

A holistic approach to EU agriculture

Marion Guillou
President of Agreenium



Van Gogh, 1888



Picasso, 1924

A large single market for EU foods: 1 244 billion €

Consumers
510 million persons

The share of the top five retailers exceeded 60% in 13 Member States in 2012.

The market share of the top five firms in the food industry was at an average of 56% in 14 of the EU's Member States in 2012.

Retail and food service

Food and beverage processing activities

Farmers

22 million persons, input 225 b€, output 358 b€

Internal trade of agricultural products
Exports: 349 billion €
Imports: 346 billion €

Inputs

470 000 persons

Sources: European Commission, 2017

EU 28: a global actor

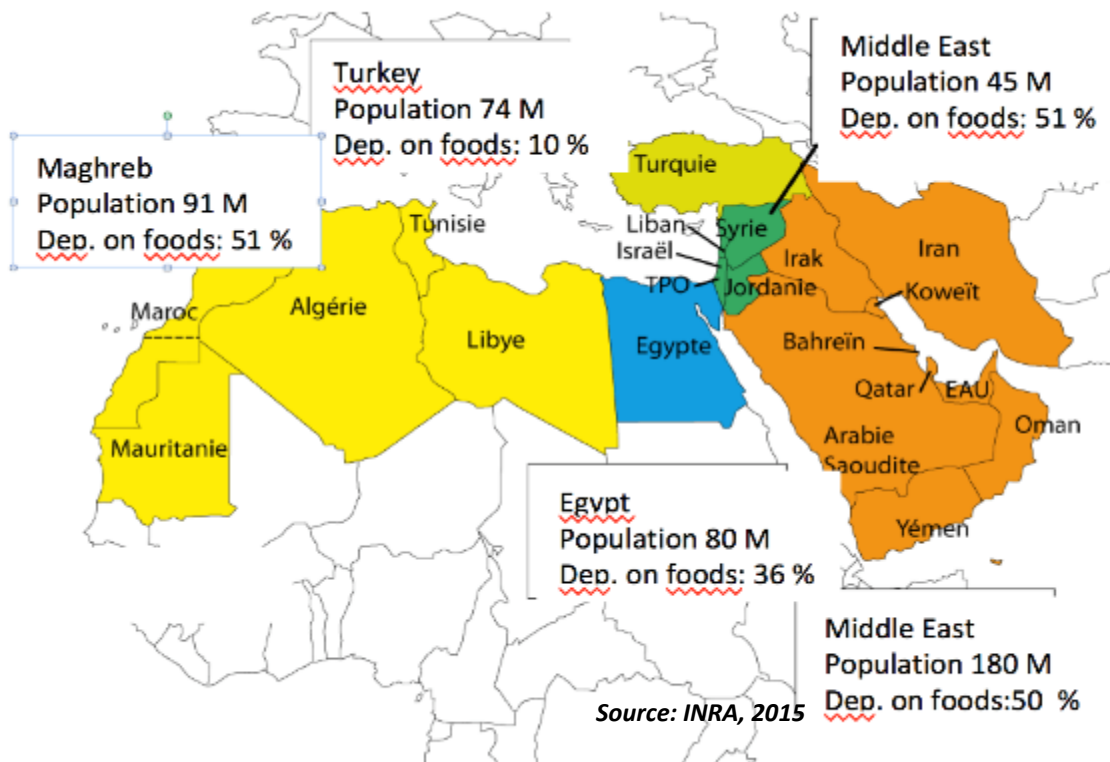
First importer in the world

Imports
112 B€

European
Agriculture

Exports
131 B€

First exporter in the world



Source: INRA, 2015

Challenges for EU food systems

climate changes and uncertainties

Arctic region

Increasing risk of biodiversity loss

Atlantic region

Increasing risk of river and coastal flooding

Increase in multiple climatic hazards

Increase in heavy precipitation

Increase in river flow

Boreal region

Increase in heavy precipitation events

Increase in precipitation and river flows

Increasing potential for forest growth and increasing risks of forest pests

Increasing risks of forest fires

Decrease in economic value of forests

Continental region

Increase in heat extremes

Decrease in summer precipitation

Increasing risks of river floods

Increasing risk of forest fires

Decrease of economic value of forests

Mediterranean region

Large increase in heat extremes

Increasing risks of forest fires

Increasing risk of drought

Decrease in crop yields

Increasing risk of biodiversity loss

Decrease in precipitation and river flow

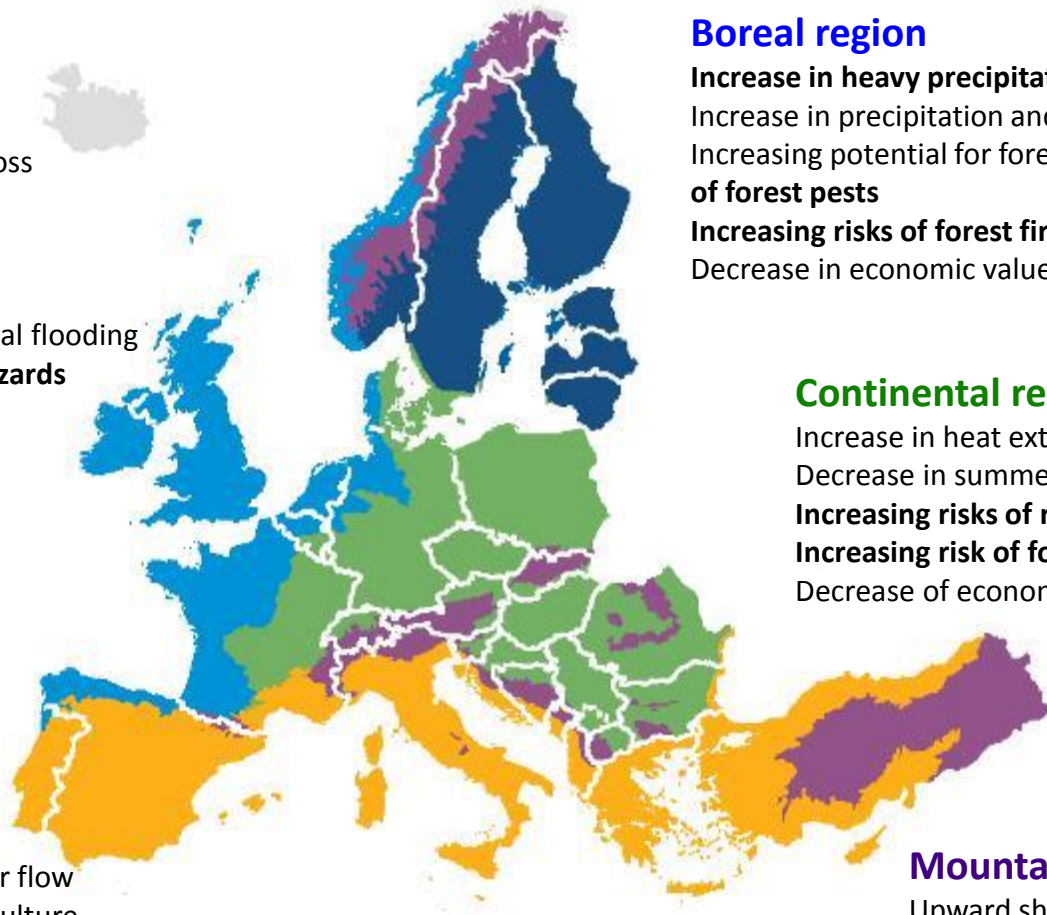
Increased water demand for agriculture

Increased competition between different water users

Increasing risks for livestock production

Increase in multiple climatic hazards

High vulnerability to spillover effects of climate change from outside Europe



Source: EEA, 2015

Mountain region

Upward shift of plant and animal species

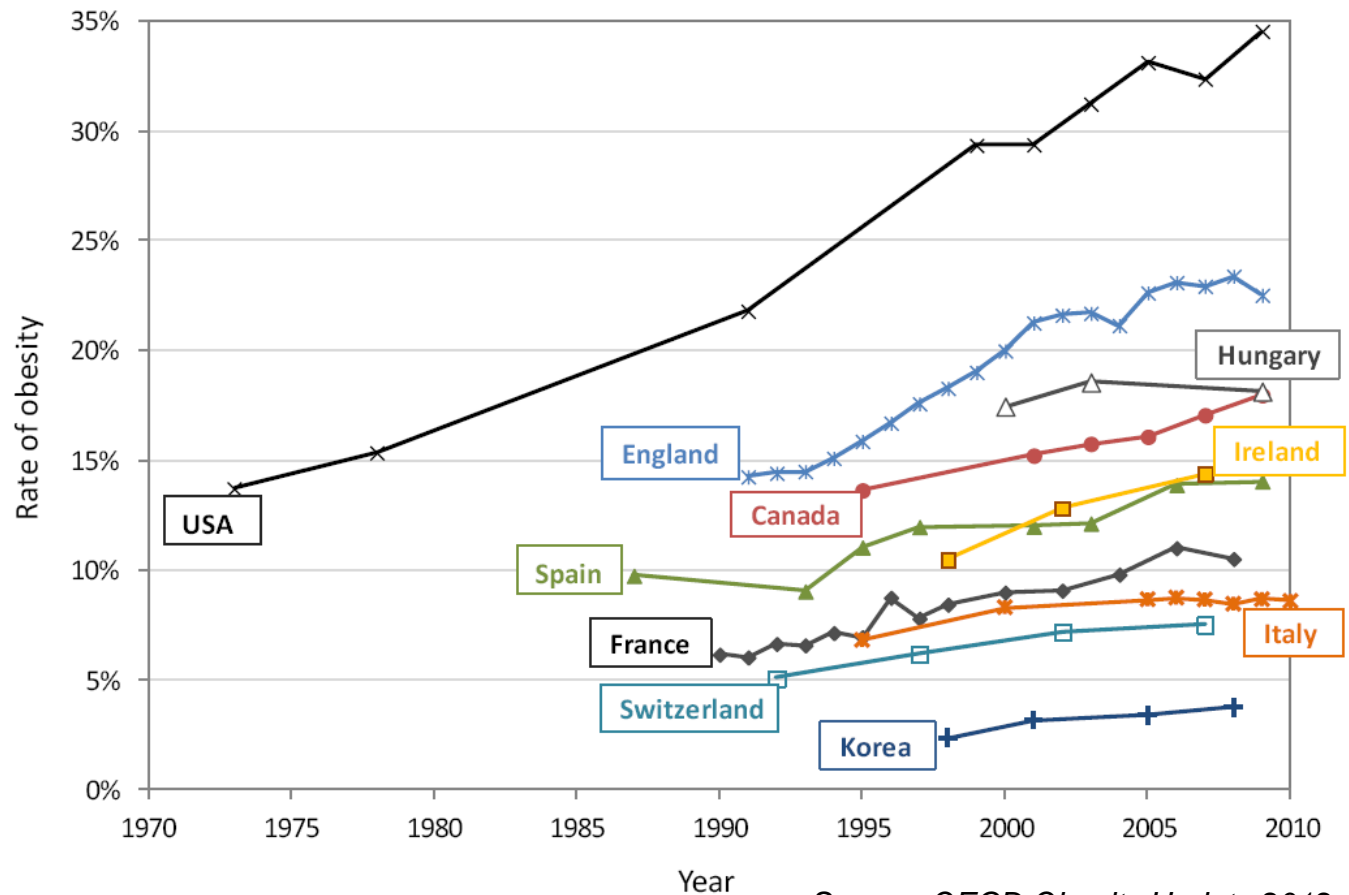
High risk of extinction species

Increasing risks of forest pests

Uncertainties in bold

Challenges for EU food systems

Poor diets are associated with considerable health burdens in European countries.



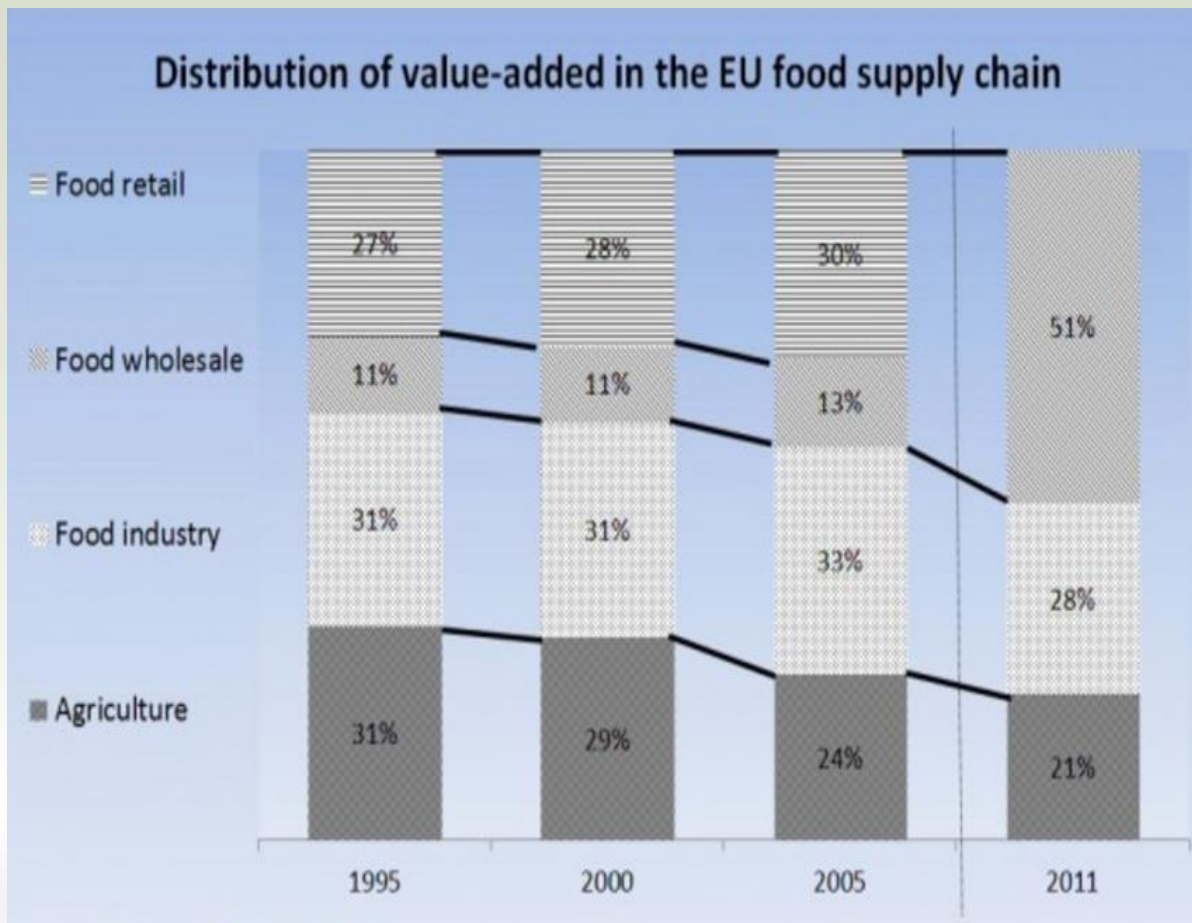
Source: OECD Obesity Update 2012



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Challenges for EU food systems

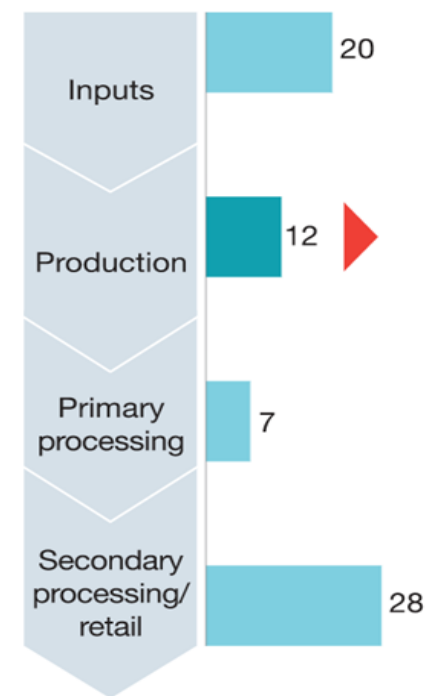
Imbalance of power between producers and retailers



Source: European Commission using Eurostat data, 2011

Parts of the value chain
Profitability differs significantly by role in value chain

Average return on invested capital, 2010–14, %

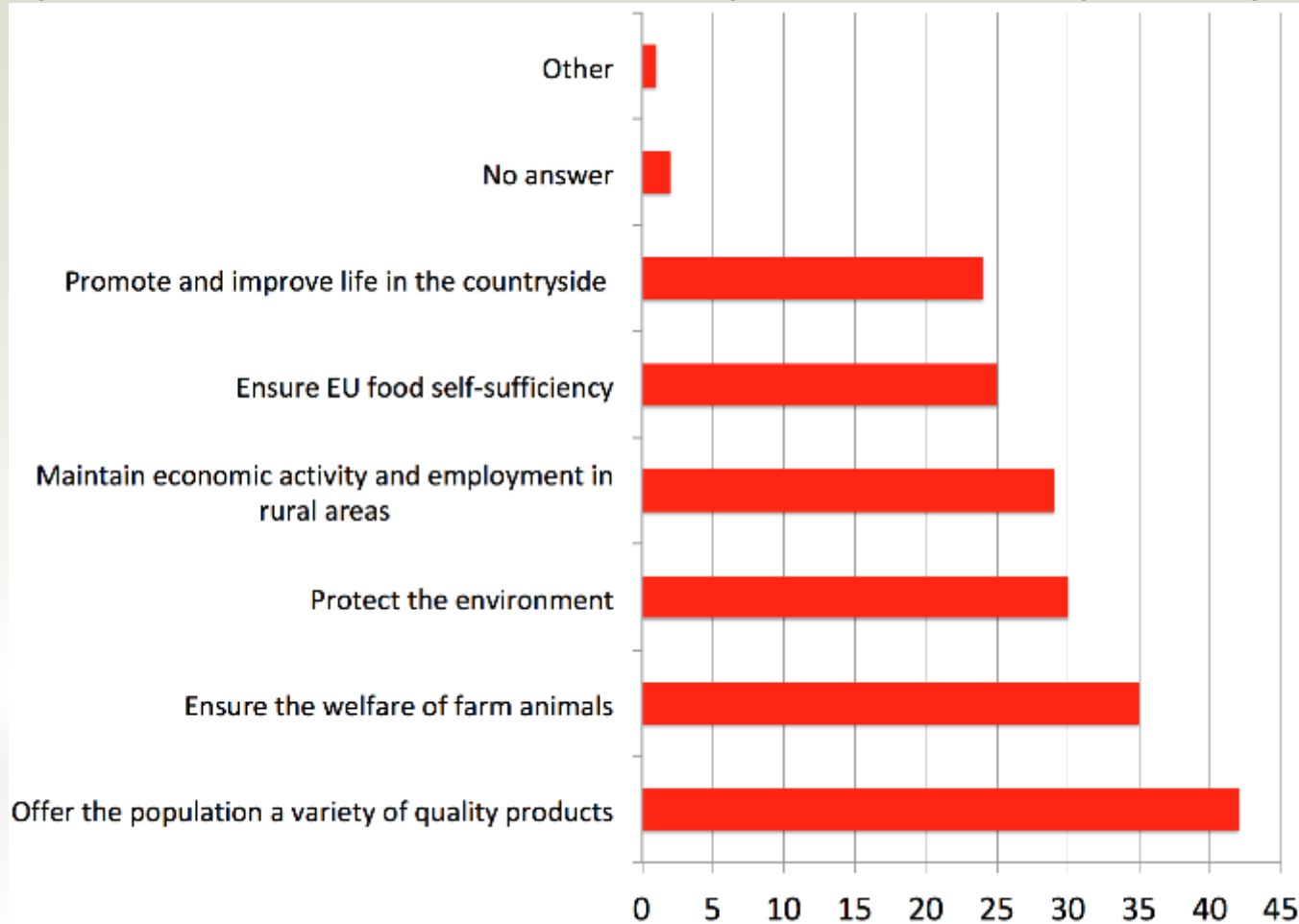


¹Utilized 3-year averages.

source: FAO stat, McKinsey analysis

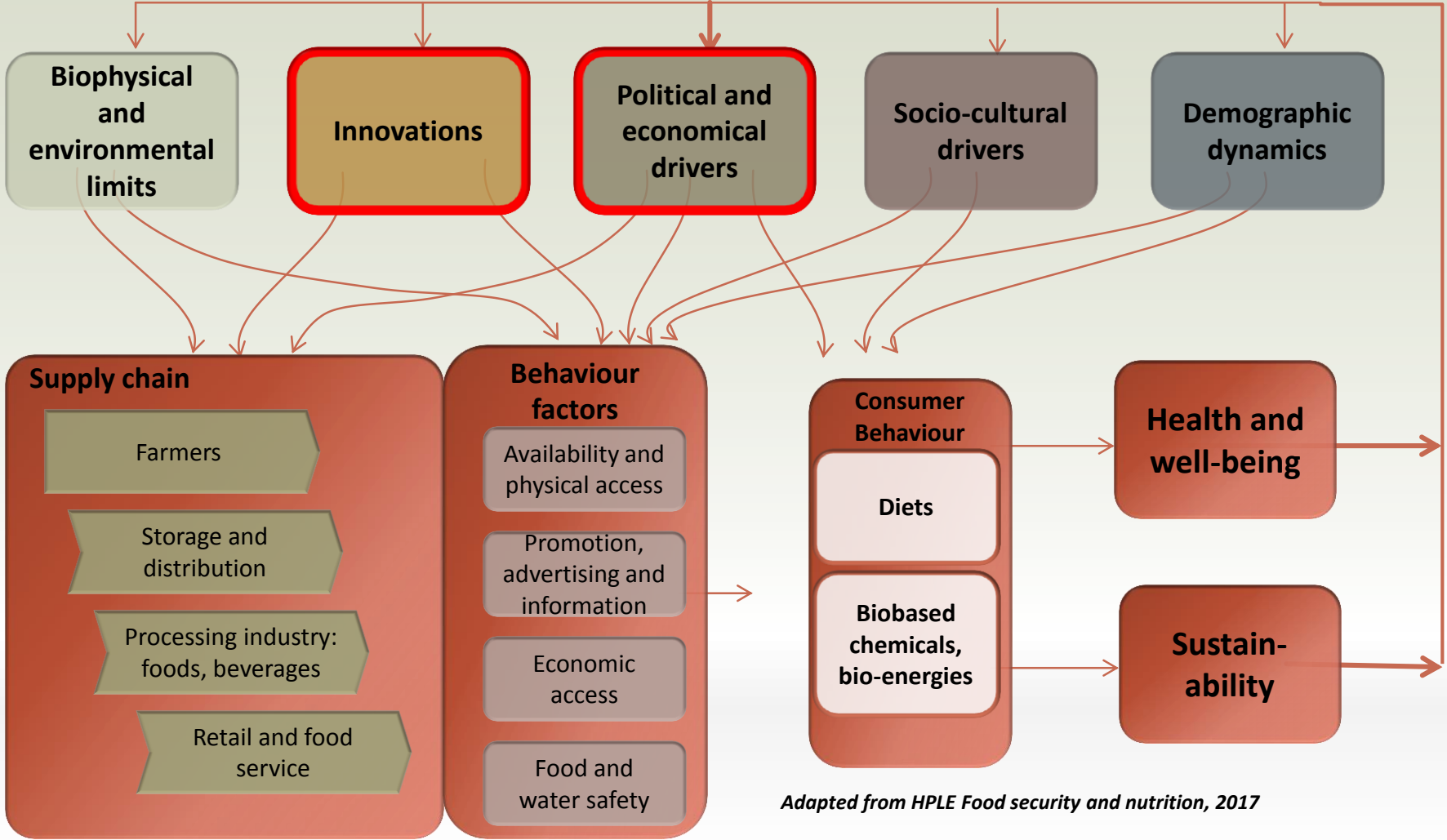
What European vision for the future?

Agriculture and rural areas are considered very important and rather important for 62% and 32% of European citizens respectively.



Source:
Eurobarometer, 2015

What European vision for the future ?

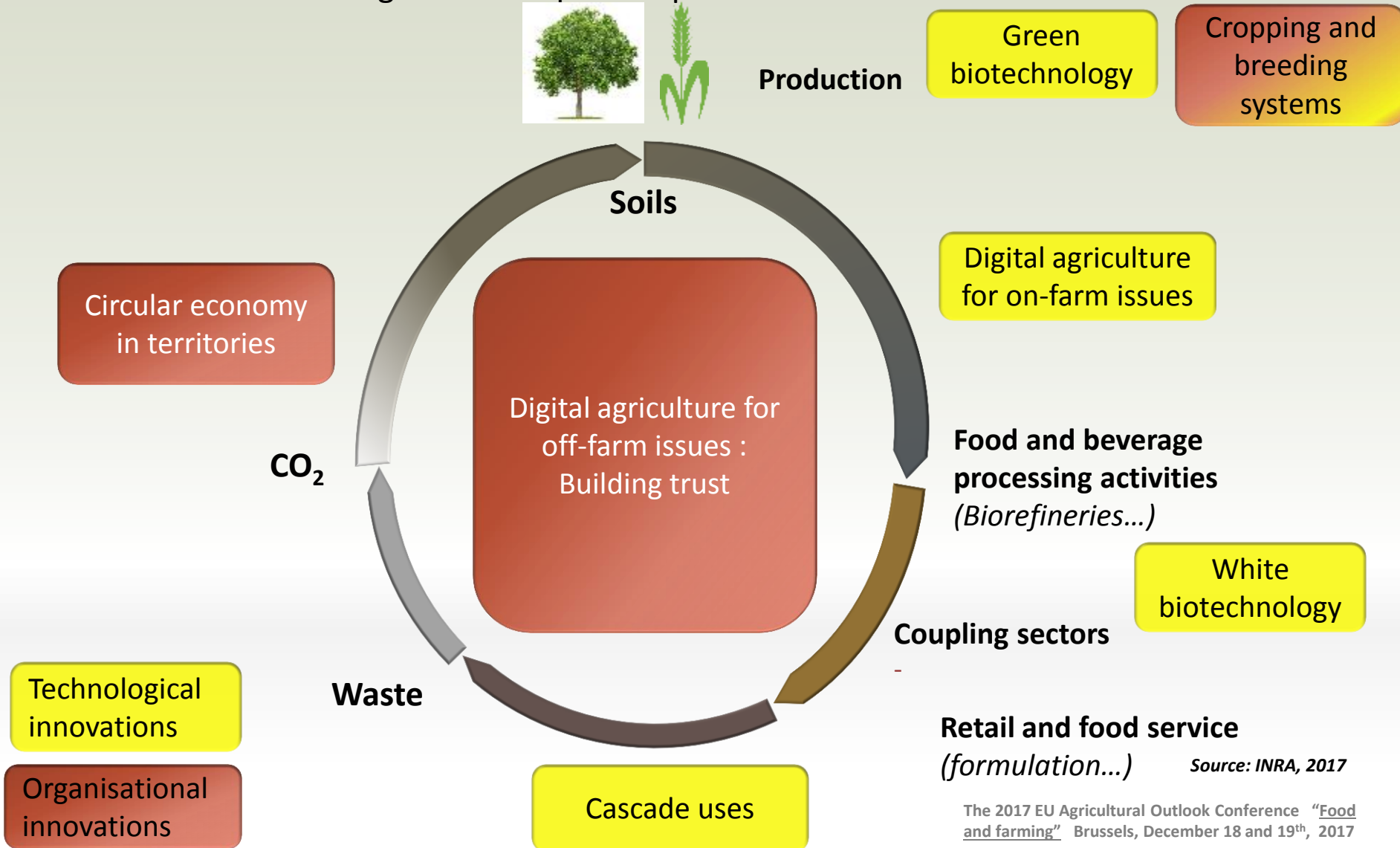


Adapted from HPLE Food security and nutrition, 2017

What European vision for the future?

Innovations to help agricultural transitions

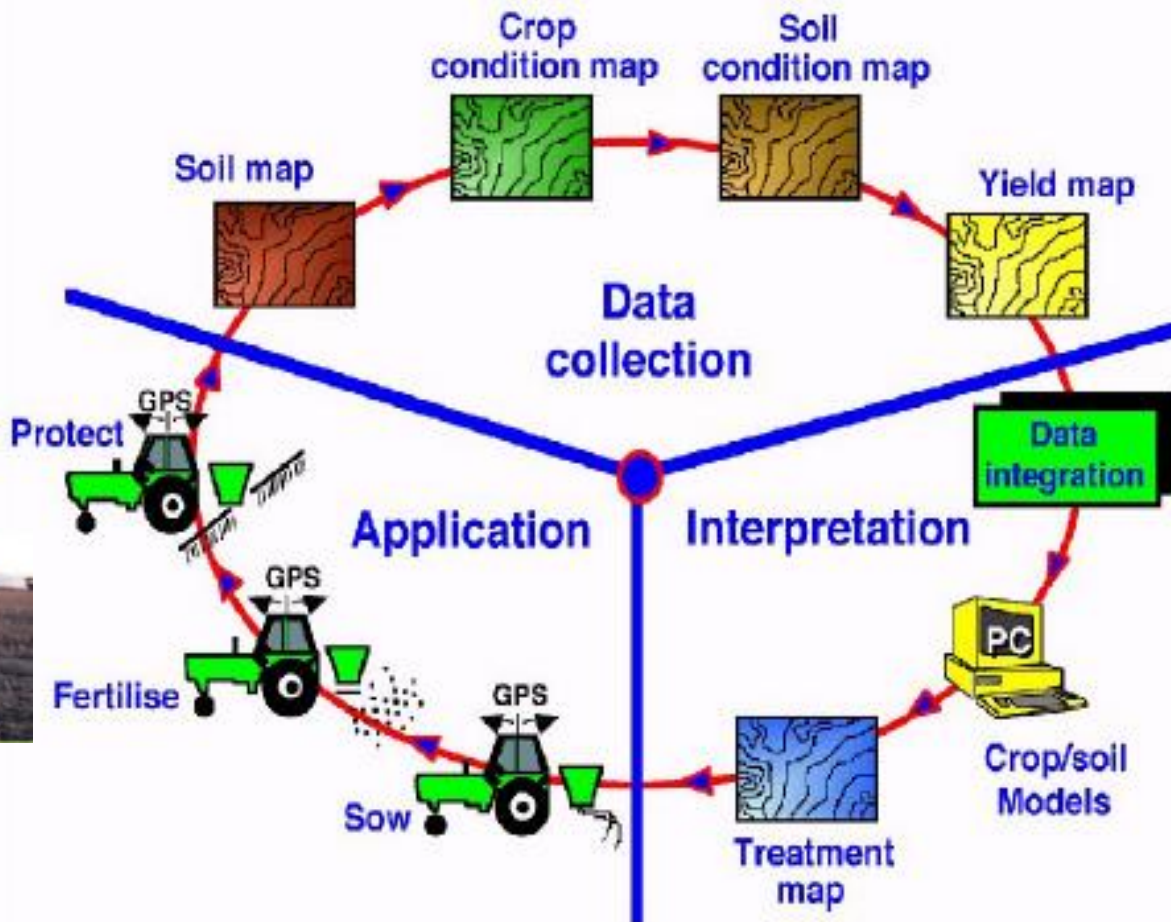
Reconsider real strategies based upon simplification.



Digital agriculture for on-farm issues

Data-driven agriculture

Cultural operations are adapted to present needs of plants (animals): fertilisation (dose), irrigation (dose), crop protection (product type, dose), weed management

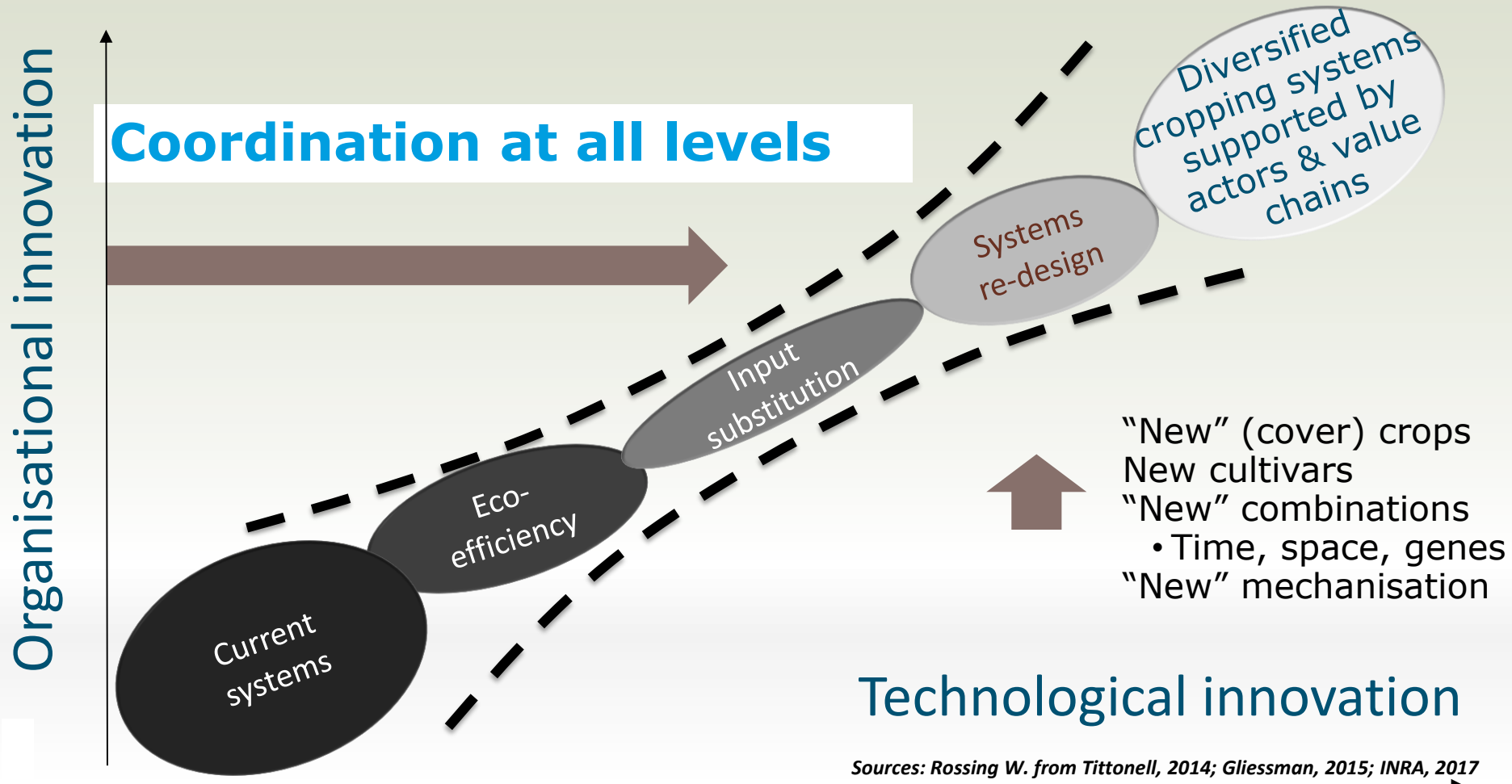


Data processing
(big data, deep learning)

Source: Irstea, 2017

Cropping and breeding systems

Optimise cropping systems/value chains, not individual crop



Sources: Rossing W. from Tiftonell, 2014; Gliessman, 2015; INRA, 2017

What European vision for the future?

Agriculture brings private, public and common goods

Farming system



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Bioeconomy
foods,
bioenergies,
biobased
chemicals and
materials



Cultural services
Citizen

Regulating services
Farmer: soil, water quality,
pests
Citizen: water quality,
Climate, pollution, air,
Resilience to floods, extreme
drought and forest fires
Animal health and welfare



Supporting services
Nutrient cycling
Water cycling,
pollination, biodiversity.

Circular economy



Agroecological practices,
Carbon sequestration (4‰)

Territories



Landscapes

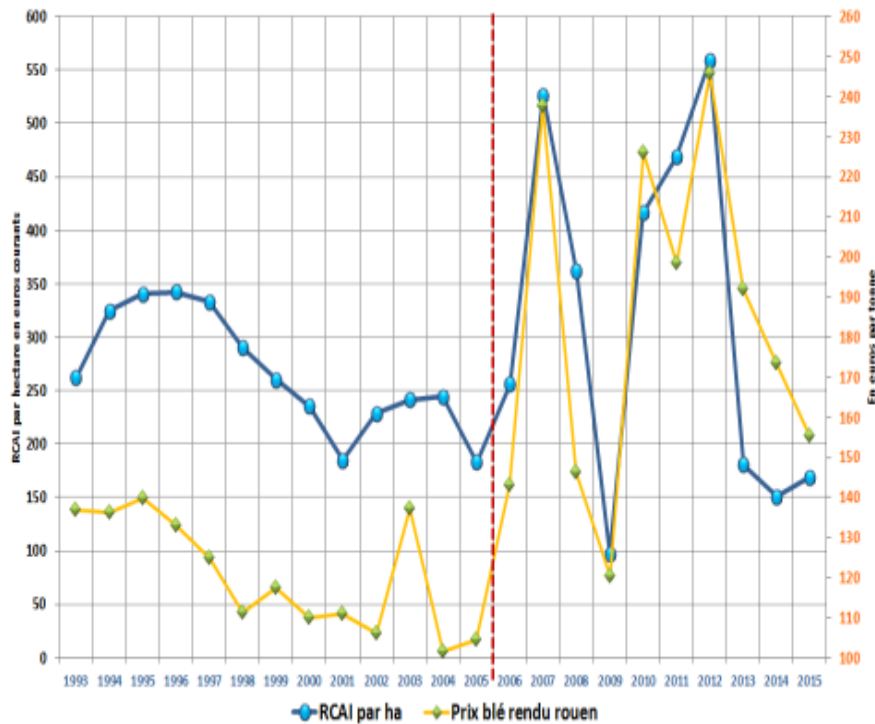
Adapted from IPCC

Which role for the CAP ?

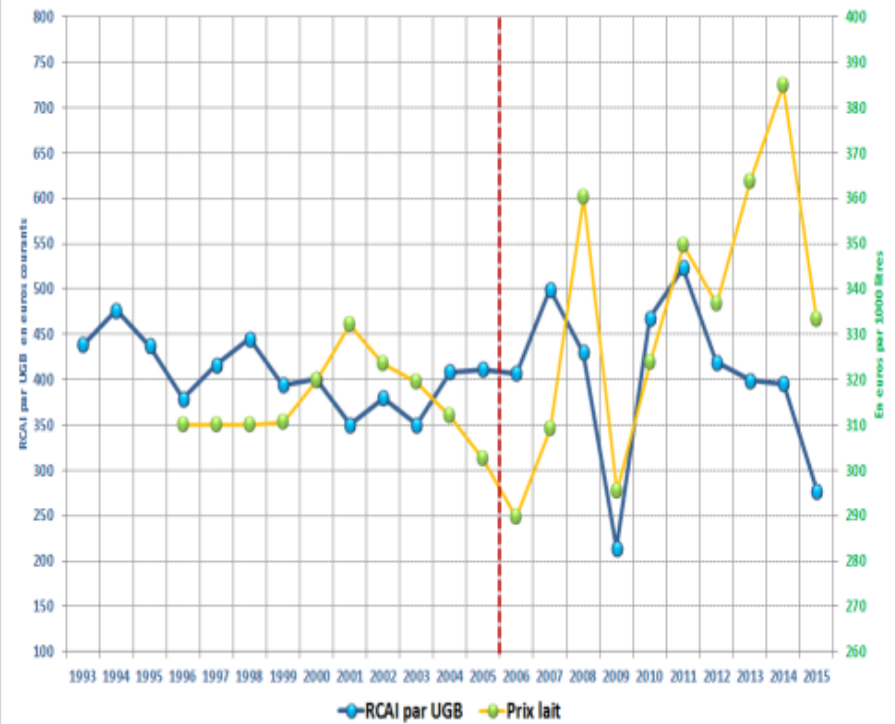
Seriously address the issue of uncertainties

The profit before tax of farmers is highly impacted by volatility of prices. Examples of the wheat sector and the milk sector in France

Evolution du R.C.A.I. par hectare et du prix du blé
"Céréales" exploitation moyenne



Evolution du R.C.A.I. par UGB et du prix du lait
"Bovins lait" exploitation moyenne



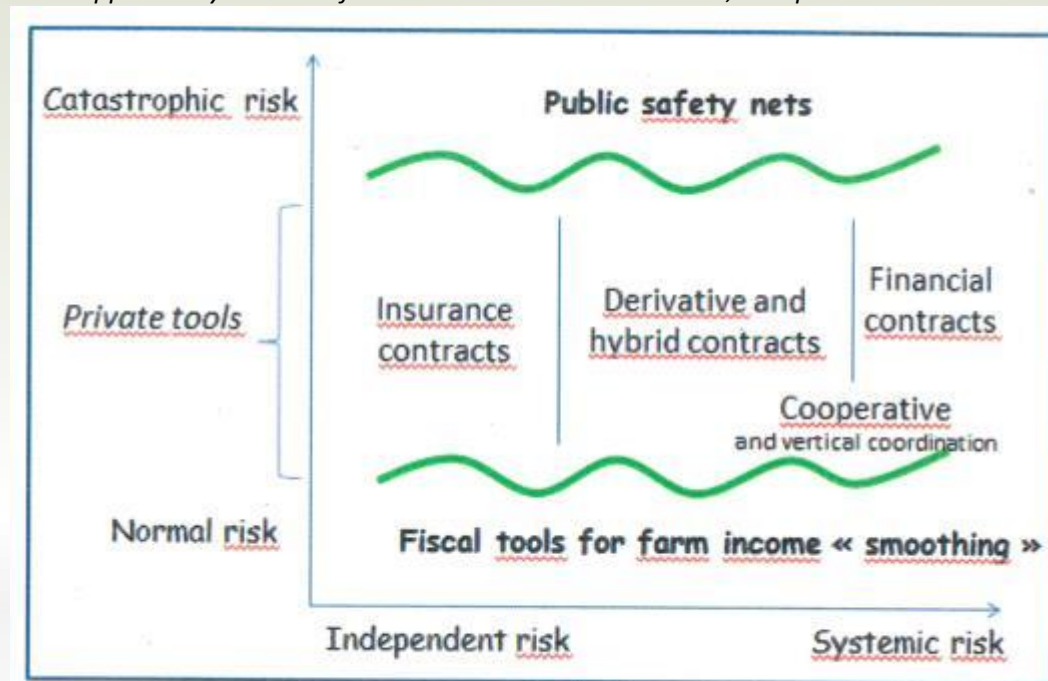
Sources: IDARI-Club EuroAgro, mai 2017 (synthesis from RICA data)

Which role for the CAP ?

Take into account uncertainties to foster and encourage players to invest in innovation

Mapping of source risk management and safety net instruments

Source: Cordier J. (2014), Comparative analysis of risks management tools supported by the 2014 farm bill and the CAP 2014-2020, European Parliament



Source: adapted from Cordier et al. 2004.

Which role for the CAP?

Keep a single European market

- Thin markets tend to reduce the efficiency gains of the large single market allowed by the size of the market and the harmonisation of the rules

Source: Adjemian, Saitone and Sexton (2016), A Framework to analyze the Performance of Thinly Traded Agricultural Commodity Markets, Amer. J. Agr. Econ, 98(2): 581-596

Which role for the CAP for assisting transitions ?

- Foster new **business models including economic growth and environmental services**
- Help **transitions and secure investments**
- **Promote safe diets** through food systems

Establish a monitoring system with open data

(for restoring confidence and trust of consumers and for monitoring purposes)

Which role for European policies for assisting transitions ?

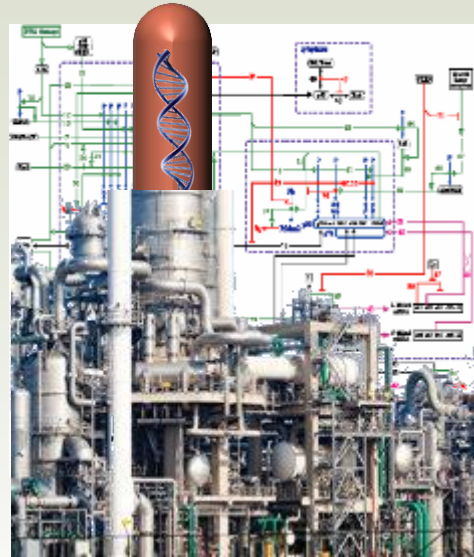
- **Avoid** development of «thin markets» that would increase **volatility**.
- Keep a **single European market**.
- Improve **coherence between policies: CAP, trade, competition**, energy, circular economy package, Framework Programme on Research and Innovation...
- Improve initial and ongoing **education**

Industrial biotechnology

Rationale : The convergence of knowledge in life sciences and chemical engineering
Uses enzymes, microorganisms or microbial consortia as catalysts

Raw agricultural
and forestry
products

Biorefi-
neries



Bio-based
products

Food and feed
Ingredients for food
such as sweeteners
Chemicals
Bulk chemicals for
manufacturing
Specialty chemicals
such as lubricants
Energy
Biobased liquid fuels
for transport
Materials
Biopolymers
Well-being /health care
Antibiotics
Ingredients for
cosmetics



Ancient Babylonians drinking
beer through straws



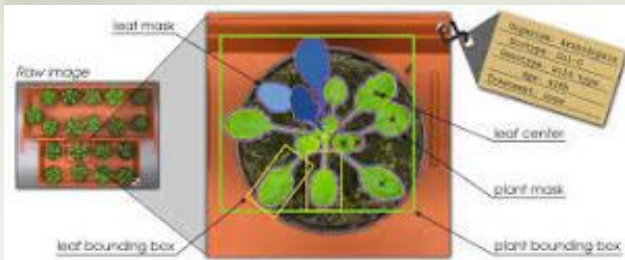
Source: Inra, 2017

Green Biotechnology

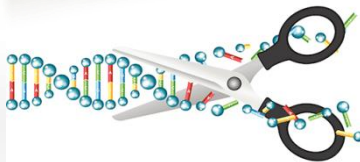
Rationale : Understand the functioning of plants & adaptation of the raw materials
Development and implementation of methodologies and (bio)technologies
Boosting of yields by enhanced photosynthesis.

➤ New breeding targets & increased diversity of varieties and crops

High-throughput phenotyping
=> Imaging & sensors



Genome editing
=> New gene editing systems
with FTO

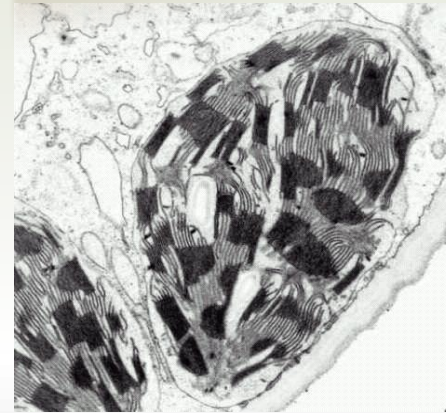


Breeding

1 - Less pesticides

2 - Adaptation to harsh climatic conditions

3 - Enhanced Photosynthesis

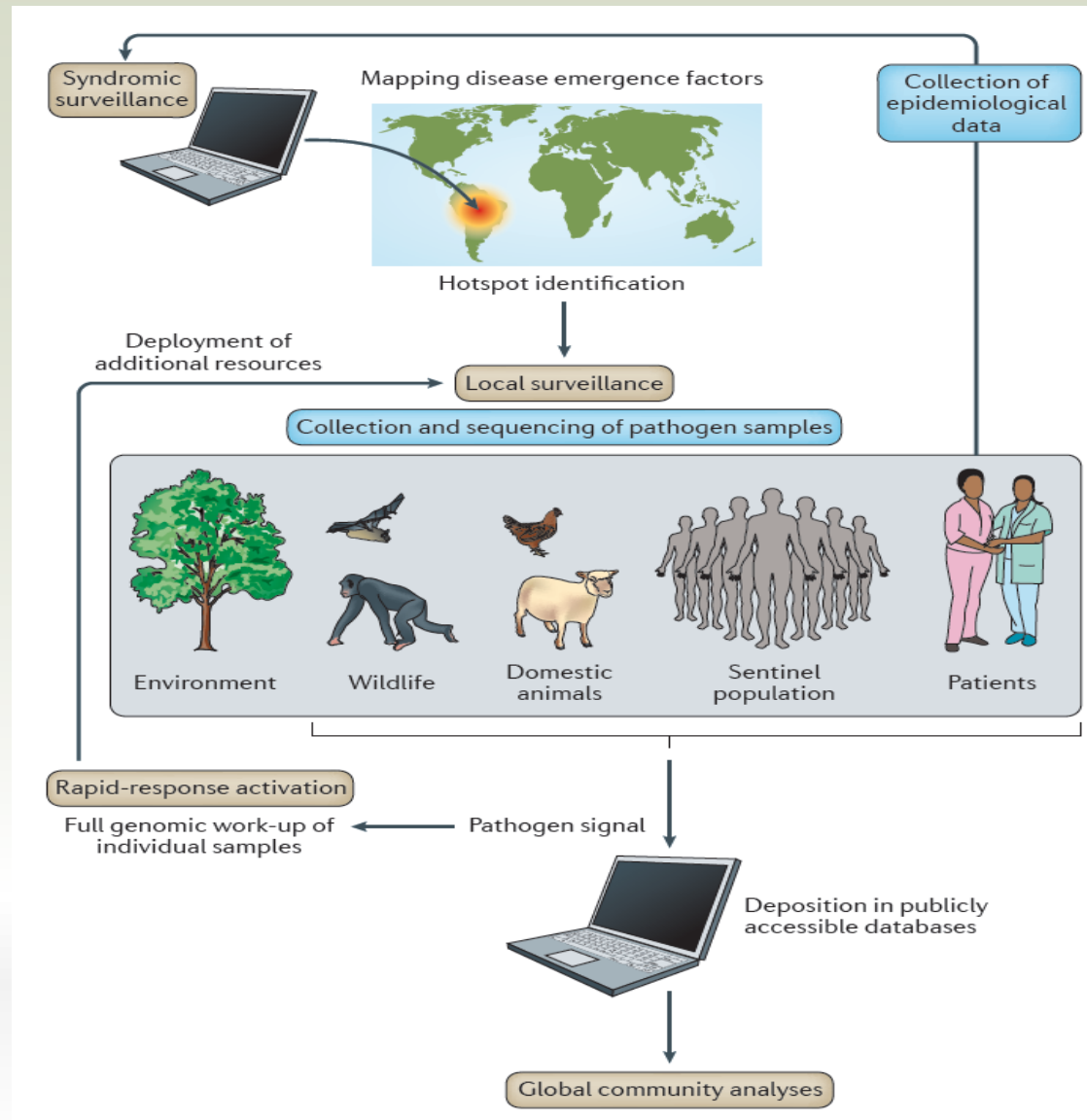


4 - Introduce greater diversity to cropping systems

5 - Towards new biomass-based products

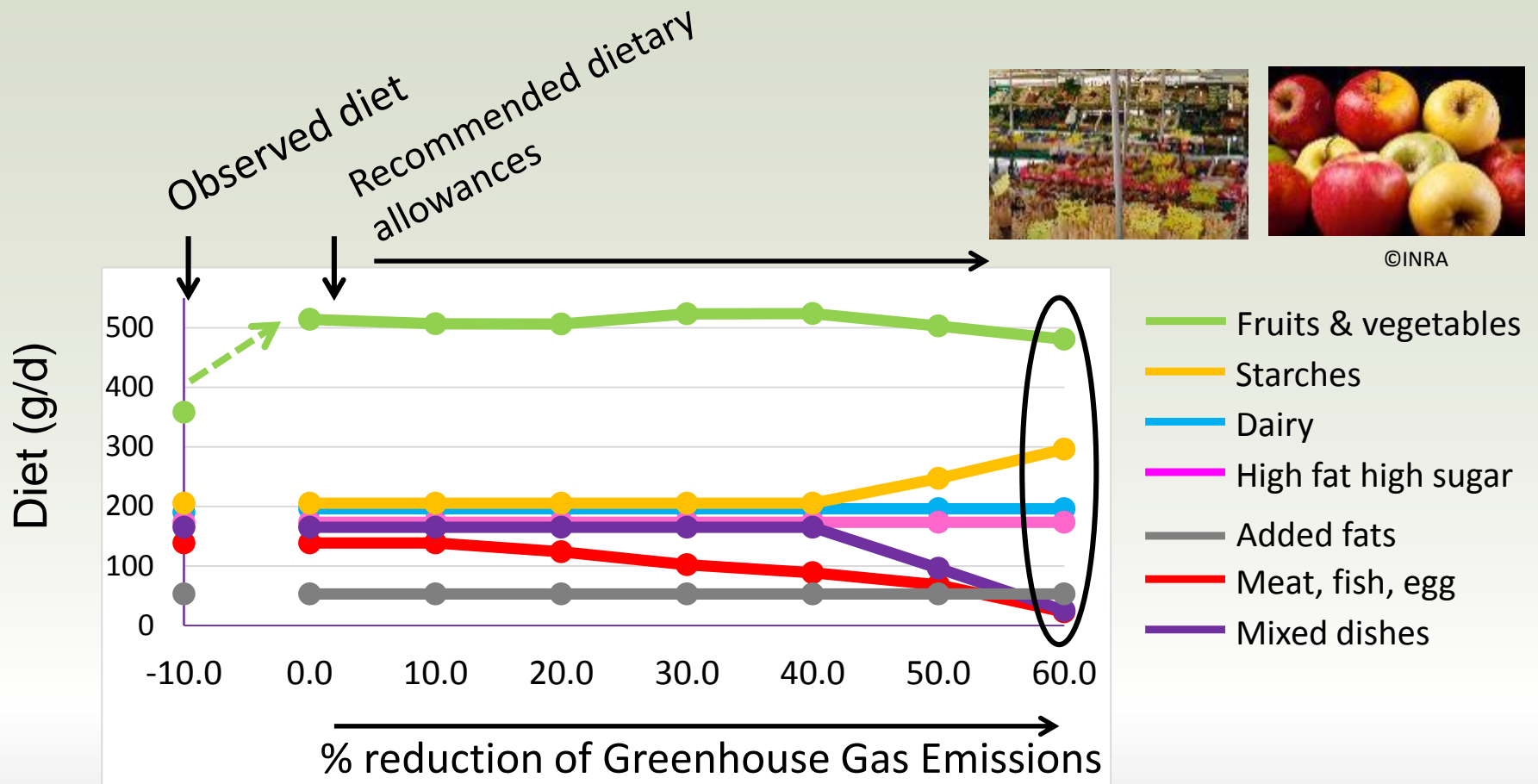
Source: Inra, 2017

A future model for surveillance and early outbreak response



Source : J. L. Gardy and all,
Nature, Vol. 19, Janv, 2018

Challenges for EU food systems: towards a nexus agriculture - diet - climate



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It is possible to design a nutritious diet without increasing cost, with moderate deviation from current intakes and 30-40% GHGE reduction.

Source: Perignon, Pub Health Nutr, 2016