Transformation processes in European farming systems: Regional challenges & related research

6 November 2019

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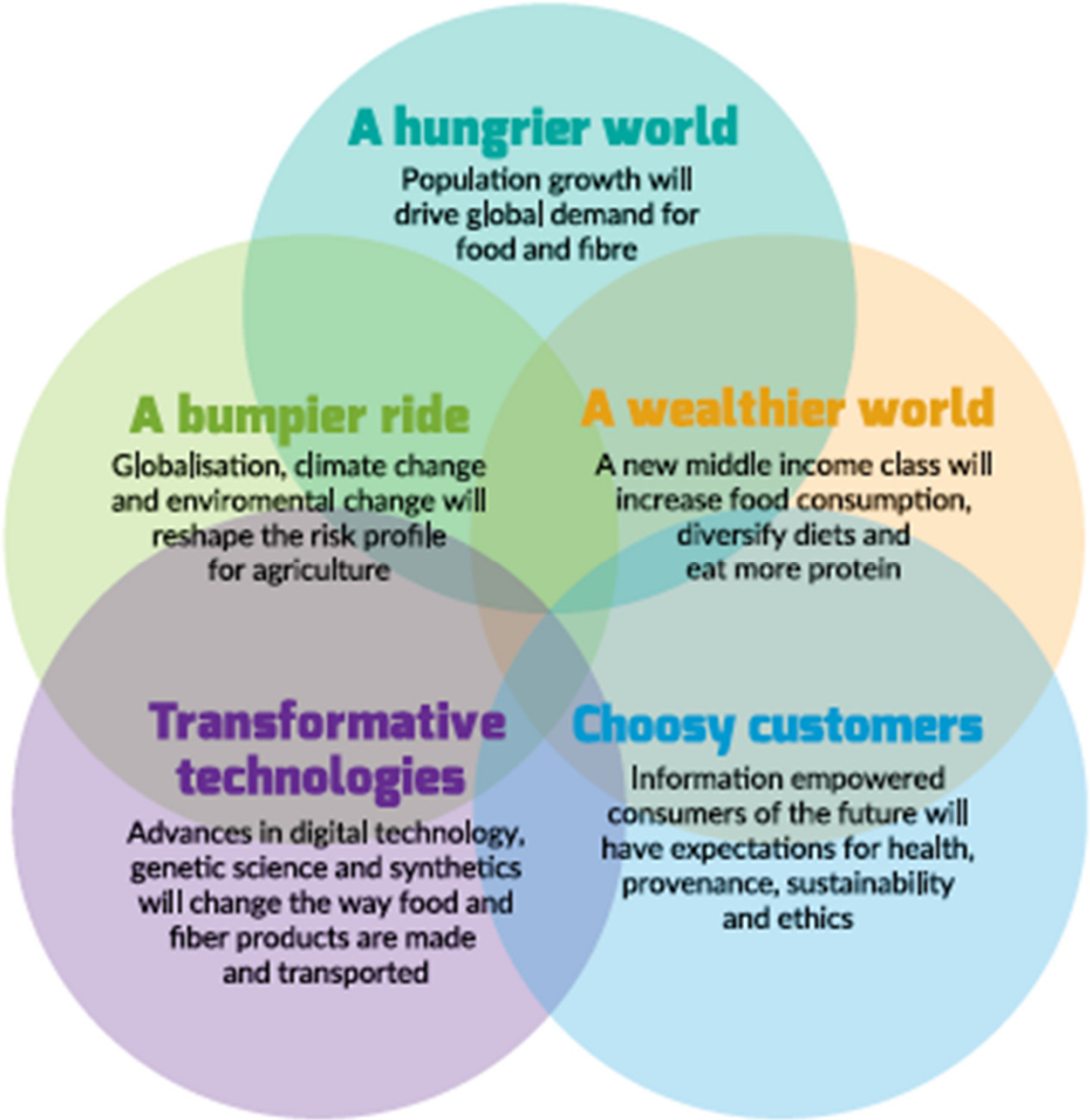
Outline of presentation

- Setting the context – the big drivers and common challenges
- Positioning the food system in a circular bioeconomy
- The need for research and innovation and some features that can help achieve impact

Rural Mega-trends

A high-level framing of the drivers



CSIRO/RIRDC (2015)

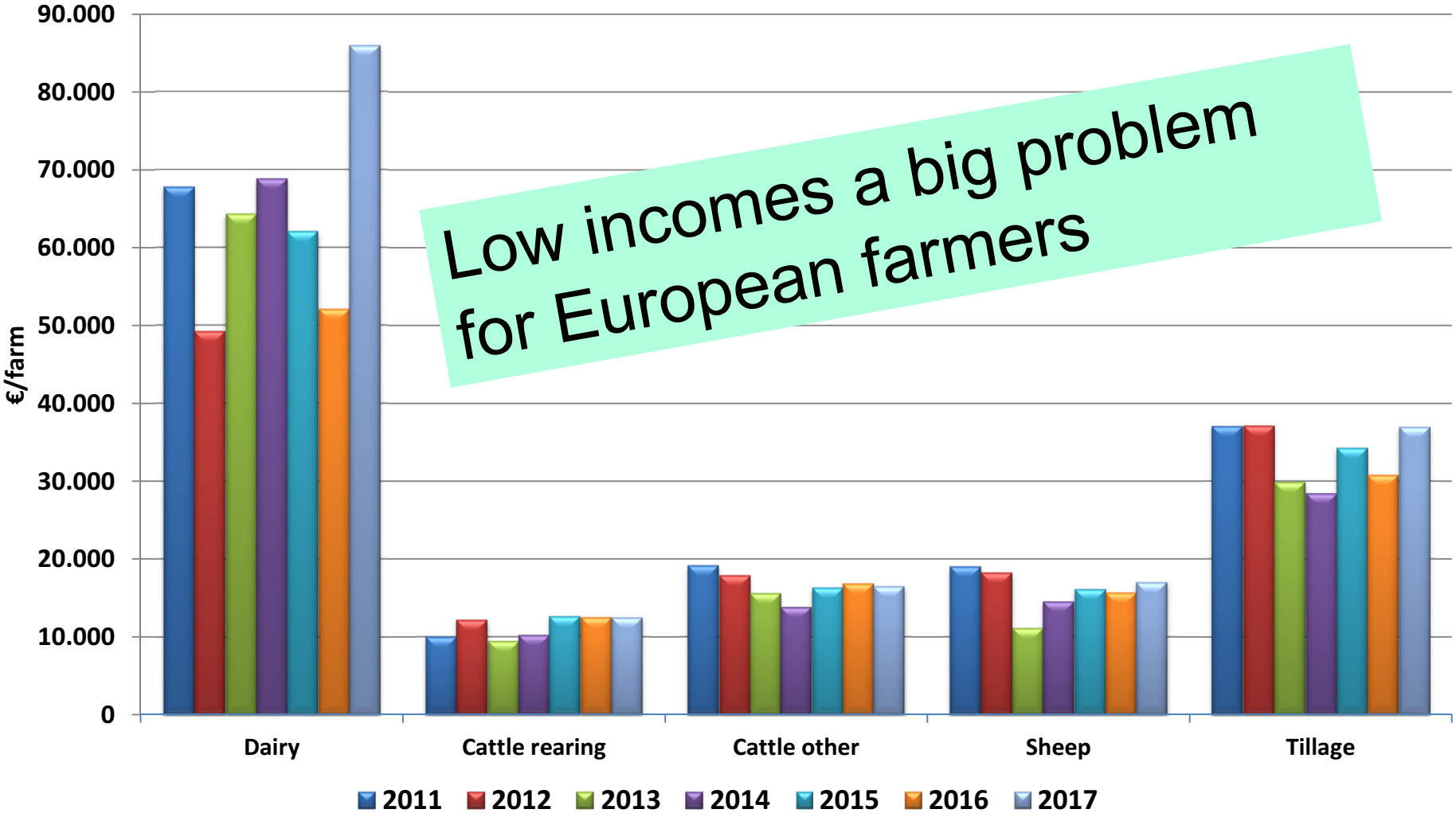
Rural Megatrends

Opportunity (and challenge) for food industry

A hungrier world	al demand for
A wealthie	Growth in middle income consumers drives demand for more higher value foods
Choosy customers	
A bumpier ride	
Transformative technologies	

Family Farm Income in Ireland 2011-2017

Teagasc National Farm Survey (FADN)



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Irish farmers blockade beef processing plants for 6 weeks over low prices in autumn of 2019

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Rural Megatrends

A hungrier world

- Population growth drives global demand fo… food and fibre

A wealthier w…

…foods

Choosy customers

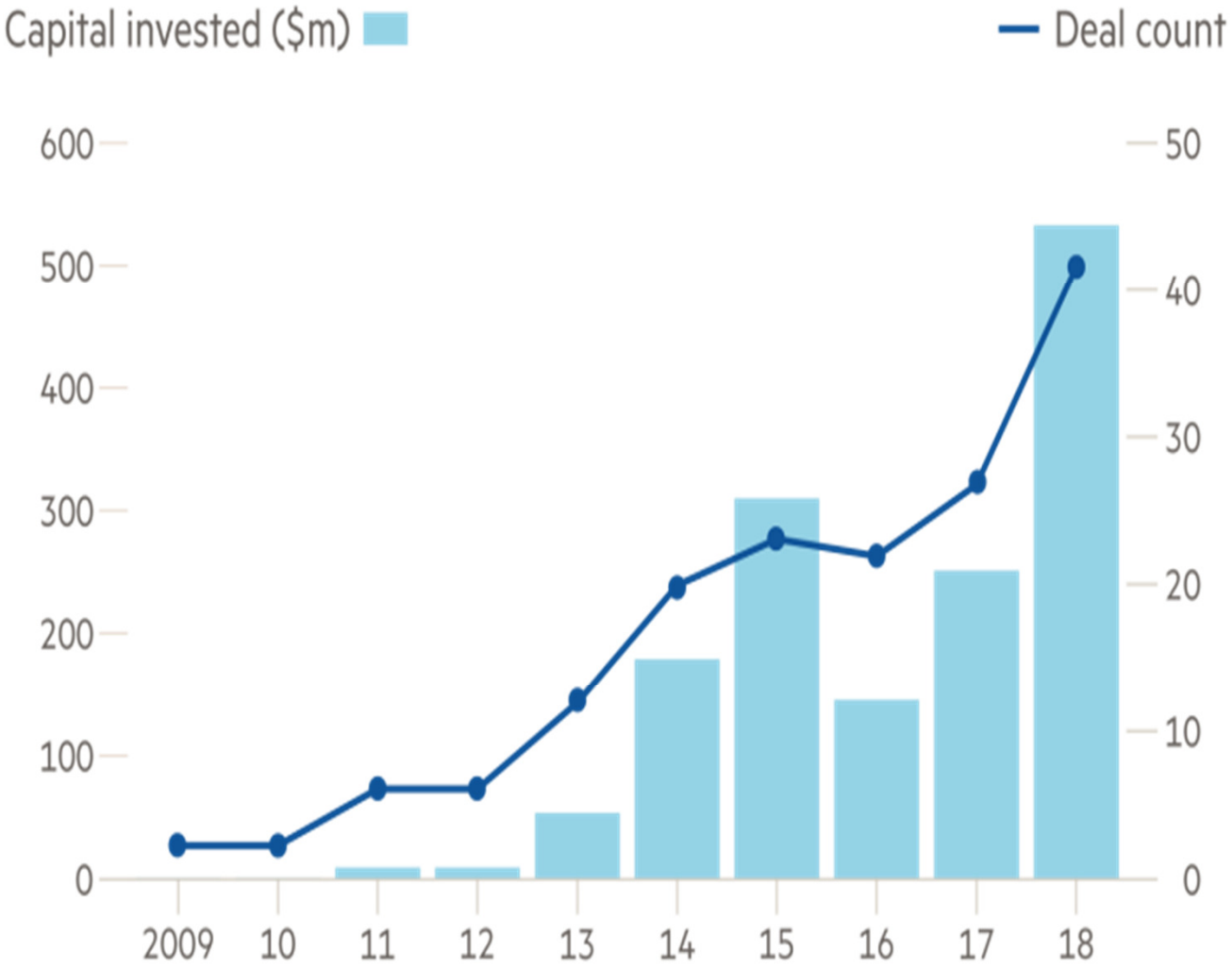
- Customers with high expectations for health, safety, provenance, sustainability and ethics

A bumpier ride

Transformative technologies

Some of the changes could be disruptive for the food system

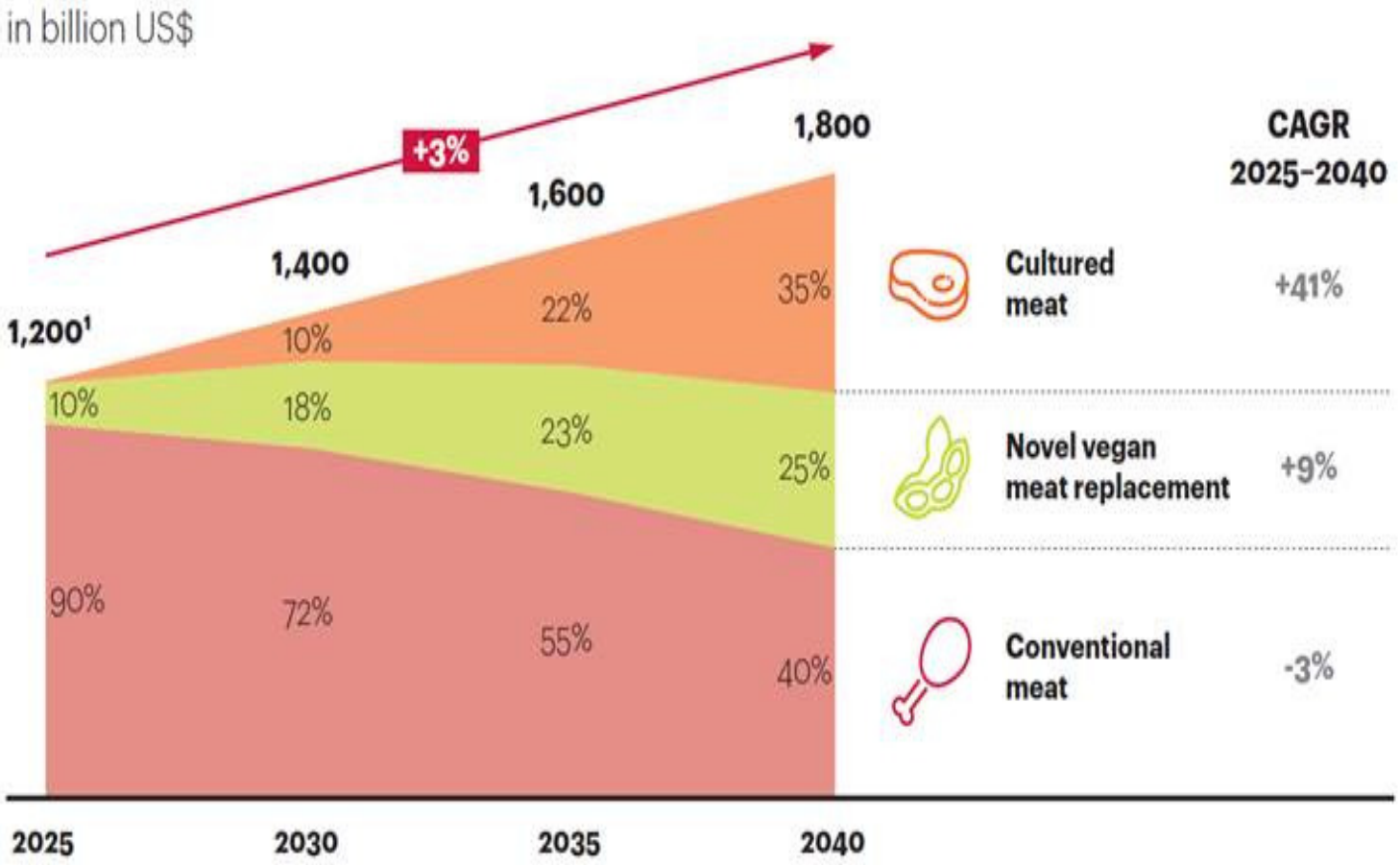
Investment soars for plant-based food companies



Sources: PitchBook; Good Food Institute

Figure 9

Global meat consumption: By 2040, conventional meat supply will drop by more than 33%



¹ Numbers are rounded to hundred billions.

Sources: United Nations, World Bank, Expert interviews; A.T. Kearney analysis

Rural Megatrends

A hungrier world	• Population growth drives global demand for food and fibre
A wealthier world	• Growth in middle income consumers drives demand for more higher value foods
Choosy customers	• Customers
A bumpier rid	ion, climate change, environmental change, geo-political change reshapes risk profiles.
Transformative technologies	

Change is not easy – farmers need to buy into the changes

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Dutch farmers protest over nitrogen regulations in October 2019

Rural Megatrends

A hungrier world	• Population growth drives global demand for food and fibre
A wealthier world	• Growth in middle income consumers drives demand for more higher value foods
Choosy customers	• Customers with high expectations for health, safety, provenance, sustainability and ethics
A bumpier ride	• Globalisation, climate change, environmental change, geo-political change reshapes risk profiles.
Transformative technologies	• Advances in biology, digital technology, materials transform food and fibre value chains

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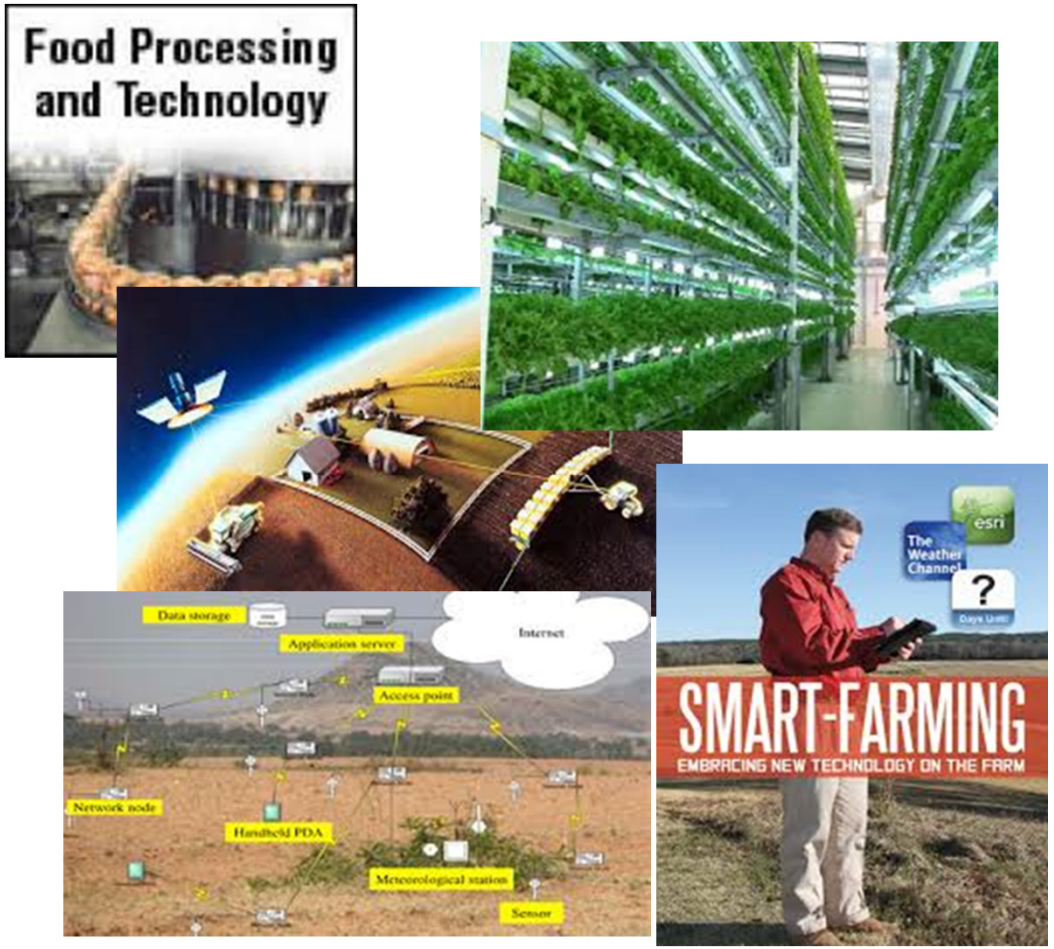
Teagasc Foresight Project Overview

The identification of the key technologies that have the potential over the next 20 years to underpin competitiveness, sustainability and growth in the Irish agri-food and bioeconomy sector



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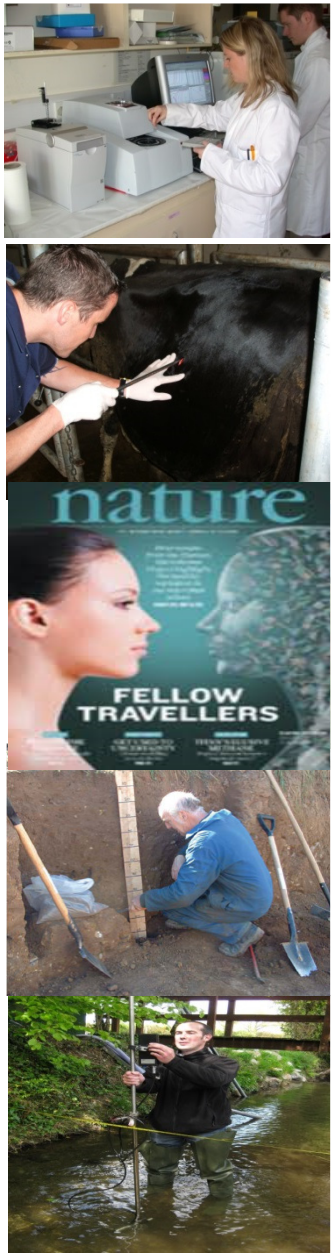
Five Transformative Technologies

- Plant and animal genomics and related technologies
- Human, animal and soil microbiota
- Digital technologies
- New technologies for food processing
- Transformation in the food value chain system

Linkages between these technologies



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Need for a well-functioning food system is evident

- growing world population
- effects of climate change.
- the double burden of obesity and malnourishment
- reduce food waste and improve food safety and nutrients security.
- food consumption, and therefore the entire food chain, is heavily depending on the basic crop, livestock and aquaculture production

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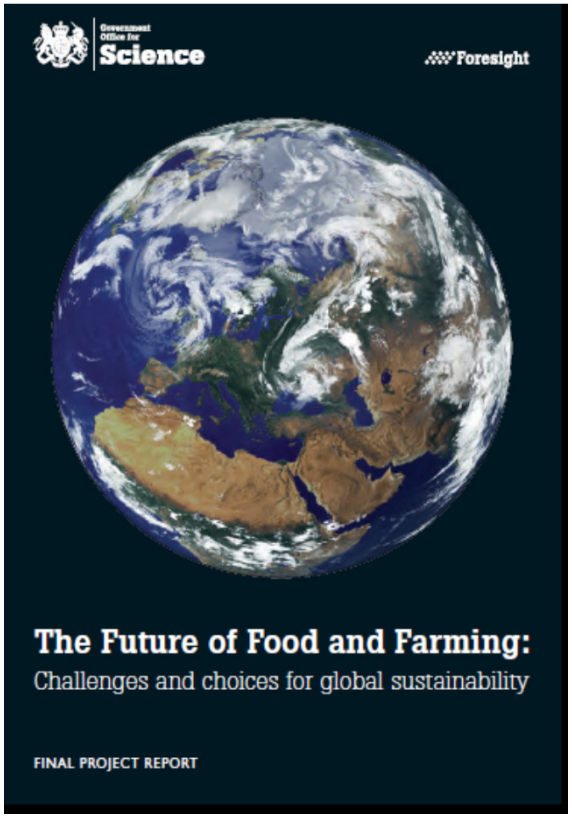
Needed Transformation in our food system



The Challenges

Produce 60% more food by 2050 to feed growing and richer population, deal with climate change and pressure on natural resources, and preserve biodiversity

"To address the unprecedented challenges that lie ahead, the food system needs to change more radically in the coming decades than ever before, including during the Industrial and Green Revolutions"

(UK Food and Farming Foresight, 2011, p.176)

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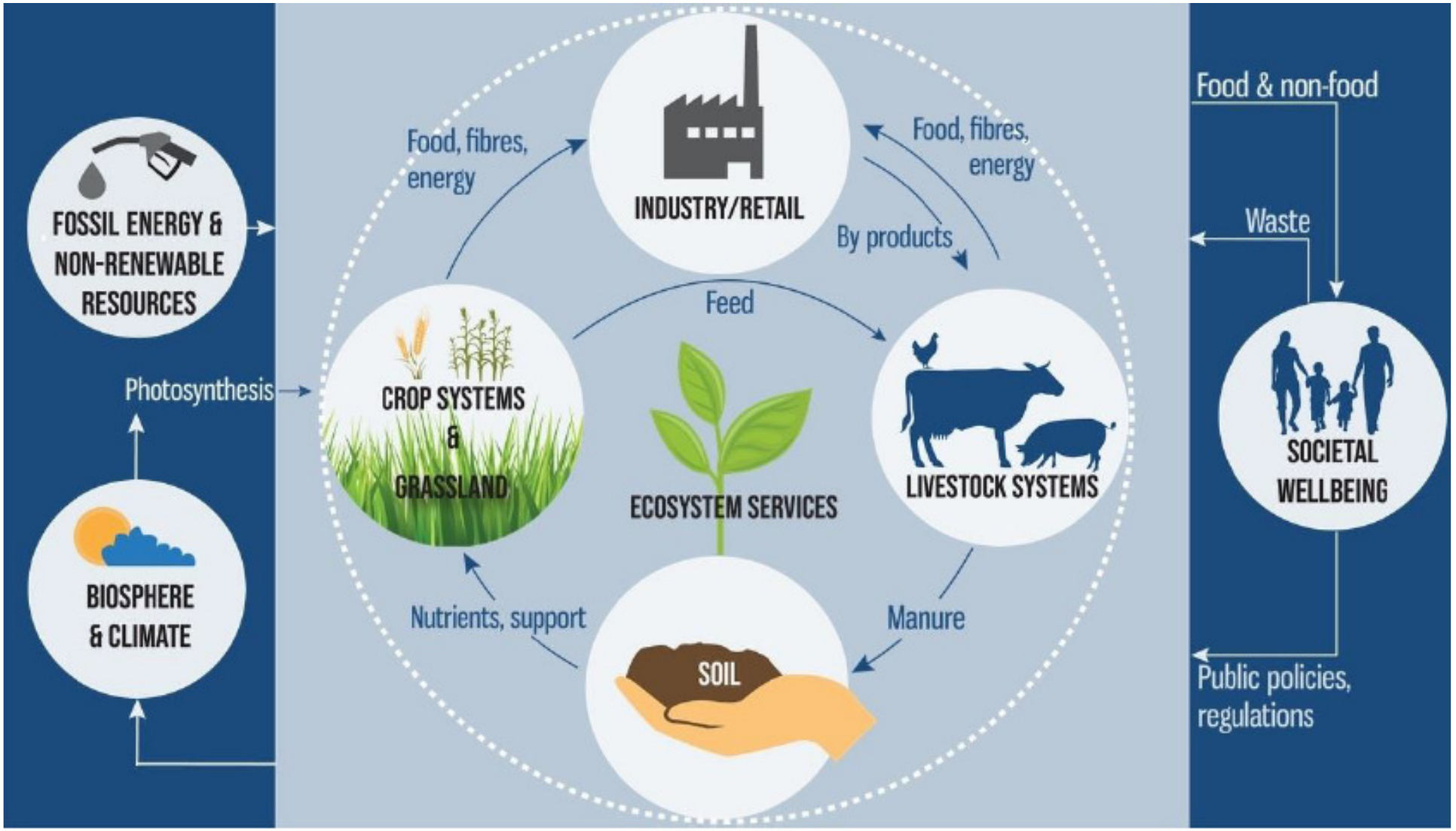
Food system in a sustainable circular bioeconomy



Why is research important?

- *"between 50 and 85 percent of the growth of the US economy over the past half century (and two thirds of our productivity gains in recent decades) are directly attributable to scientific and technological advances"*

John Holdren, US Presidential Science & Technology Adviser giving testimony to Congressional Committee, Feb 2009

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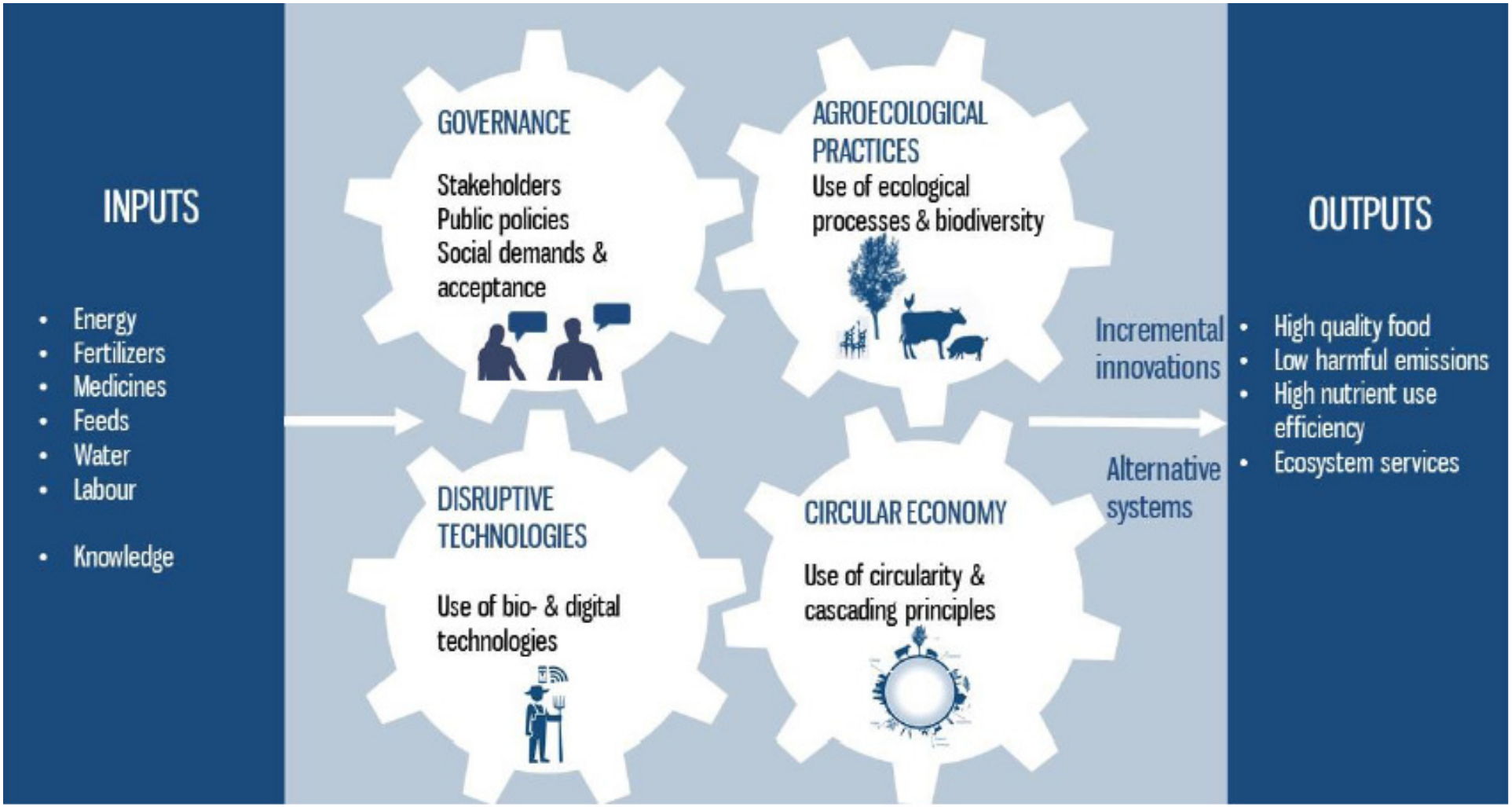
Framework for research and innovation to enhance the role of the European livestock sector in circular agri-food systems



Source: Animal Task Force, 2019

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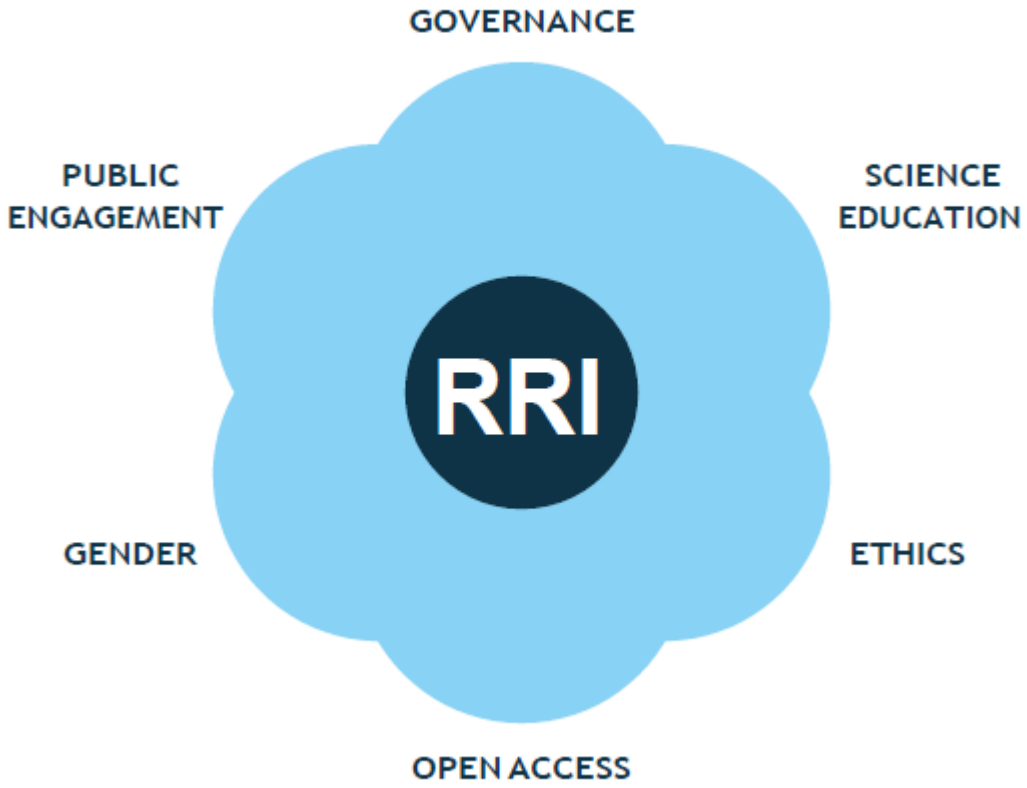
We need responsible research and innovation



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Inverting the paradigm of research and innovation

R& D → MARKETS CONSUMERS INDUSTRY NEEDS → € IMPACT




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Participatory approach is necessary

All the actors, especially farmers, must be involved in co-creating the solutions

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Systems approach is necessary to research

- These issues have to be analysed using a systems approach in order to avoid trade-offs
- Multidisciplinary teams of scientists (and the other actors) are needed
- Also need ‘excellent science’, focused on a single discipline

Summary

- Great opportunity and many challenges facing farmers and the food system
- We are living in a time of change, and some changes will be disruption
- Science has a major role to play, but it must be focused on impact and innovation and involve all the actors and stakeholders