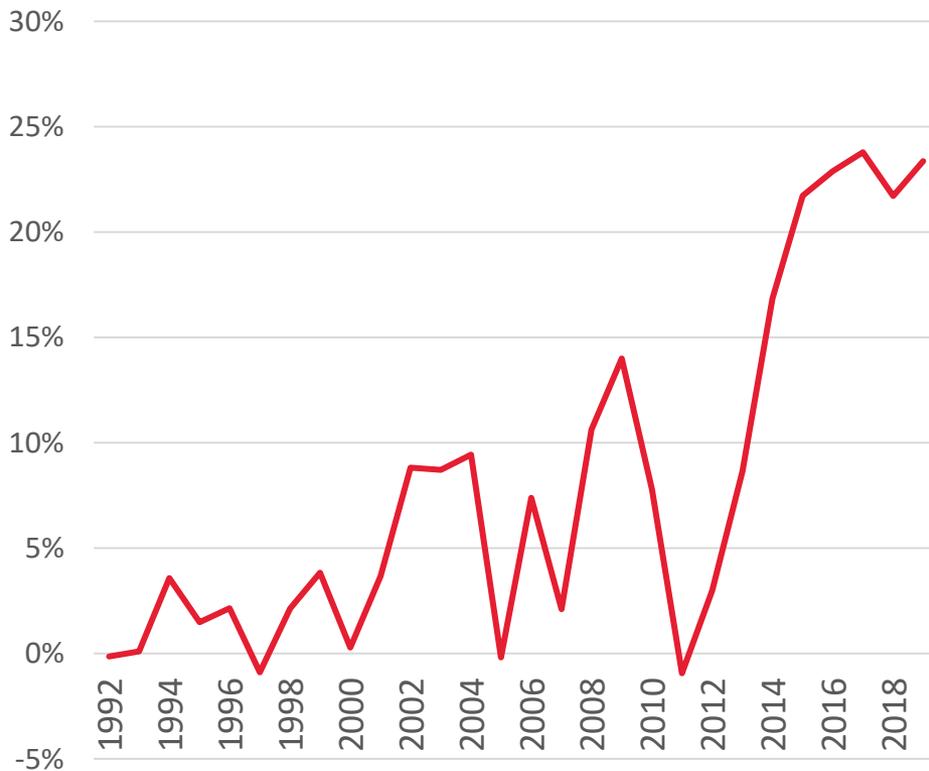
- Enduring concerns about the potential impacts of the Farm to Fork Strategy
  - Recently fuelled by the war in Ukraine and the “feed the world” narrative
- Four key messages
  1. The current food security problems caused by the war in Ukraine illuminate structural vulnerabilities within EU food systems.
  2. The F2F targets are ambitious, but common and intensifying critiques don't look at the whole picture.
  3. Agroecological farming under the Farm to Fork Strategy would also have climate benefits.
  4. The transition to more sustainable production is necessary to ensure the productivity and resilience of the EU food system.

## 1. Weaknesses of the EU food system in light of the war in Ukraine

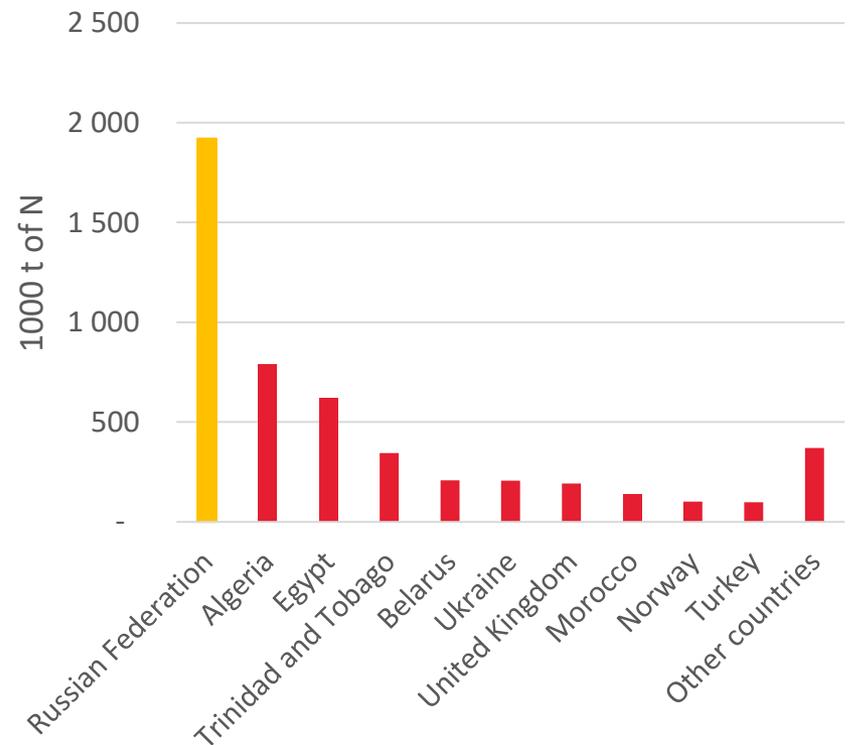
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# N management: dependence...

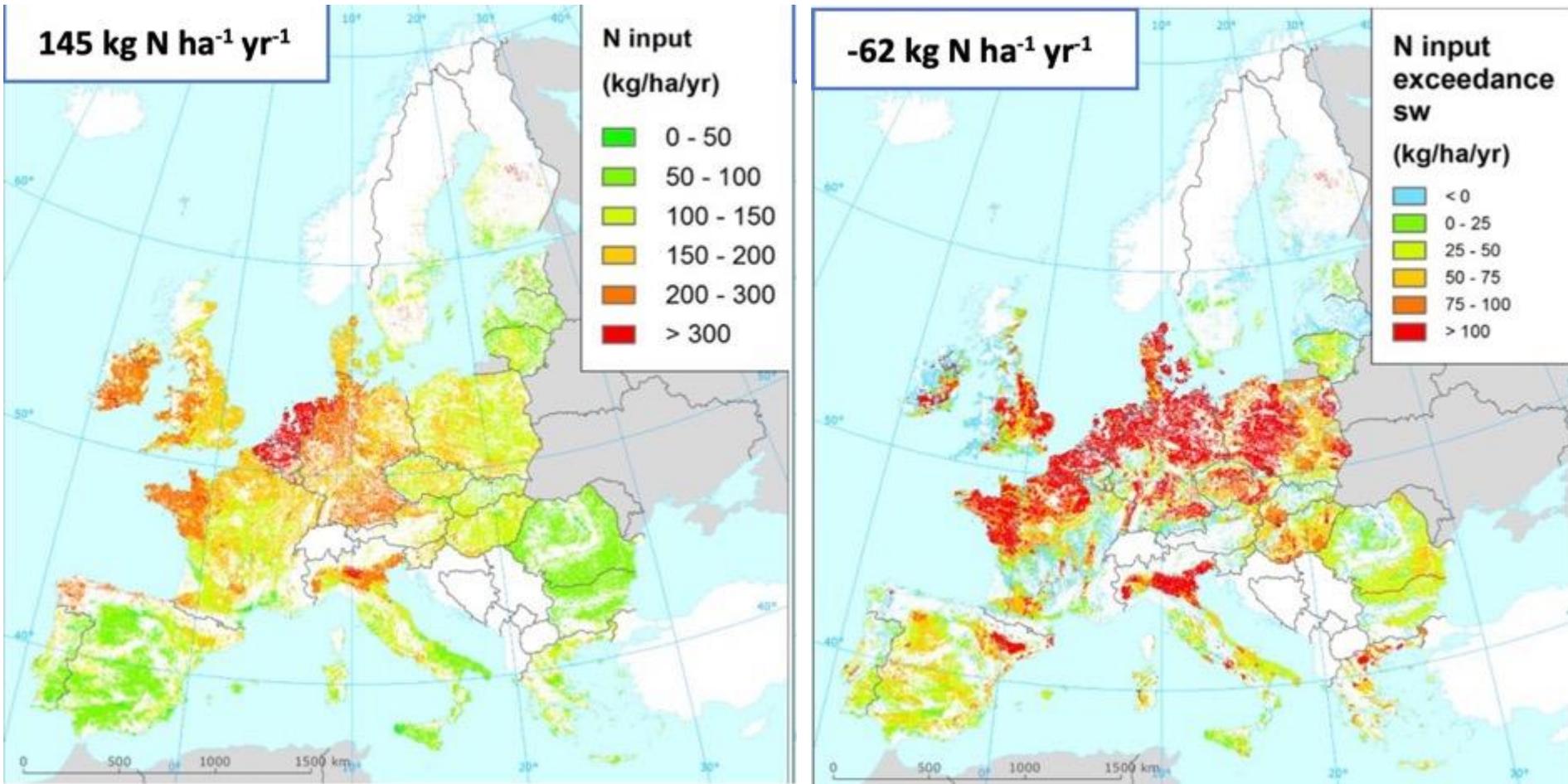
EU net import dependence on synthetic N fertilizers



EU main trade partners for synthetic N fertilizers imports



# ... and overuse

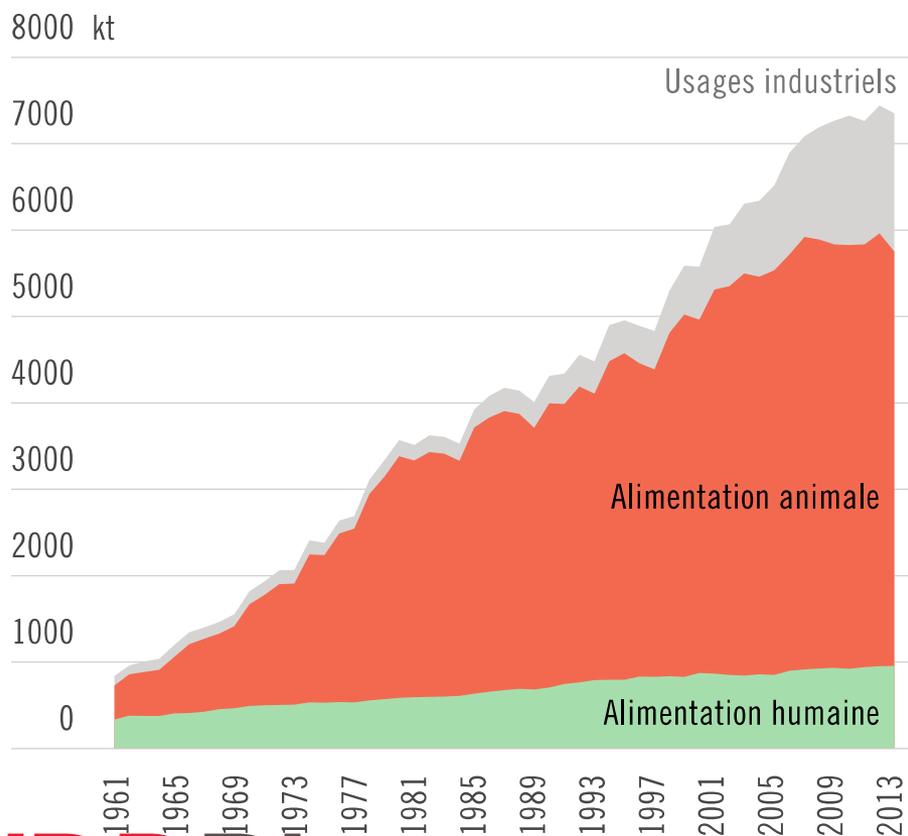


Actual N application vs required N application at constant NUE in view of the protection of surface water (DeVries, 2020)

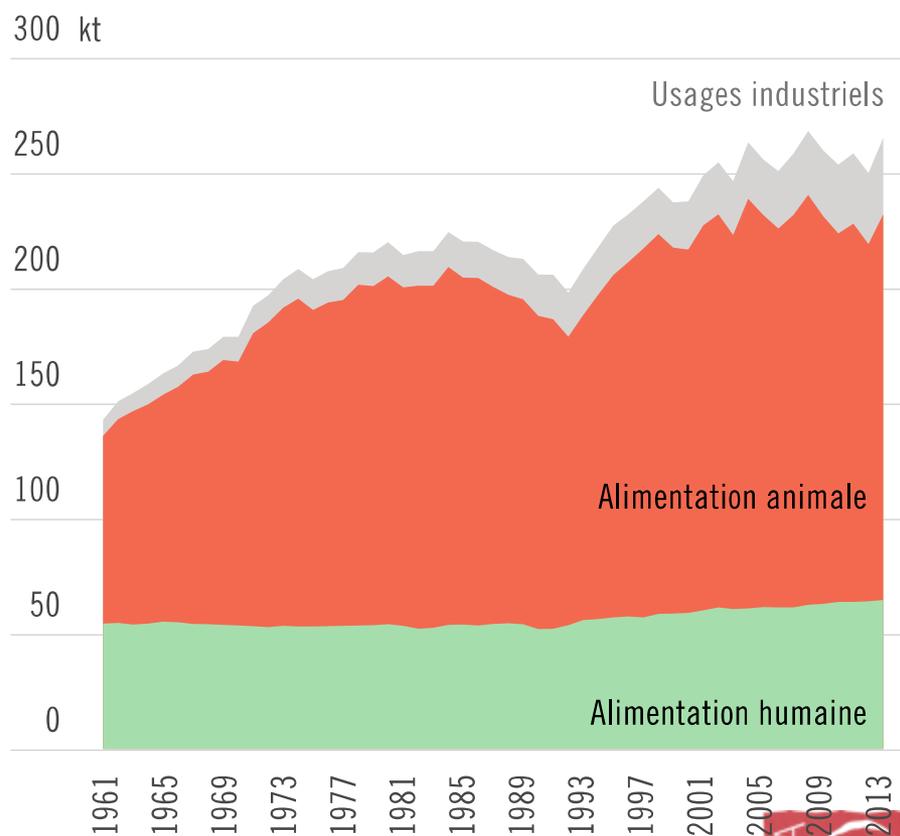
# Animal feed: a major use of vegetal products in the EU...

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

*8.a. Oléagineux, EU, 1961-2013*

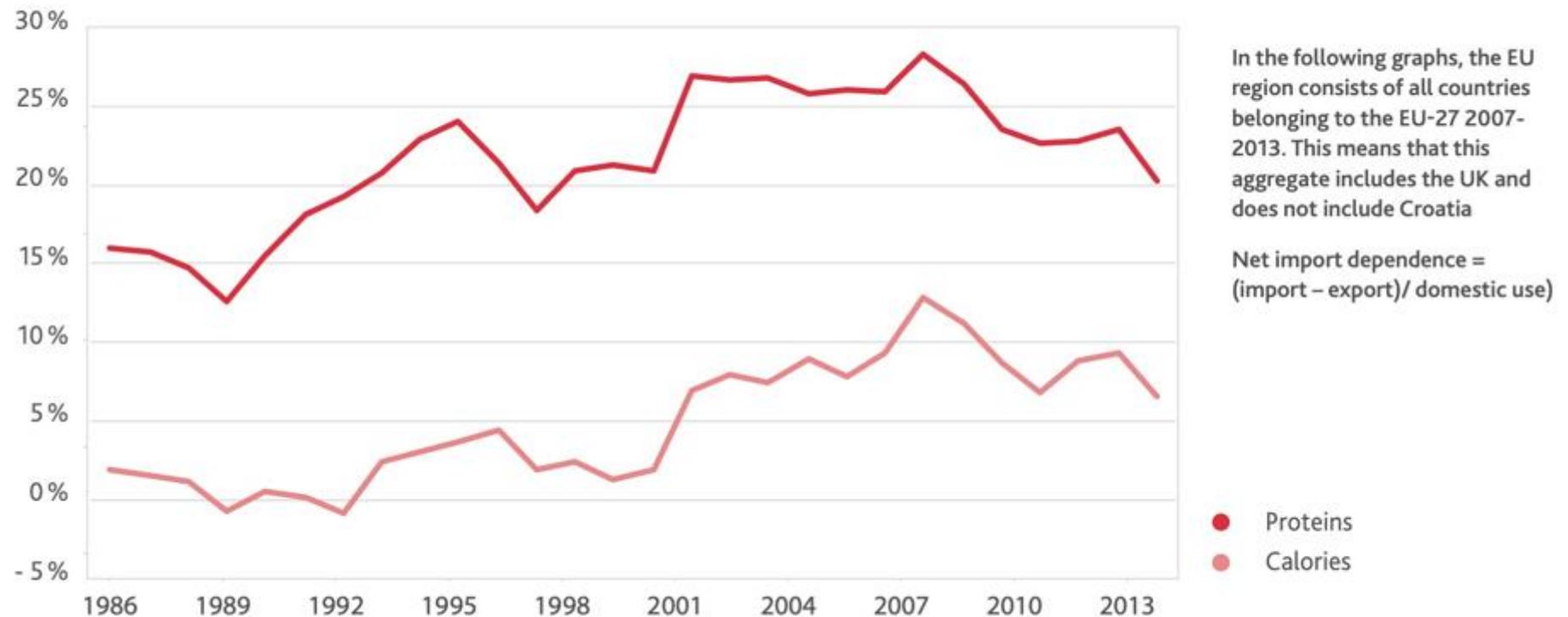


*8.b. Céréales, EU, 1961-2013*



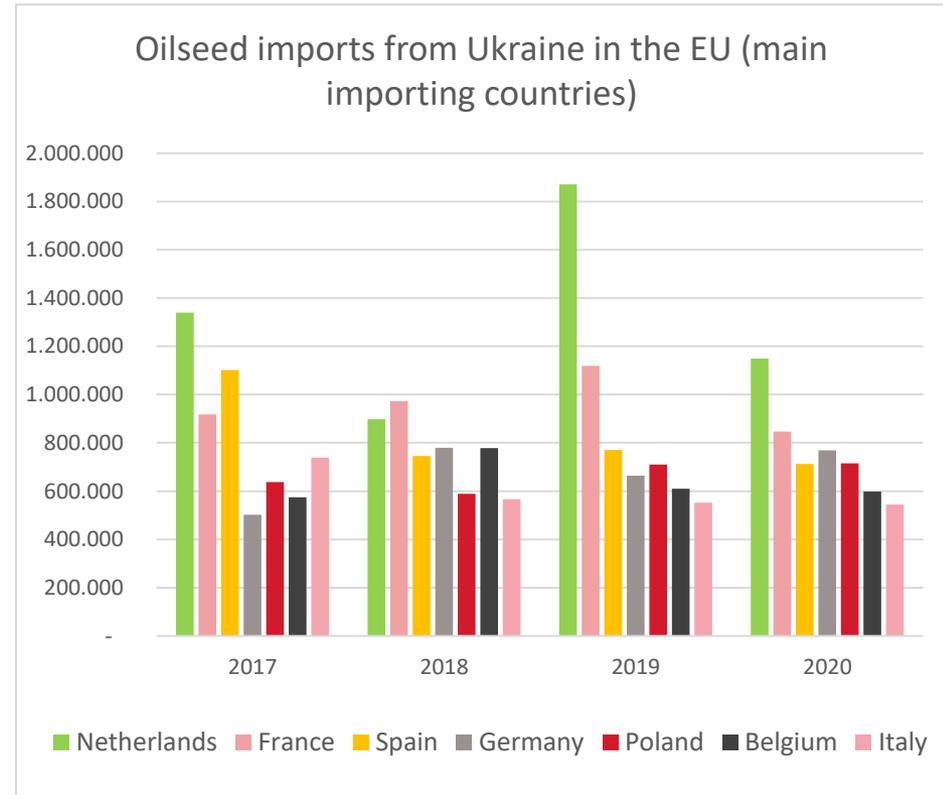
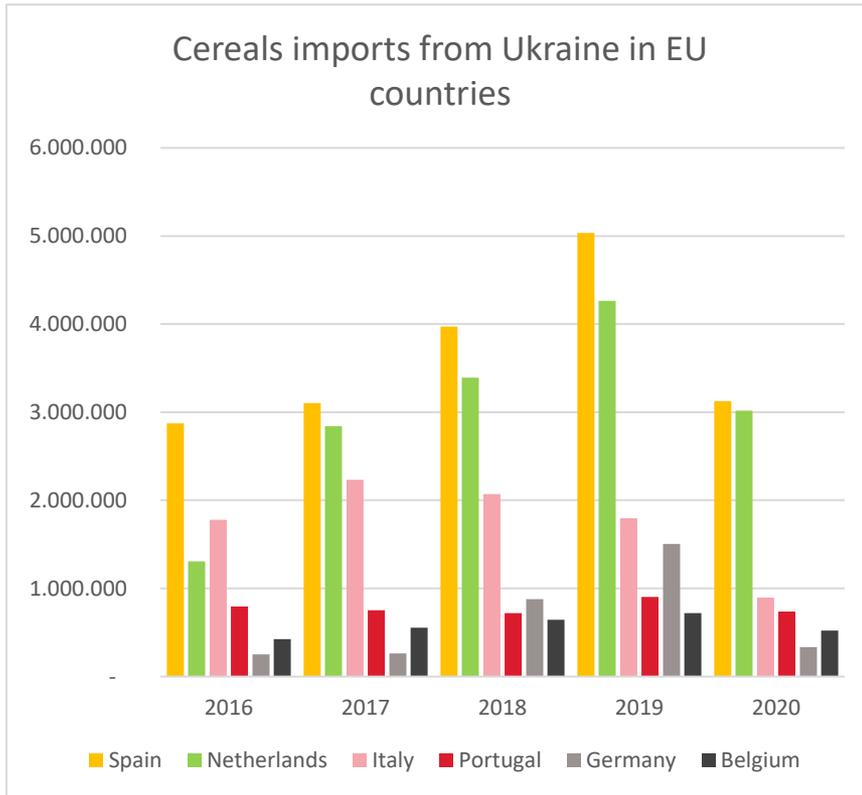
# ... which is dependent on protein and cereal imports

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



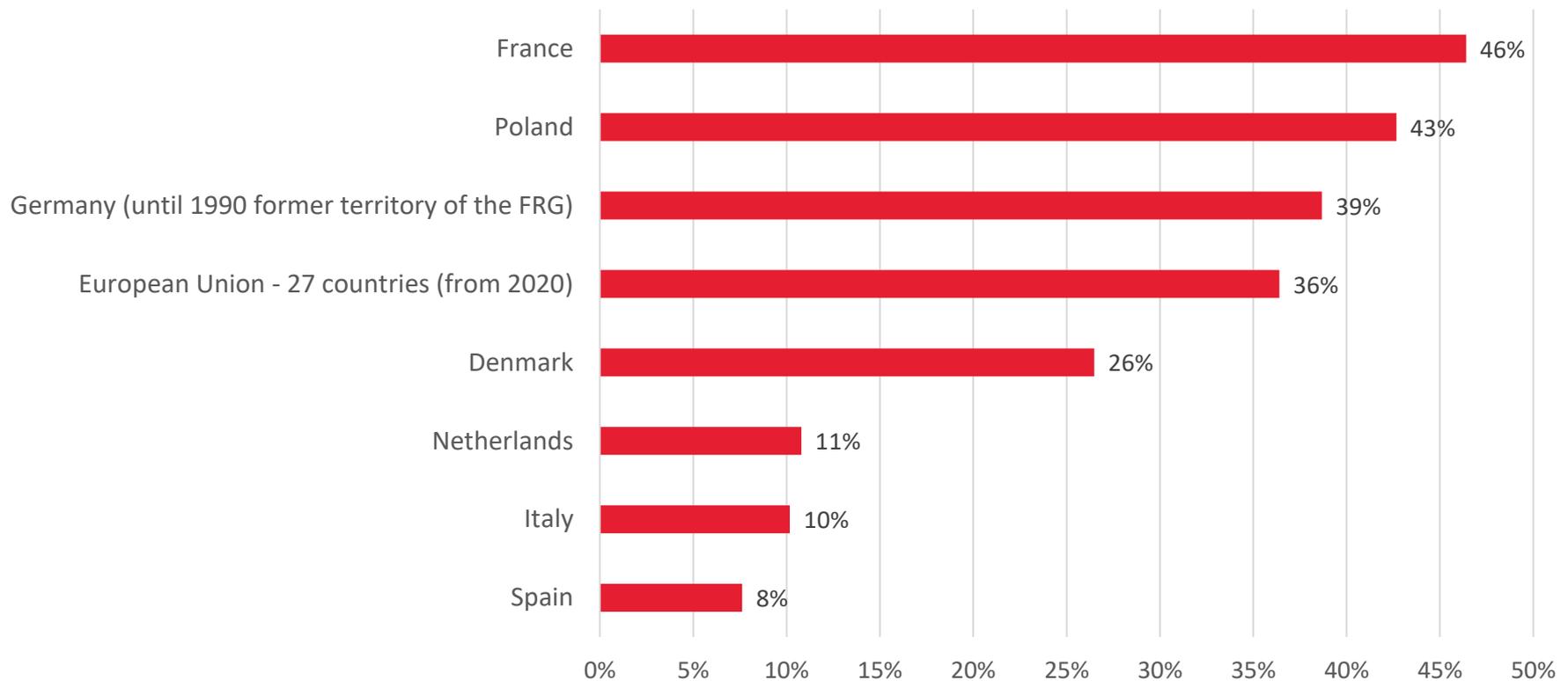
Source: FAOSTAT, IDDRI treatment

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



# ... most notably highly dependent livestock systems

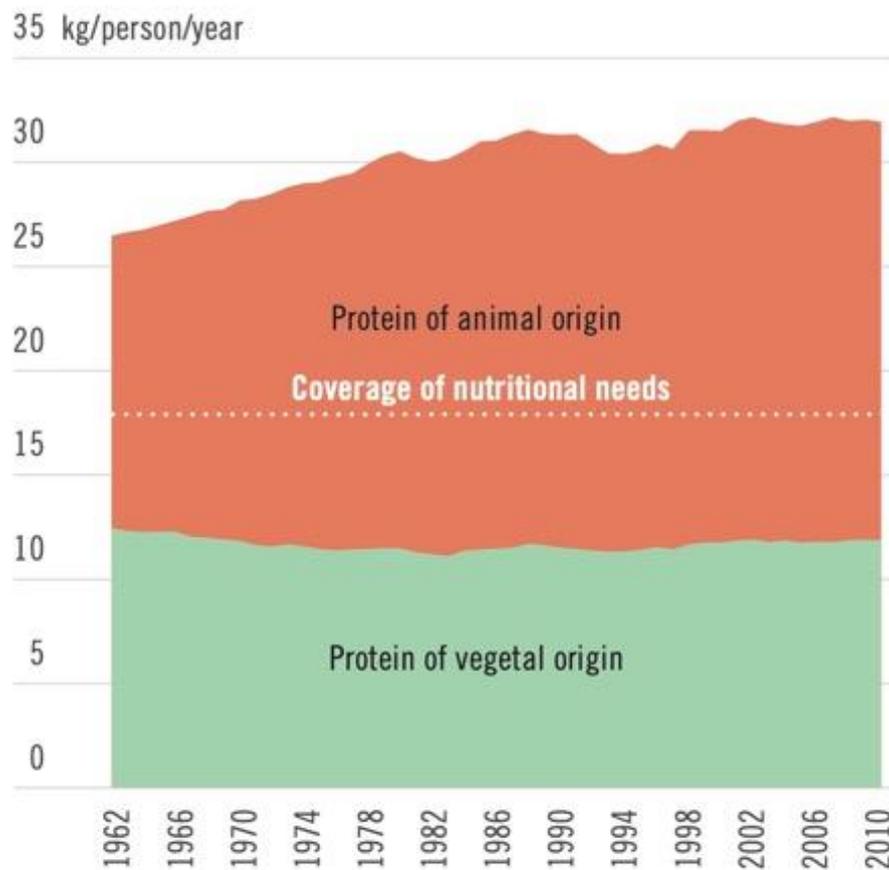
Share of feeding stuff produced on the farm in total feed use in 2019  
(Production value at basic price)



# ... associated with an overconsumption of animal proteins

**Figure 2. Annual protein consumption**

*EU-28 from 1962 to 2010*



Source: author, according to FAOstat.

2. The Farm to Fork  
targets support  
sustainable, resilient and  
productive agriculture

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# 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
- Responses to the nitrogen and feed questions
  - On N: Surplus –50%, Application –20%
  - On feed: reducing red and processed meat consumption

# A strategy

RESEARCH

CLIMATE CHANGE

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

Michael A. Clark<sup>1\*</sup>, Nina G. G. Domingo<sup>2</sup>, Kimberly Colgan<sup>3</sup>, Sumil K. Thakrar<sup>4</sup>, David Tilman<sup>5,6</sup>, John Lynch<sup>7</sup>, Inês L. Azevedo<sup>8,7</sup>, Jason D. Hill<sup>2</sup>

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.

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## ISSUE BRIEF

N°10/18 SEPTEMBER 2016

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

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

**S**ocial 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 feed/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.

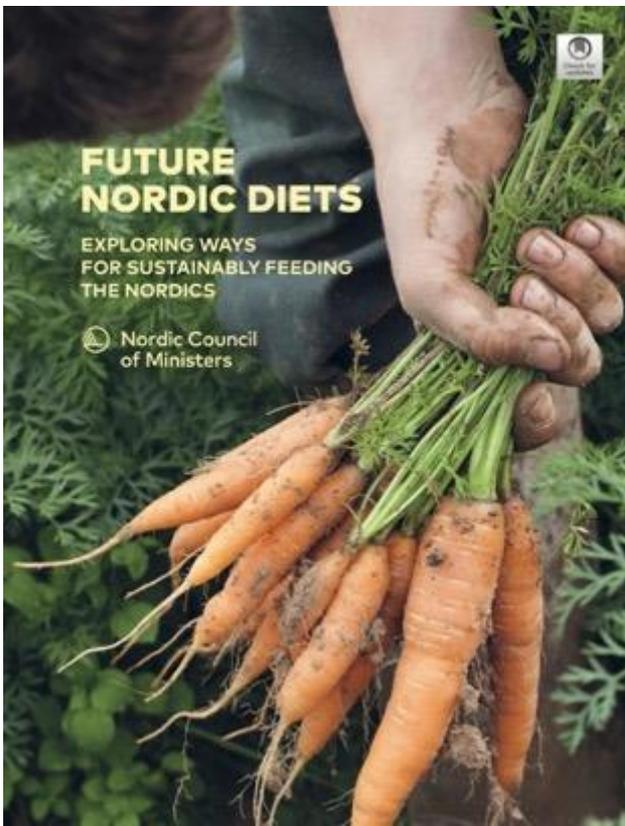
# THE LANCET

## 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."

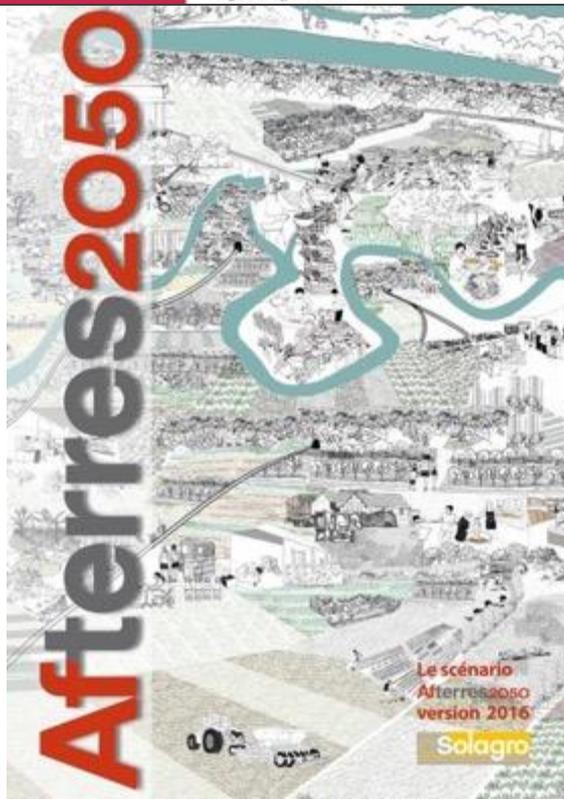
A Commission by The Lancet



## FUTURE NORDIC DIETS

EXPLORING WAYS FOR SUSTAINABLY FEEDING THE NORDICS

Nordic Council of Ministers



Le scénario Afterres2050 version 2016

Solagro



## WORLD RESOURCES REPORT CREATING A SUSTAINABLE FOOD FUTURE

A Menu of Solutions to Feed Nearly 10 Billion People by 2050

FINAL REPORT, JULY 2015



# The three main critiques of the F2F

- The F2F will put food security at risk by reducing production
- It will reduce farmer incomes and destroy jobs – in particular in the livestock sector
- It will raise the cost of food for poor consumers



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



# Green Deal targets for 2030 and agricultural production studies

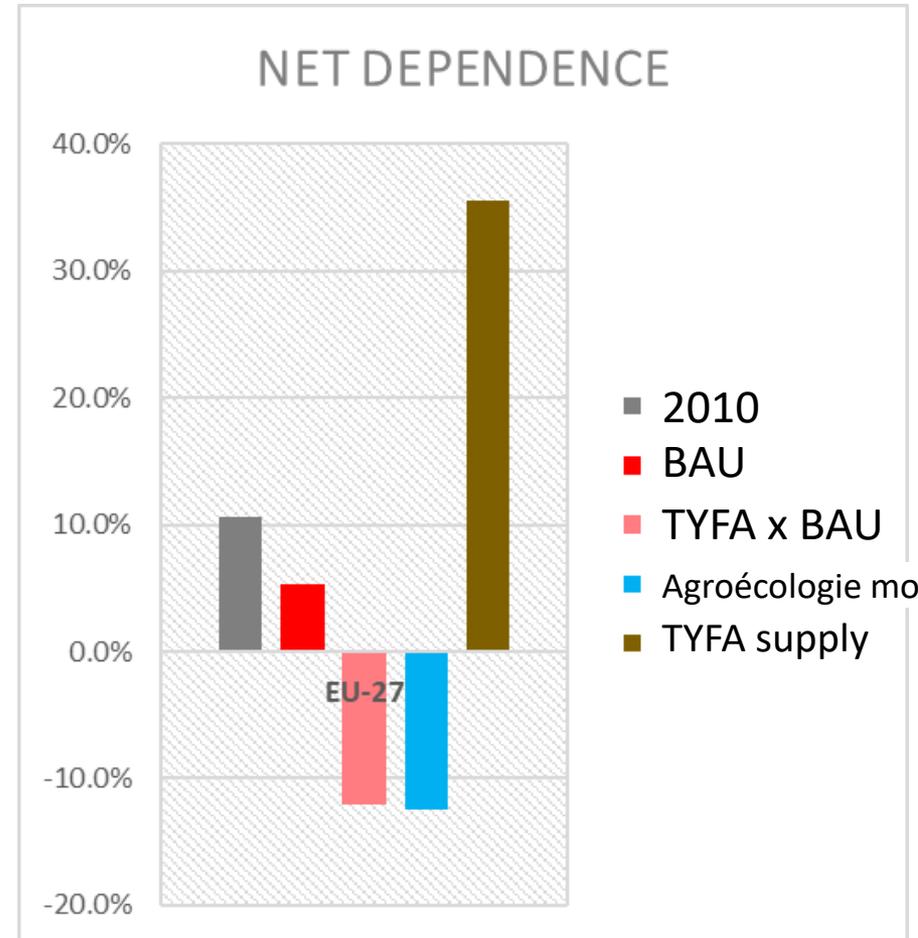
February 2022  
#EUGreenDeal

Various recent studies have analysed possible effects of the Farm to Fork and Biodiversity Strategies on agriculture in the European Union. The studies provide both the scientific community and policy makers with a valuable insight on the choice of policy tools to mitigate the risks. The studies therefore cover only a few elements of the strategies and must be treated with caution. The table below presents an overview of the elements taken into account by each study.

		COMMISSION JRC <sup>1</sup>	WAGENINGEN UNIVERSITY AND RESEARCH <sup>2</sup>	USDA <sup>3</sup>	KIEL UNIVERSITY <sup>4</sup>	IDDRI <sup>5</sup>
<b>GREEN DEAL TARGETS (BY 2030)</b>	High-diversity landscape features: 10% of UAA*	✓	✓	✓	✓	✓
	Nutrient losses: -50%, fertiliser: -20%	✓	✓	✓	✓	✓
	Pesticide use and risk: -50%	✓ (in value)	✓	✓ (in value)	✓ (in value)	✓
	Land under organic farming: 25% of UAA*	✓	✓ (separate scenario)	✗	✓	✓
	Antimicrobials: -50%	✗	✗	✓	✗	✓

# 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 and Iddri.

# On jobs and farmer incomes

- 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:

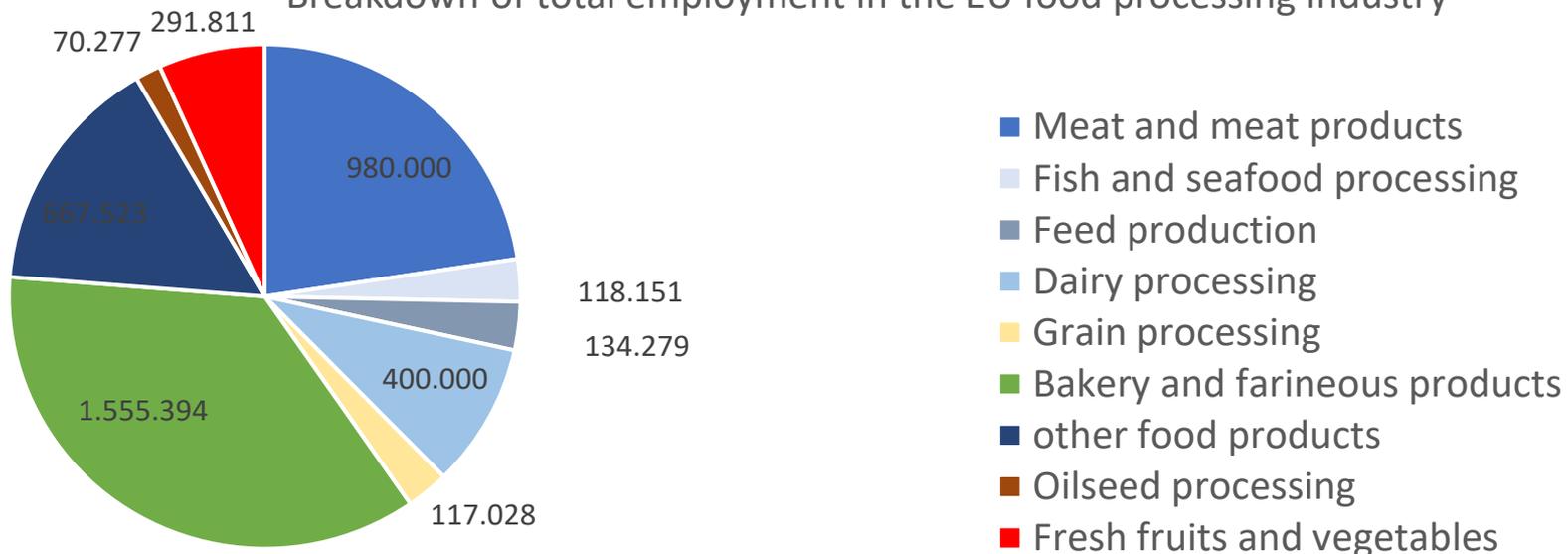
49.4%  
of food and drink  
turnover

48.1%  
of food and drink  
value added

62.8%  
of food and drink  
employment

99% of food and drink companies are SMEs

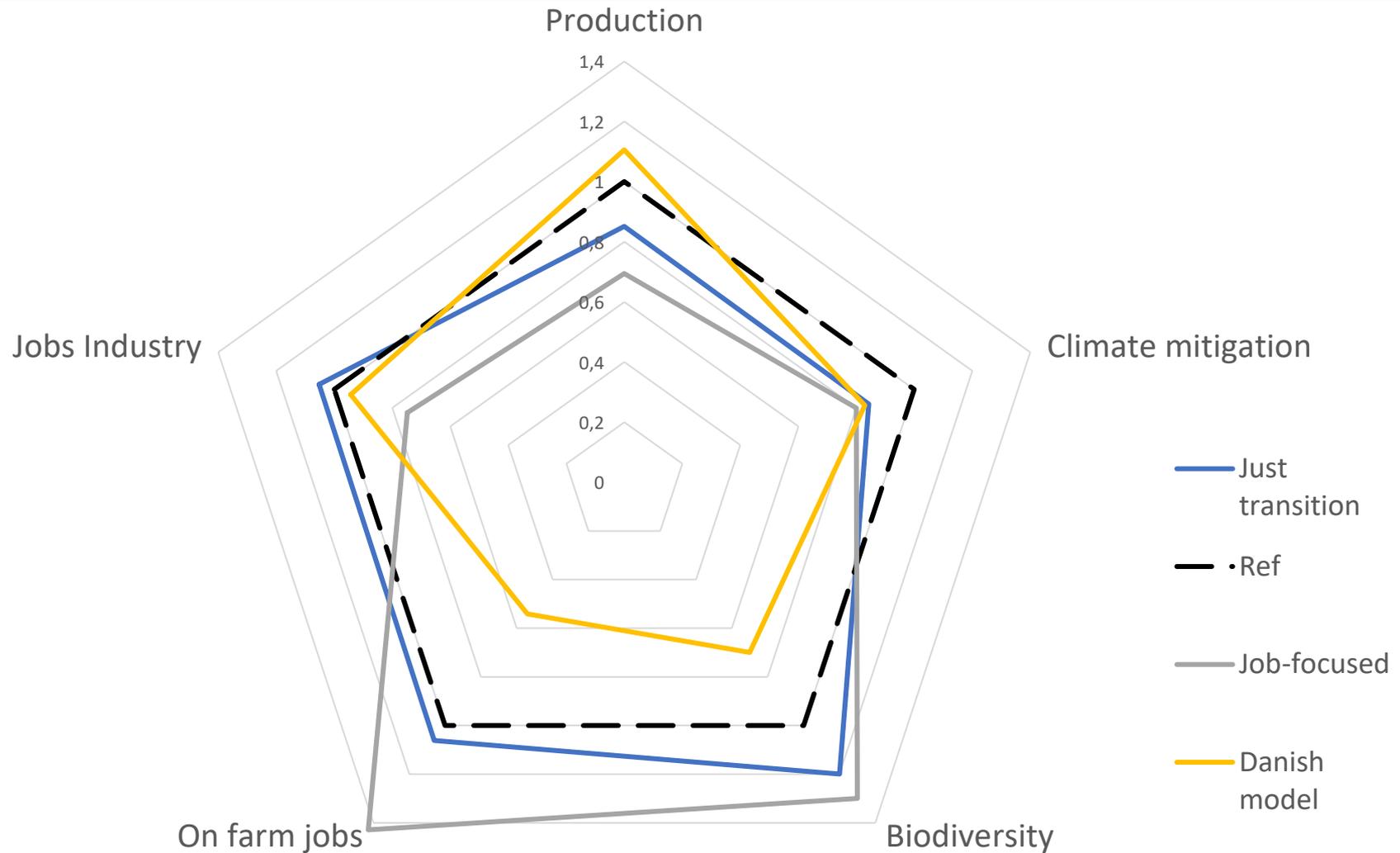
Breakdown of total employment in the EU food processing industry



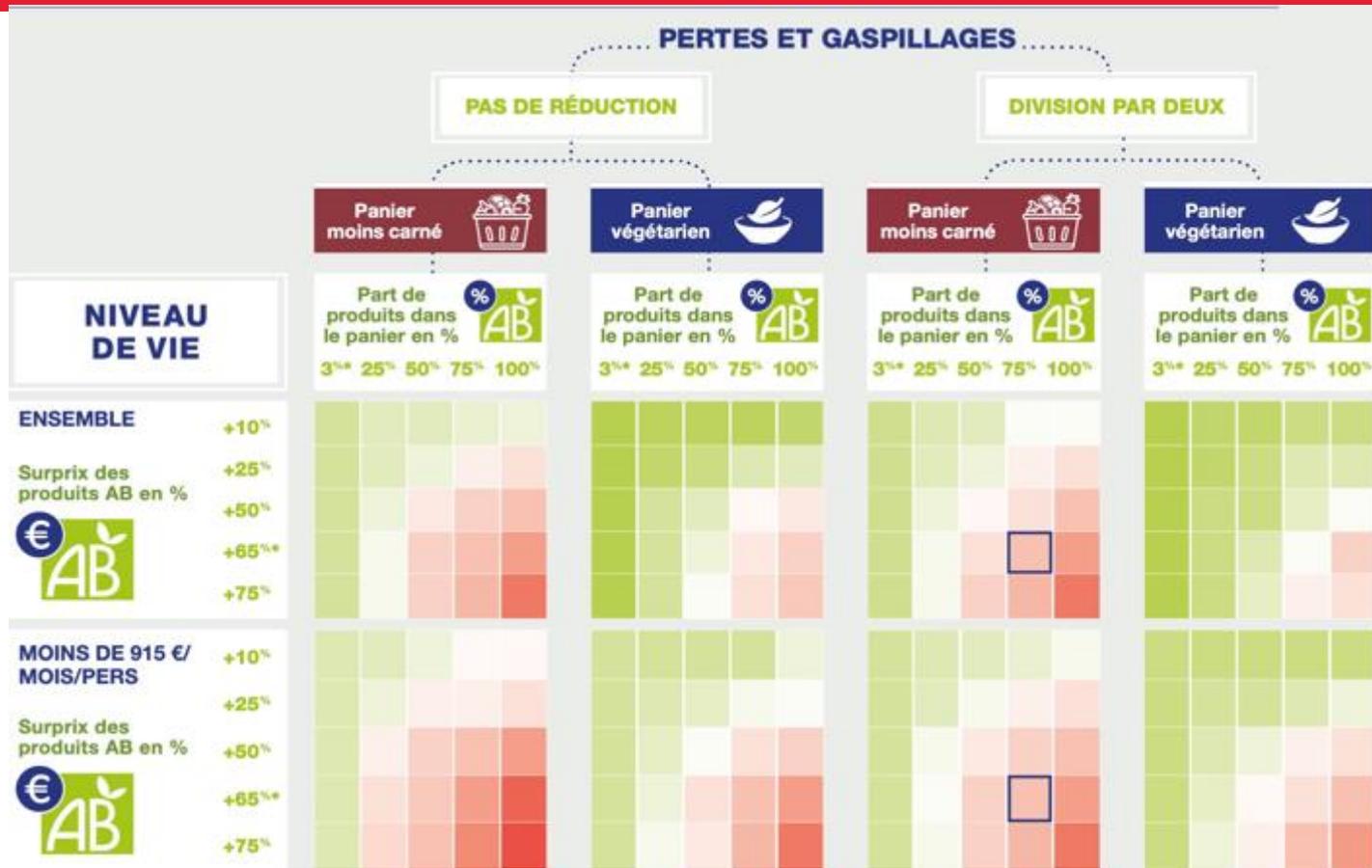
# On jobs and farmer incomes



# On jobs and farmer incomes



# On the cost of food

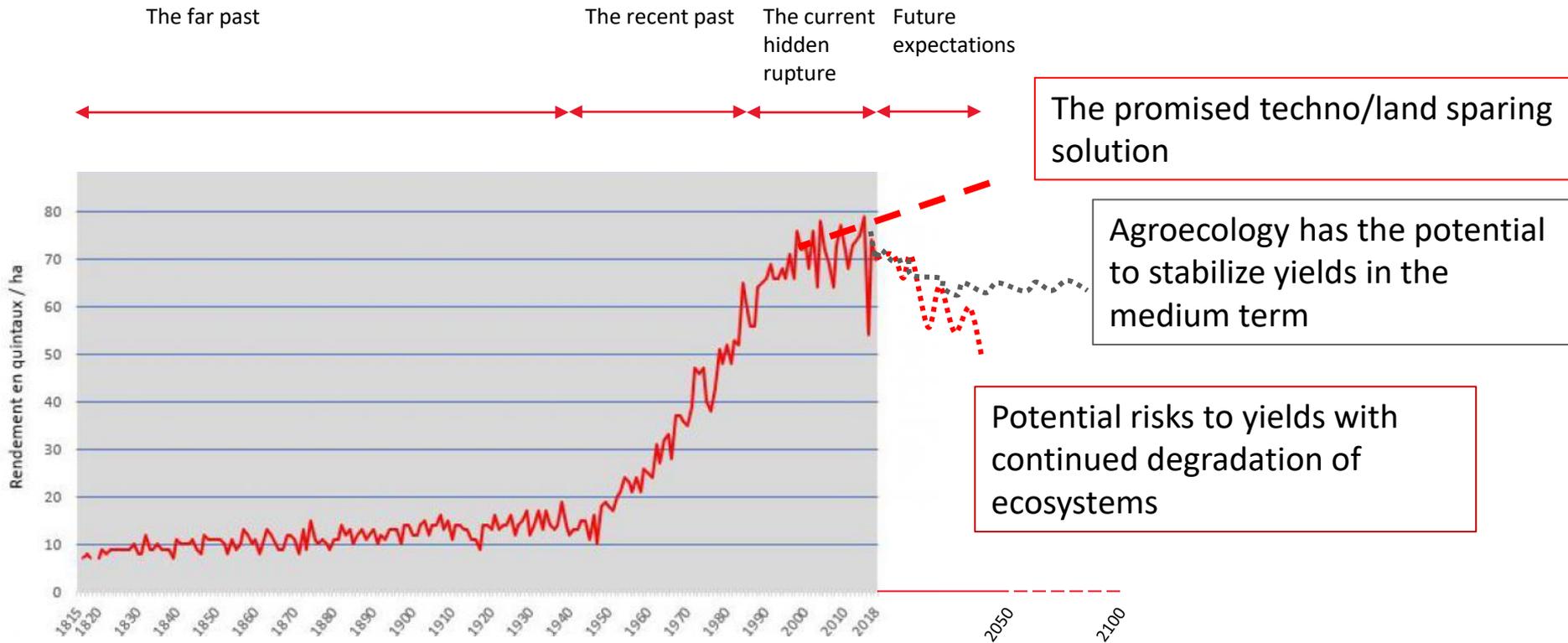


Source: Rogissart, Bellassen and Foucherot, 2021

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3. Agroecology will  
foster the  
resilience and  
productivity of the  
EU food system

# The yield problem

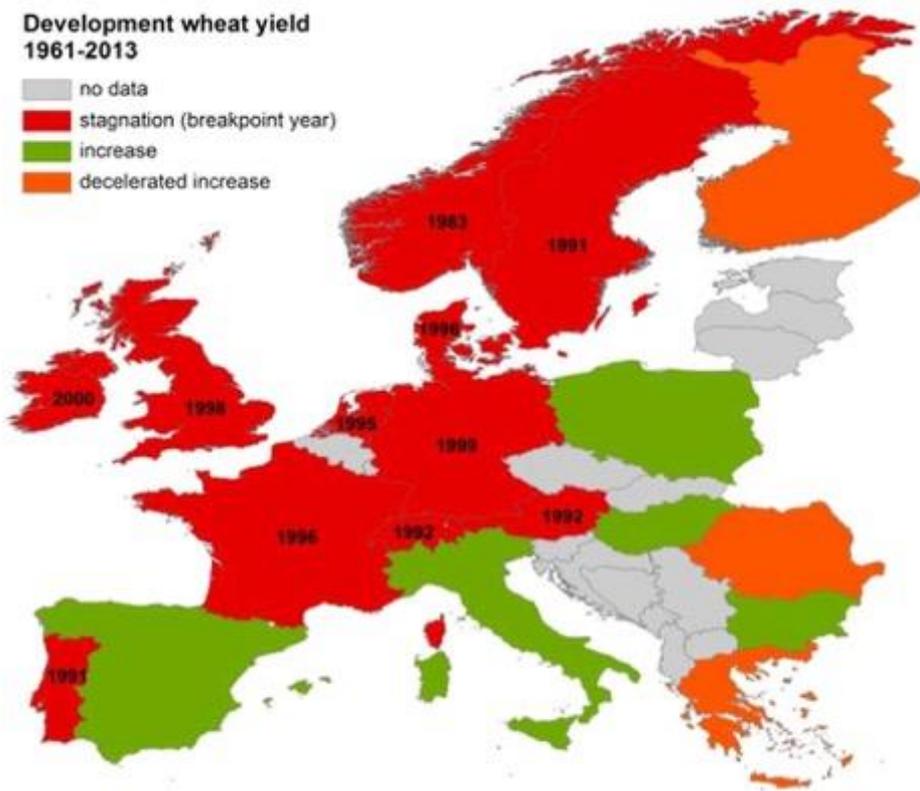


Average yields of French wheat from 1815 to 2018

<https://www.academie-agriculture.fr/publications/encyclopedie/reperes/evolution-du-rendement-moyen-annuel-du-ble-france-entiere-de-1815>

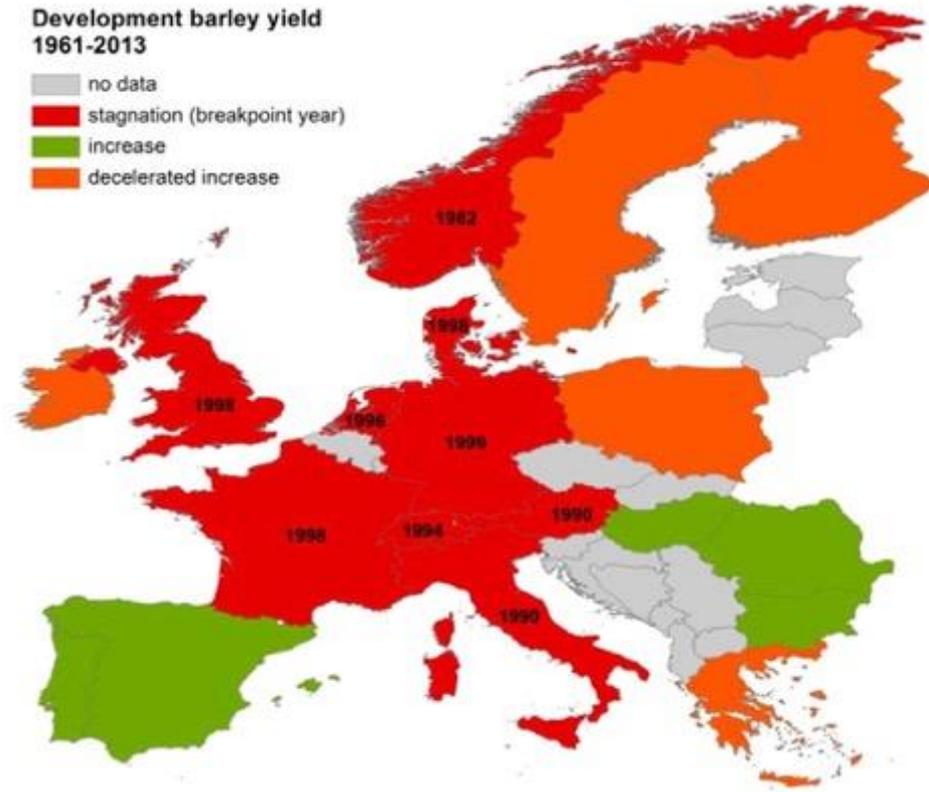
### Development wheat yield 1961-2013

- no data
- stagnation (breakpoint year)
- increase
- decelerated increase

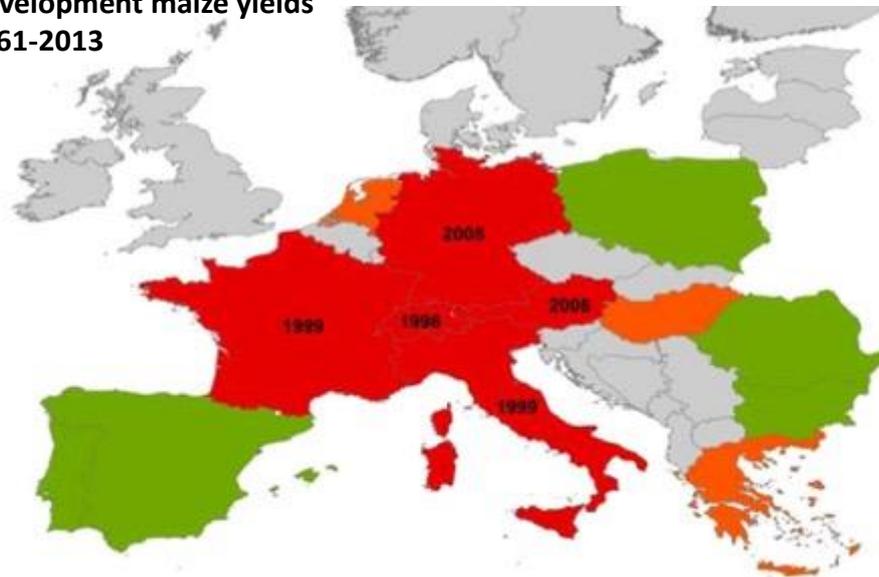


### Development barley yield 1961-2013

- no data
- stagnation (breakpoint year)
- increase
- decelerated increase

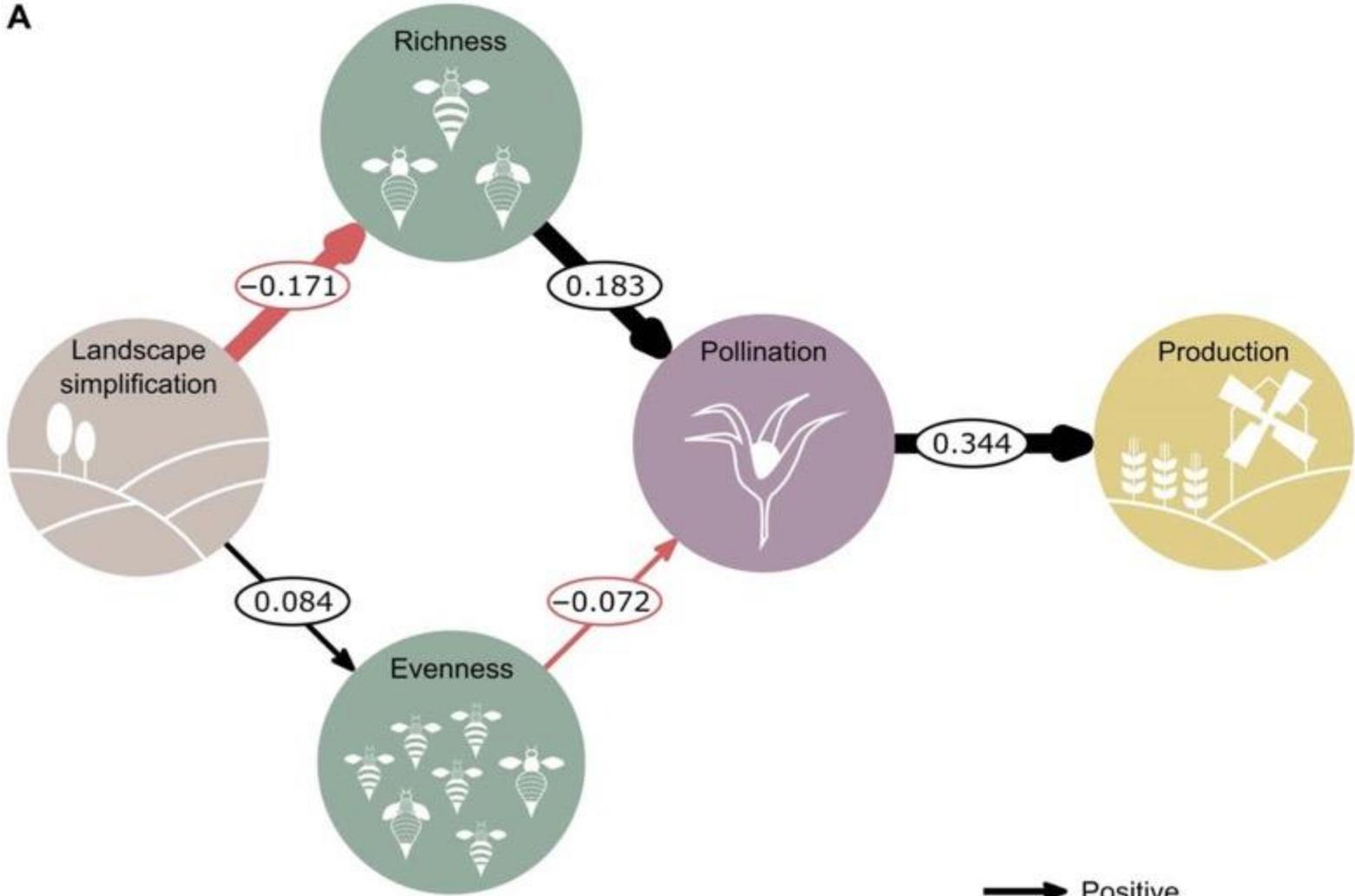


### Development maize yields 1961-2013



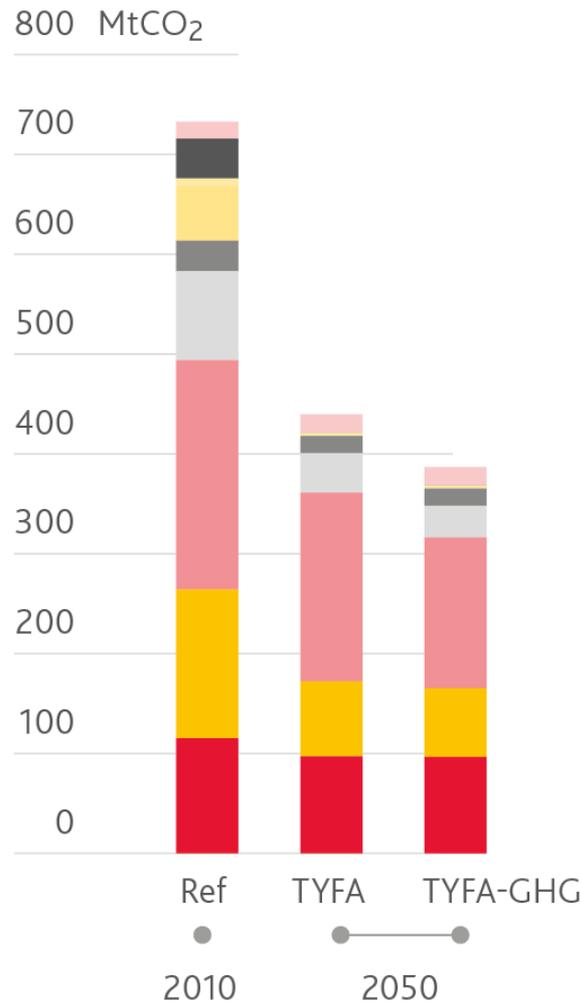
Wiesmeier et al, 2015

A



Dainese et al, 2019

# Emission reductions



TYFA: -36% non CO<sub>2</sub> direct emissions, – 40% all emissions

TYFA-GHG: –47% non CO<sub>2</sub> direct emissions, idem for all emissions  
*Without considering the GWP\**

- Agricultural machinery
- Imported deforestation linked to soybean imports
- Other inputs fabrication
- Nitrogen fabrication
- Provision of energy
- Manure management
- Enteric fermentation
- Agricultural soils
- Energy consumption

# Conclusions

- Four key messages
  1. The current food security problems caused by the war in Ukraine illuminate structural vulnerabilities within the EU food system.
  2. The F2F targets are ambitious, but common and intensifying critiques don't look at the whole picture.
  3. Agroecological farming under the Farm to Fork Strategy would have climate benefits.
  4. The transition to more sustainable production is necessary to ensure the productivity and resilience of the EU food system.
- Policy recommendations
  - In the short-term, the EU should support developing countries to get access to food and maintain robust social safety nets at home while avoiding measures with potential negative long-term effects.
  - In the medium- to long-term, the EU needs to transition towards sustainable agriculture in order to make food systems resilient and productive far into the future.

# THANK YOU FOR YOUR ATTENTION!

## CONTACT

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[www.iddri.org/tyfa](http://www.iddri.org/tyfa)

<https://www.iddri.org/en/publications-and-events/study/agroecological-europe-2050-multifunctional-agriculture-healthy-eating>

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