



SUSTAINABLE  
RESILIENT  
EU FARMING  
SYSTEMS

# Resilience of farming systems in the EU: current conditions and future scenarios

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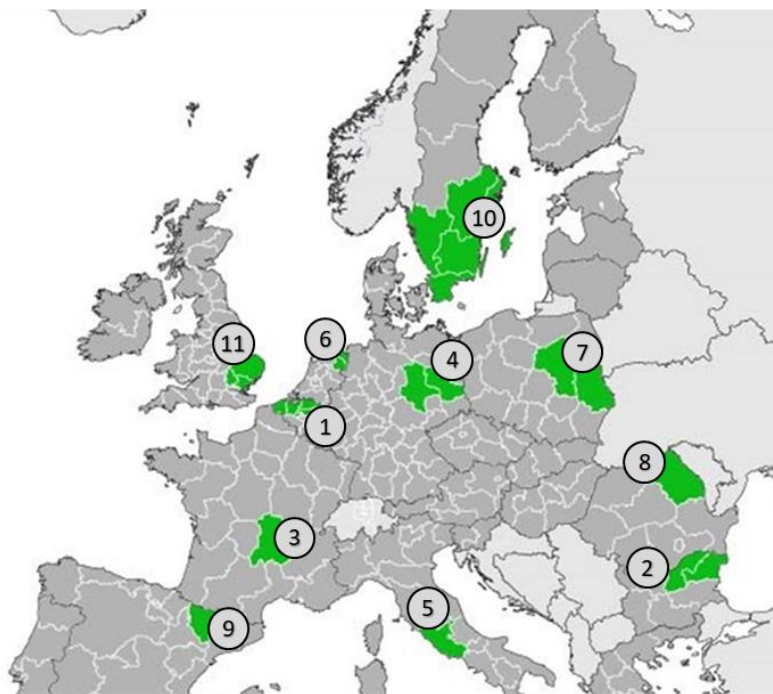


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Research workshop 'Resilience and the Bioeconomy', 24 June 2022

# Farming systems face different challenges



- ① Intensive dairy farming in Flanders, Belgium
- ② Large-scale arable farming in Northeast Bulgaria
- ③ Extensive beef cattle system in the Massif Central, France
- ④ Large-scale corporate arable farming with additional livestock activities in the Altmark in East Germany
- ⑤ Small-scale hazelnut production in Lazio, central Italy
- ⑥ Intensive arable farming in Veenkoloniën, the Netherlands
- ⑦ Fruit and vegetable farming in the Mazovian region, Poland
- ⑧ Small-scale mixed farming in Northeast Romania
- ⑨ Extensive sheep farming in Northeast Spain
- ⑩ High-value egg and broiler farming in Southern Sweden
- ⑪ Arable farming in the East of England, UK



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Der Laden







NO FARMERS  
NO FOOD  
NO FUTURE!

GEWIK JE VERSTAND  
BEHOUD  
BOEREN NONS LAND

STIK...  
KABINET...

De Agri en het Land



# Integrated assessment

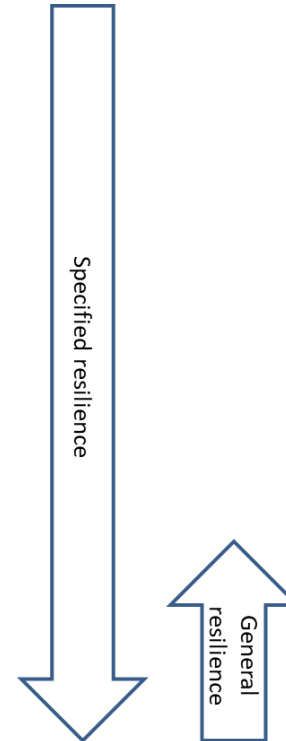
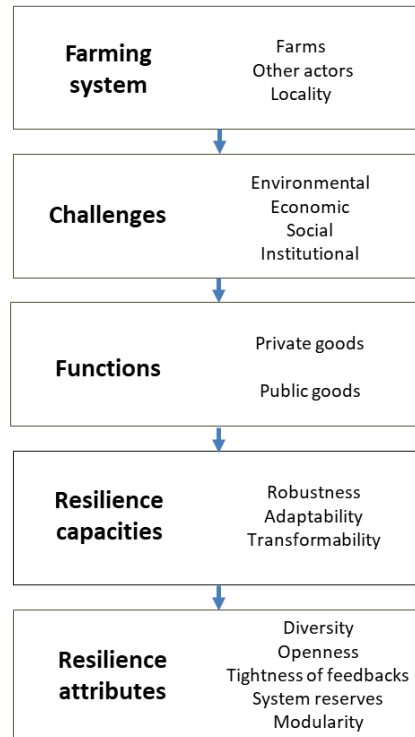
1. Resilience *of what?*

2. Resilience *to what?*

3. Resilience *for what purpose?*

4. What *resilience capacities?*

5. What *enhances resilience?*



## Qualitative

**methods:**

workshops,  
interviews

## Quantitative

**methods:** system  
dynamics modelling,  
ecosystem services  
assessment, farm  
structural change  
modelling



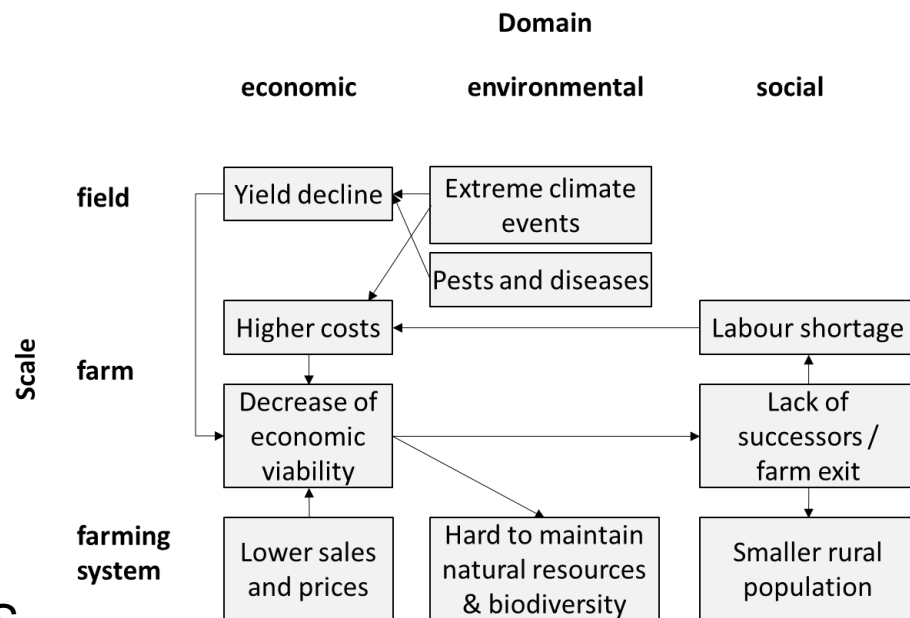
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# Accumulating challenges cause farming systems to approach critical thresholds

- Many FS are perceived to be close to critical thresholds
  - low economic viability leading to farmer exits, making it hard to maintain the social fabric, natural resources and biodiversity
  - E.g., extensive sheep production in Huesca, Spain

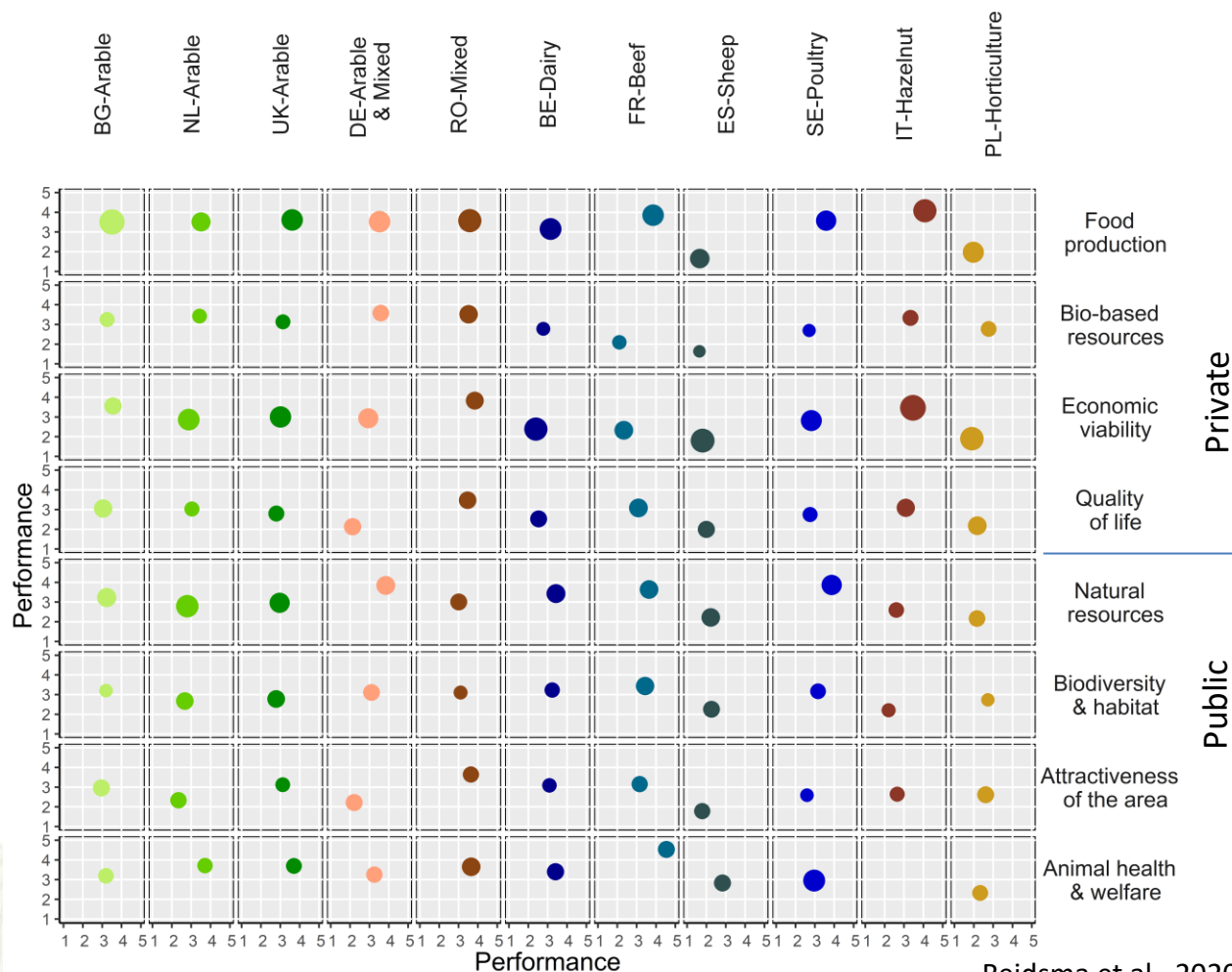


- Continuous change of laws & regulations critical in 5 out of 11 FS



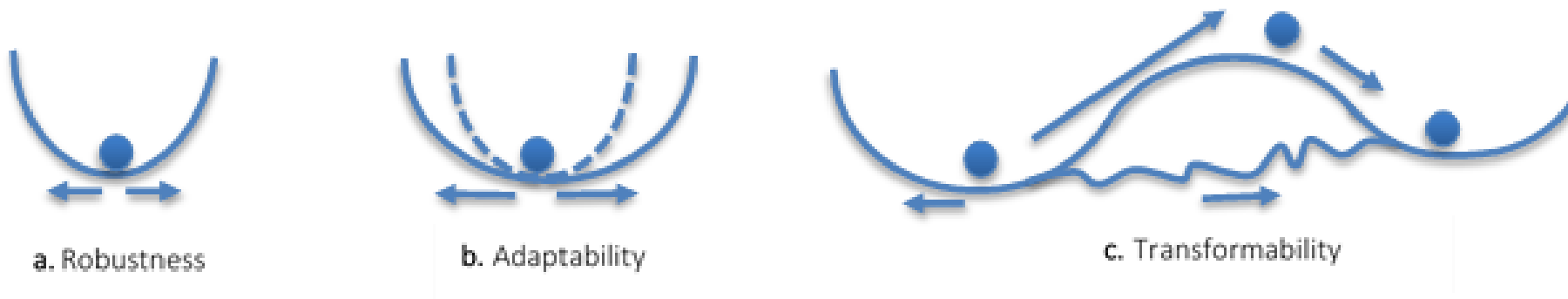
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# Past strategies mainly focused on remaining economically viable, leading to a decline in the provision of public goods



- Importance (size):
  - Economic viability (farmers)
  - Food production (all)
  - Natural resources (other stakeholders)
- Performance (level)
  - Food production high
  - Economic viability moderate
  - Public goods lower
  - Variability among FS & stakeholders

# The resilience of the farming systems is perceived as low to moderate, with robustness prevailing over transformability



- Presence of resilience attributes & historical dynamics of main functions
  - FS generally robust (although close to critical thresholds)
  - trade-offs with transformability (into desired directions)
  - adaptability mostly employed for keeping stability and realizing (slow) incremental improvements
- However, adaptation or even transformation is necessary



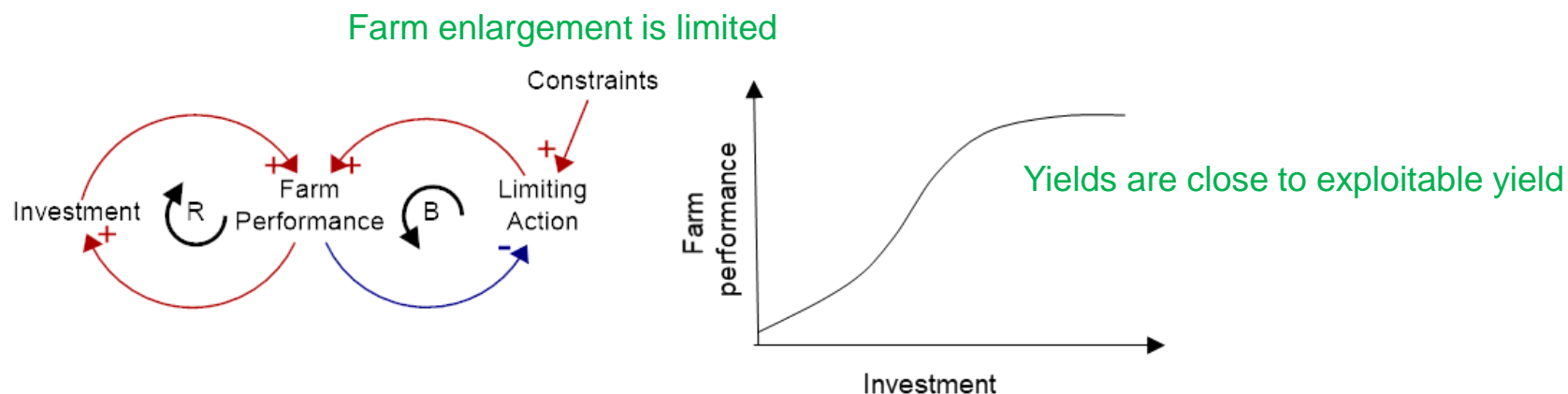
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# Strategies from the past are not sufficient to bring the desired social, economic and environmental change

## ● Past strategies

- kept farming systems robust, but adaptation and transformation are required
- have led to the erosion of the social fabric and reduced the maintenance of natural resources and biodiversity
- have **limits to success** (e.g., increasing farm size and intensity)



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# Desired alternative systems: actor-driven and -supported

	Case studies										
Category	BG-Arable	NL-Arable	UK-Arable	DE-Arable&Mixed	RO-Mixed	ES-Sheep	FR-Beef	SE-Poultry	PL-Horticulture	IT-Hazelnut	Total <sup>1</sup> (n)
Intensification				Intensification		Semi-intensive		Large farms			3
Specialization					Commercial specialization of family mixed farms		Only-for-export production		Horticulture farming		3
Technology	Innovation and technology	Precision agriculture				Hi-tech extensive		Robots	Shelter farming (under cover)	Technological innovation	6
Product valorization	Processing and increasing added value						Production only for the French market			Product valorization	3
Collaboration	Collaboration	Collaboration & water			Cooperation / multifunctionality						3
Attractive countryside				Better societal appreciation			Development of tourism			Sustained demand (high and stable prices)	3
Diversification	Crop diversification	Alternative crops	Likely system		Alternative crops / livestock			Self-sufficiency fodder			5
Organic / nature friendly		Nature-inclusive	Desirable system	Organic farming	Organic agriculture				Local organic farming	Eco-friendly agriculture	6
<b>Total (n)</b>	<b>4<sup>2</sup></b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>32</b>



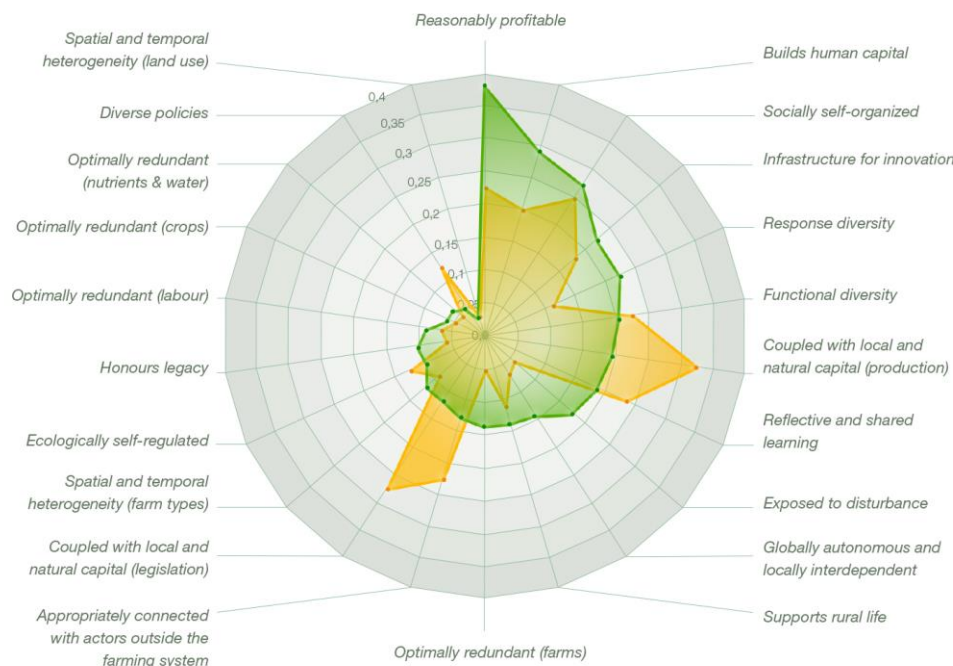
# Sustainability and resilience can be improved when strategies improve multiple functions and attributes at once



Strategies for  
current systems



Strategies for future  
alternative systems



- From strategies
  - enhancing mainly ‘reasonably profitable’
  - to ‘coupled with local and natural capital’
- Strengthening
  - ecological processes
  - stakeholder collaboration
  - institutional environment
  - while ensuring ‘reasonably profitable’



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# Desired alternative systems are diverse but only compatible with the sustainability scenario

Category systems	future systems [#]	Average compatibility score				
		SSP1 "Sustain- able"	SSP2 "Established "	SSP3 "Separated"	SSP4 "Unequal"	SSP5 "High- tech"
Status quo	9	0.55	0.31	-0.59	0.15	0.29
Intensification	3	0.67	0.48	-0.29	0.21	0.28
Specialization	2	0.50	0.36	-0.67	0.24	0.37
Technology	6	0.63	0.32	-0.50	0.22	0.26
Product valorization	2	0.68	0.26	-0.80	0.01	0.22
Collaboration	3	0.63	0.26	-0.76	0.16	0.24
Attractive countryside	2	0.48	0.44	-0.59	0.28	0.50
Diversification	5	0.72	0.26	-0.47	0.07	0.15
Organic / nature friendly	6	0.72	0.37	-0.74	0.11	0.21
Average <sup>1</sup>		0.63	0.33	-0.59	0.15	0.26

## EU and national policies

- should be directed at “unfolding” the “agriculture on sustainable paths” scenario
- while stimulating macro-level institutional, social, economic and technological developments that seem lacking in this specific scenario



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# Policies should be based on a long-term vision, ensuring economic viability of farming systems that ensure the provision of public goods



- All involved actors inside and outside the farming system need to collaborate in order to make a change towards business models that tackle long-term challenges
- A matter of perspective: it should be clarified that such policies are also ‘for’ farmers



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## SUSTAINABLE RESILIENT EU FARMING SYSTEM

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Policy brief D5.7:

<https://www.surefarmproject.eu/wordpress/wp-content/uploads/2021/03/D5.7-Policy-Brief-Resilience-of-FS-under-current-conditions-and-future-scenarios.pdf>

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