The resilience of farming systems in the EU under current conditions and future scenarios

Policy Brief

February, 2021

Executive Summary

The resilience of EU farming systems is perceived to be low to moderate. Many farming systems are perceived to be close to critical thresholds, with low economic viability leading to farmer exits, making it hard to maintain the social fabric, natural resources and biodiversity. There are limits to success with regard to increasing farm size and intensity, the main adaptation strategies in the past. In the future, a more balanced attention is needed for economic, social and environmental dimensions, and for an enabling environment. 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.

What is the issue?

Resilience of a farming system can be defined as its ability to ensure the provision of the system functions in the face of increasingly complex and accumulating economic, social, environmental and institutional shocks and stresses. The resilience of EU farming systems is threatened. In this brief, we first identify main challenges, and assess performance of key system functions, resilience capacities and resilience-enhancing attributes, and impacts of past strategies. Next, using lessons from the past, we propose strategies to enhance resilience in the future.

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

Accumulating challenges cause farming systems to approach critical thresholds

According to stakeholders in 11 EU farming systems, most farming systems are close to critical thresholds. Extreme weather events, low prices, price volatility, high production costs and continuous change of laws and regulations push many farming systems to the limits. In specific farming systems, also low labour availability, lack of infrastructure, low attractiveness of the area and changes in consumer preferences are critical. Accumulating challenges cause some systems to be close to an undesired decline, such as extensive sheep production in Huesca, Spain, where a vicious circle leads to low economic returns, low attractiveness of the sector and abandonment of pasture lands. In other systems, such as the starch potato system in the Veenkoloniën, the Netherlands, innovation and self-organisation have, so far, prevented the system from an undesired decline, but nematode pressure, droughts, high production costs and stricter regulations keep the system close to critical thresholds.

The need to ensure economic viability has led to a decline in the provision of public goods

Economic viability is perceived to be a central function of farming systems, but in many it is perceived to be close to its critical threshold. Food production needs to be high to ensure economic viability. Past strategies (e.g., increasing farm size and intensity) to cope with challenges have led to the erosion of the social fabric and reduced the maintenance of natural resources and biodiversity. Slower processes related to public goods (e.g., improvement of soil quality and social well-being in the farming system) need improvement, but concerns with more immediate stress signals from the faster processes concerning private goods (e.g., year-to-year variation of production and income levels) inhibit this.

This Project has received funds from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 727520

More info:
www.surefarmproject.eu

Contact:

Dr. Pytrik Reidsma
Associate Professor
Plant Production Systems Group
pytrik.reidsma@wur.nl

The resilience of farming systems in the EU under current conditions and future scenarios

Policy Brief

February, 2021

Past strategies kept farming systems robust, but adaptation and transformation are required

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

The resilience of a system can be evaluated based on the system response to change (e.g., degree of return of a function to a reference level), or based on resilience attributes. Resilience attributes are specific system characteristics that are supposed to contribute to general resilience. Based on an assessment of the presence of resilience attributes (see Figure 1 for an overview) and strategies implemented in the past in 11 EU farming systems, resilience was judged to be low to moderate. Arable systems and horticultural systems scored relatively low, while the high-value egg and broiler system in southern Sweden, and the small-scale hazelnut system in central Italy, scored higher. In Sweden, this was mainly because of production and legislation being well coupled to local and natural capital, while in Italy, the system was reasonably profitable and socially self-organized. In most farming systems, presence of resilience attributes and historical dynamics of main functions suggest a certain robustness prevailing over transformability. In this context, adaptability is mostly employed for keeping stability and realizing (slow) incremental improvements. However, given the perceived current low to moderate performance of farming systems and their closeness to critical thresholds, adaption or even transformation seems necessary.

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

Past strategies to cope with challenges were often geared towards maintaining profitability, such as intensification and scale enlargement, and to a lesser extent towards building human capital, social self-organization, facilitating infrastructure for innovation, enhancing response and functional diversity, and coupling production with local and natural capital (Figure 1). These strategies kept farming systems robust, but there are limits to success with regard to increasing farm size and intensity. Systems focused on production and economic functions may seem to enhance resilience in the short-term, but they negatively affect other resilience attributes and deteriorate resilience in the long-term. Strategies aiming for long-term sustainability and resilience need to consider how to nurture environmental and social dynamics that are needed to sustain and enhance economic viability of farming systems (e.g., natural resources and labour are needed to maintain profitable yields). Hence, there is a clear need for alternative systems with a balanced attention for economic, social and environmental dimensions.

This Project has received funds from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 727520

More info:
www.surefarmproject.eu

Contact:

Dr. Pytrik Reidsma
Associate Professor
Plant Production Systems Group
pytrik.reidsma@wur.nl

The resilience of farming systems in the EU under current conditions and future scenarios

Policy Brief

February, 2021

To prevent surpassing critical thresholds, and reach desired alternative systems, future strategies should enhance multiple resilience attributes at once

How can resilience be improved?

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

The balance between social, economic and environmental functions was not always kept by stakeholders when envisaging alternative systems. Envisaged alternative systems range from a focus on intensification, specialization, technology, product valorisation, collaboration, an attractive countryside, diversification, and organic and/or nature friendly farming. Each type of system may enhance the performance of some system functions, but all need improvement. We argue that sustainability and resilience can only be improved when (a combination of) strategies improve multiple functions and attributes at once. Technological innovation is required, but should be accompanied with structural, social, agro-ecological and institutional changes. For all envisaged systems, stakeholders indicated that mostly enabling conditions in the social and institutional domains were lacking to make change happen. Policies should address improved access to knowledge, more effective bureaucracy, improving the consistency and transparency of policies and regulations, and providing compensation for the delivery of public goods.

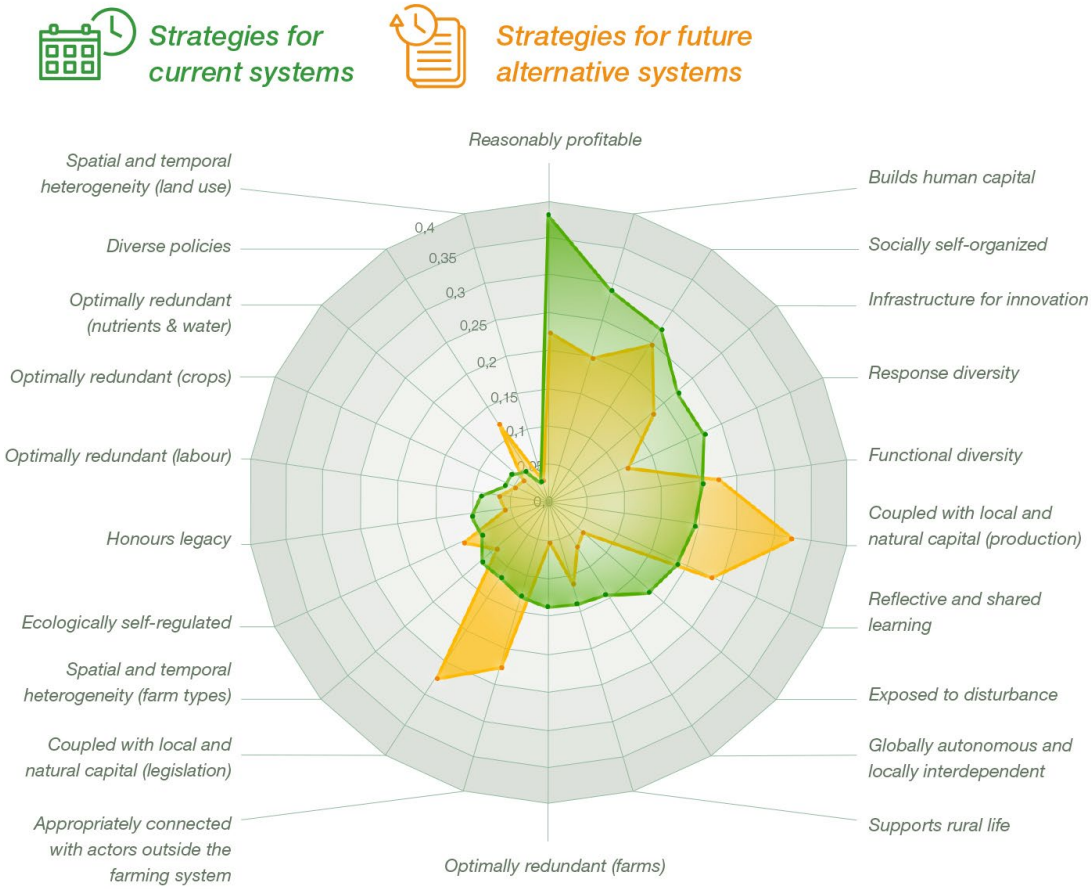


Figure 1. The contribution to resilience attributes of the identified strategies implemented and proposed in farming systems. The green line shows the ratio of (past) strategies implemented for current systems contributing to an attribute, and the black dotted line the ratio of future strategies for alternative systems contributing to an attribute. Attributes are ordered, starting with the attribute to which most past strategies contributed.

This Project has received funds from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 727520

More info:
www.surefarmproject.eu

Contact:

Dr. Pytrik Reidsma
Associate Professor
Plant Production Systems Group
pytrik.reidsma@wur.nl

The resilience of farming systems in the EU under current conditions and future scenarios

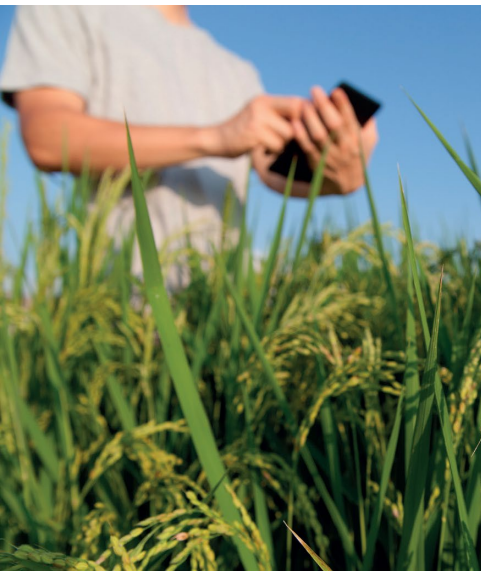
Policy Brief

February, 2021

All actors in the farming systems and enabling environment need to collaborate in order to make a change

Strengthening ecological processes and stakeholder collaboration in an enabling environment

In order to reach more sustainable and resilient future systems, specifically more attention is needed for coupling production and legislation with local and natural capital (Figure 1). Strategies to improve these resilience attributes include improving soil quality, improving circularity, reducing inputs, using varieties adapted to local climatic conditions, local branding, and policies that support this. Further potential for strengthening ecological processes lies in increasing functional diversity and creating ecologically self-regulated systems. Likewise, strengthening social processes requires social self-organization, an adequate level of connections of farming system actors with actors outside their system, and policies that simultaneously manage robustness, adaptability and transformability. 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. Policies should be based on a long-term vision, ensuring economic viability of farming systems that ensure the provision of public goods.



Further reading

Accatino, F., et al., 2020. D5.5 Impacts of future scenarios on the resilience of farming systems across the EU assessed with quantitative and qualitative methods. Sustainable and resilient EU farming systems (SURE-Farm) project report.

Meuwissen, M., et al. 2020. The Struggle of Farming Systems in Europe: Looking for Explanations Through the Lens of Resilience. EuroChoices 19(2), 4-11.

Paas, W. I. Coopmans, S. Severini, E. Wauters, M. van Ittersum, M. Meuwissen, P. Reidsma. 2021. Participatory assessment of sustainability and resilience of specialized EU farming systems. Ecology & Society, In Press.

Reidsma, P., et al. 2019. D5.3 Resilience assessment of current farming systems across the European Union. Sustainable and resilient EU farming systems (SURE-Farm) project report.

Reidsma, P., et al., 2020. How do stakeholders perceive the sustainability and resilience across farming systems in the EU? EuroChoices 19(2), 18-27.

Reidsma, P., et al. 2020. D5.6 Impacts of improved strategies and policy options on the resilience of farming systems across the EU. Sustainable and resilient EU farming systems (SURE-Farm) project report.

This Project has received funds from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 727520

More info:
www.surefarmproject.eu

Contact:

Dr. Pytrik Reidsma
Associate Professor
Plant Production Systems Group
pytrik.reidsma@wur.nl