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UNDERSTANDING & IMPROVING
THE SUSTAINABILITY OF AGRO-ECOLOGICAL
FARMING SYSTEMS IN THE EU

Improving biodiversity and water quality while limiting the negative impacts on the economic viability of farms

The Nienburg County in Lower Saxony, Germany

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 773901.



The case study context: The Nienburg County

Farming system:

- Arable farming is the dominating the agricultural land use.
- Farms in the case study are mainly conventional and implement few agro-ecological practices.
- The area is adjacent to intensive livestock regions with high land prices.

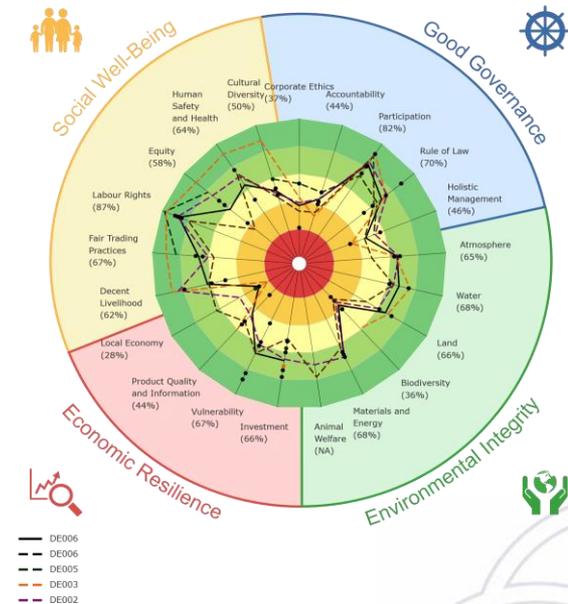
Main sustainability issues:

- The Nienburg County in Lower Saxony comprises an intensive agricultural area with sustainability issues regarding biodiversity loss and water quality.



The case study context (cont'd)

- **Dilemma:**
 - How to improve biodiversity and water quality while limiting the negative impacts on the economic viability of farms?
- **Stage of transition examined:**
 - Example of what is required to initiate the transition process to agro-ecological farming in cases of highly market-oriented farming with low levels of agro-ecological innovation.
 - Currently, the different agro-ecological levels consist of farms which implement no or largely only mandatory measures of incremental agro-ecological practices



The case study approach

Different participatory approaches were applied in the context of:

- 9 farm visits with in-depth sustainability assessments
- 5 stakeholder workshops
- Additional in-depth interviews accompanying workshops

Key actors involved in the MAP:

- Farmers
- Advisory services and auditors of the Chamber of Agriculture Lower Saxony
- Trade standards, GlobalGAP
- Water Management Association
- Administration County Nienburg, Lower Nature Protection Authority
- NABU Lower Saxony
- Lower Saxony Ministry of Food, Agriculture, and Consumer Protection
- Researchers from related other Horizon 2020 and national projects



Agro-ecological practices identified:

Biodiversity: Flower und buffer strips on 10% of the agricultural area



Tillage management:
Reduced tillage

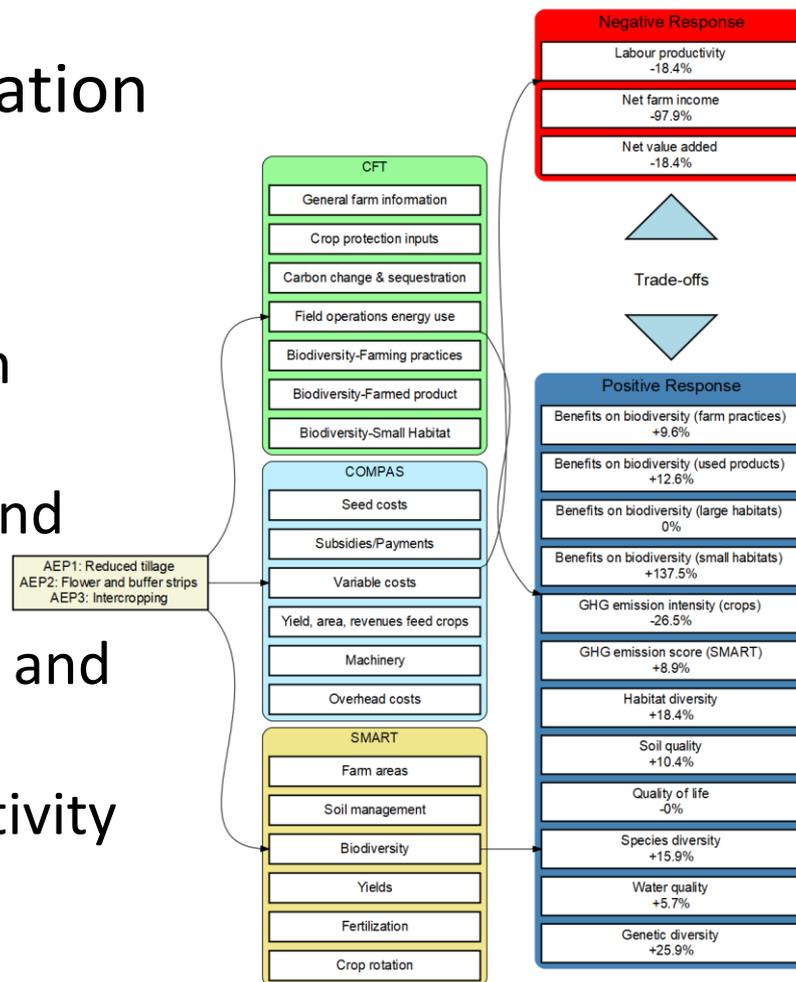


Crop spatial diversity: Intercropping

Implementing the practices: Sustainability implications and trade-offs

The simultaneous implementation of the practices leads to...

- 
 reduced GHG emissions from arable land,
- 
 small improvements of soil and water quality,
- 
 increases in genetic, species, and habitat diversity,
- 
 Reductions in labour productivity and farm income.



Barriers of implementation

- **Attitude** of farmers towards agro-ecological farming and **knowledge** of agro-ecological practices and their benefits,
- **Access to land** and conditions of land rental agreements
- **Lack of added value** from agro-ecologically produced goods
- **High bureaucracy**, strict control mechanisms and a lack of flexibility.



Key actions and instruments to address the barriers

- **Agro-ecological knowledge and attitudinal changes**
 - Cooperation of farmers with schools to raise public awareness of benefits of agro-ecologically produced goods
 - Coordinated approaches initiated by trusted intermediaries for knowledge transfer and social capital generation
 - Support for setting up and educating local networks, their network manager and other participating actors
- **Improved conditions of land rental contracts**
 - Tax incentive for landowners to enhance their willingness to enable the implementation of agro-ecological practices

Key actions and instruments to address the barriers (cont'd)

- **Creating added value for farmers**
 - Cooperation of farmers with food policy councils and initiation of such councils in cooperation with local communities
 - Green public procurement of canteens and schools to buy products from farms with agro-ecological practices
- **Reducing the bureaucracy of policy support**
 - Involvement of trusted peers (farmers) in monitoring and controlling of policy measures
 - Removal of administrative barriers behind implementation and controlling of instruments



Key lessons learnt

Solving the sustainability issues in the Nienburg County requires:

- **Local champions**, such as farming peers and trusted advisors, acting as a facilitator for knowledge networks that improve social, cultural and human capital
- **Adding value to products which were produced in a more agro-ecological manner** by enhancing the linkage between producers and consumers and building on the increasing interest in locally and sustainably produced food.
- **Innovative design changes** to existing rural development measures, such as result-based approaches and the integration of advice into existing agri-environmental programmes.

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European Union's
Horizon 2020 Programme
GA N° 773901

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18-19
MARCH
2021

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