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

Retail and food service

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

Food and beverage processing activities

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

Inputs
470 000 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.

Sources: European Commission, 2017
EU 28: a global actor

First importer in the world: Imports €112 billion

European Agriculture

Exports €131 billion

First exporter in the world

Source: INRA, 2015

The 2017 EU Agricultural Outlook Conference “Food and farming” Brussels, December 18 and 19th, 2017
Challenges for EU food systems
climate changes and uncertainties

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

Atlantic region
Increasing risk of river and coastal flooding
**Increase in multiple climatic hazards**
Increase in heavy precipitation
Increase in river flow

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

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

Mountain region
Upward shift of plant and animal species
**High risk of extinction species**
**Increasing risks of forest pests**

Uncertainties in bold

**Source: EEA, 2015**

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Challenges for EU food systems

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

Source: OECD Obesity Update 2012
Challenges for EU food systems

Imbalance of power between producers and retailers

Source: European Commission using Eurostat data, 2011

*Utilized 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?

Supply chain
- Farmers
- Storage and distribution
- Processing industry: foods, beverages
- Retail and food service

Behaviour factors
- Availability and physical access
- Promotion, advertising and information
- Economic access
- Food and water safety

Consumer Behaviour
- Diets
- Biobased chemicals, bio-energies

Availability and physical access
- Political and economical drivers

Demographic dynamics
- Socio-cultural drivers

Sustainability
- Health and well-being

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.

Source: INRA, 2017
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

Source: Irstea, 2017

Data processing (big data, deep learning)

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Cropping and breeding systems

Optimise cropping systems/value chains, not individual crop

Coordination at all levels

Organisational innovation

Current systems

Eco-efficiency

Input substitution

Systems re-design

Diversified cropping systems supported by actors & value chains

“New” (cover) crops
New cultivars
“New” combinations
• Time, space, genes
“New” mechanisation

Technological innovation

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

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What European vision for the future?
Agriculture brings private, public and common goods

Farming system

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

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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

Sources: IDARI-Club EuropAgro, 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
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

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

**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

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Raw agricultural and forestry products

Biorefineries

Bio-based products

Source: Inra, 2017

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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

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
Circular economy in territories

**Rationale:** organising organic streams in cascades until closing loops of N, P and K.

Source: Circle Economy, TNO and Fabric, 2016
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

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