



SUSTAINABLE
RESILIENT
EU FARMING
SYSTEMS



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



Resilience of farming systems; how to measure a multi-dimensional concept

**Bucharest, 26 September
2019**

**Miranda Meuwissen &
SURE-Farm consortium**

.. By involving a good group of researchers:



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.. a structured approach:

1. Resilience *of what?*

Farming system

Farms
Other actors
Locality

2. Resilience *to what?*

Challenges

Environmental
Economic
Social
Institutional

3. Resilience *for what purpose?*

Functions

Private goods
Public goods

4. What *resilience capacities?*

Resilience capacities

Robustness
Adaptability
Transformability

5. What *enhances* resilience?

Resilience attributes

Diversity
Openness
Tightness of feedbacks
System reserves
Modularity

Specified resilience

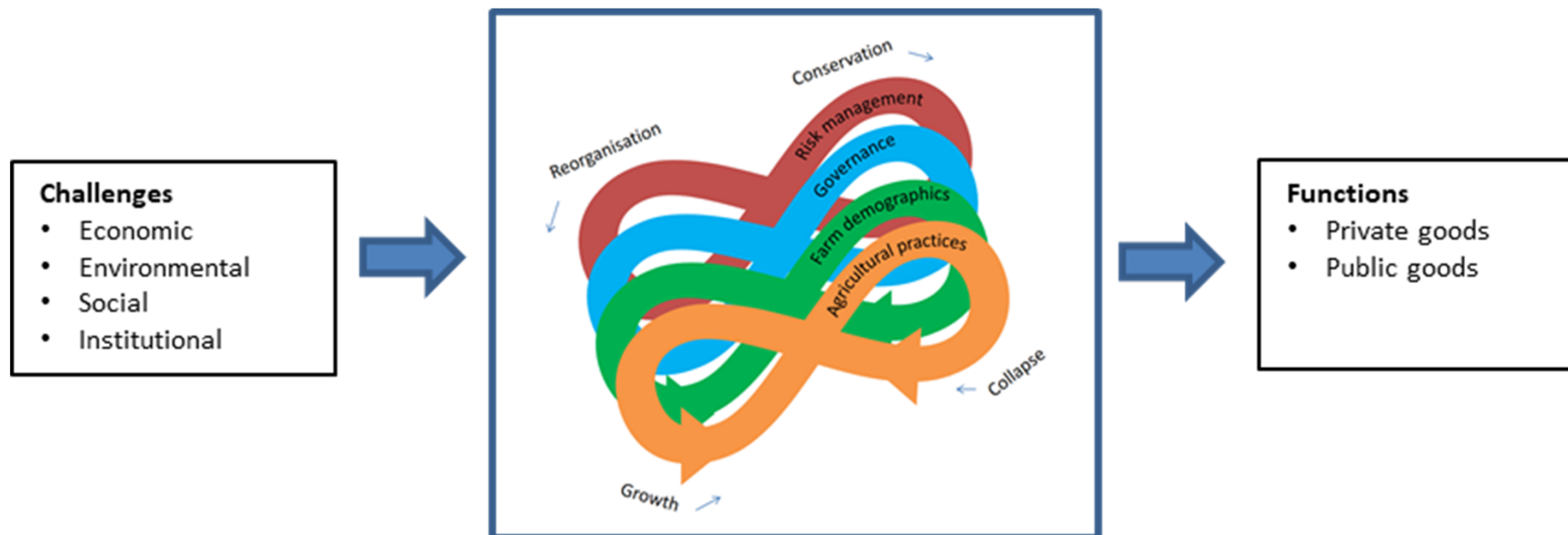
General
resilience



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& by considering adaptive cycles.



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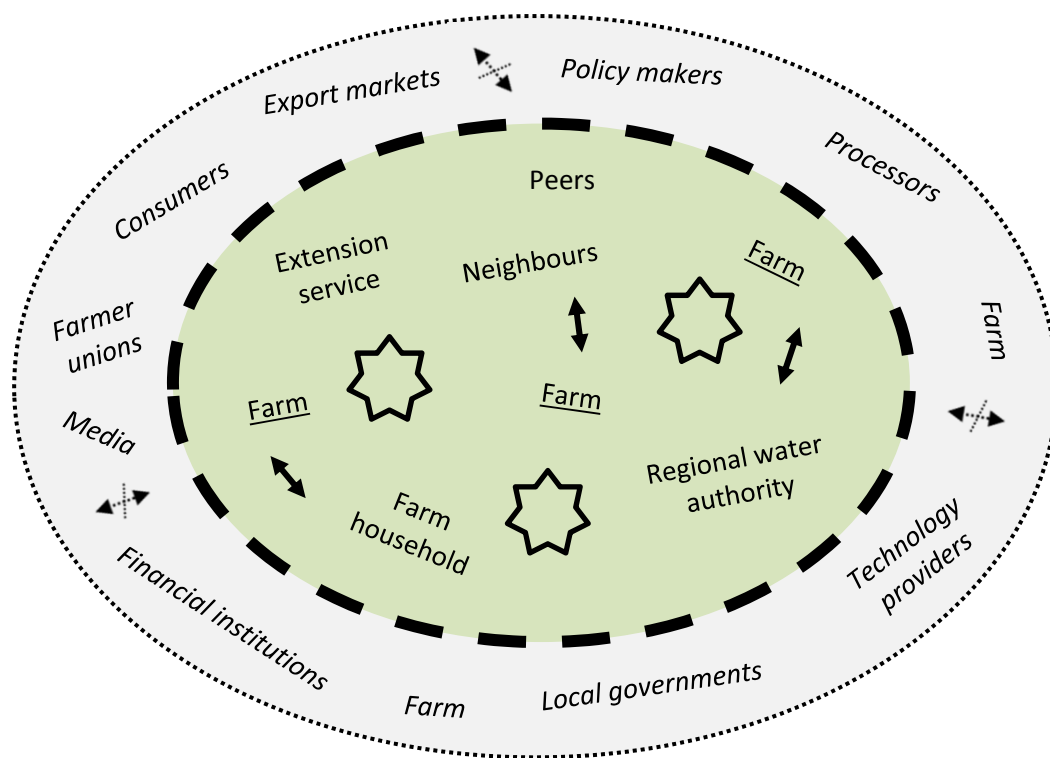
Then HOW ?



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By looking beyond the farm:



Farming system (FS)

Farm

Main farms in analysis

Actors

Other FS actors



Locality (agro-ecological context, infrastructure, public goods, identity, ..)



Context

Actors

Context actors

Distinction between 'other FS actors' and 'context actors':



Mutual influence with farms



Unilateral influence with farms



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.. and beyond the narrow definition of resilience:



a. Robustness



b. Adaptability



c. Transformability



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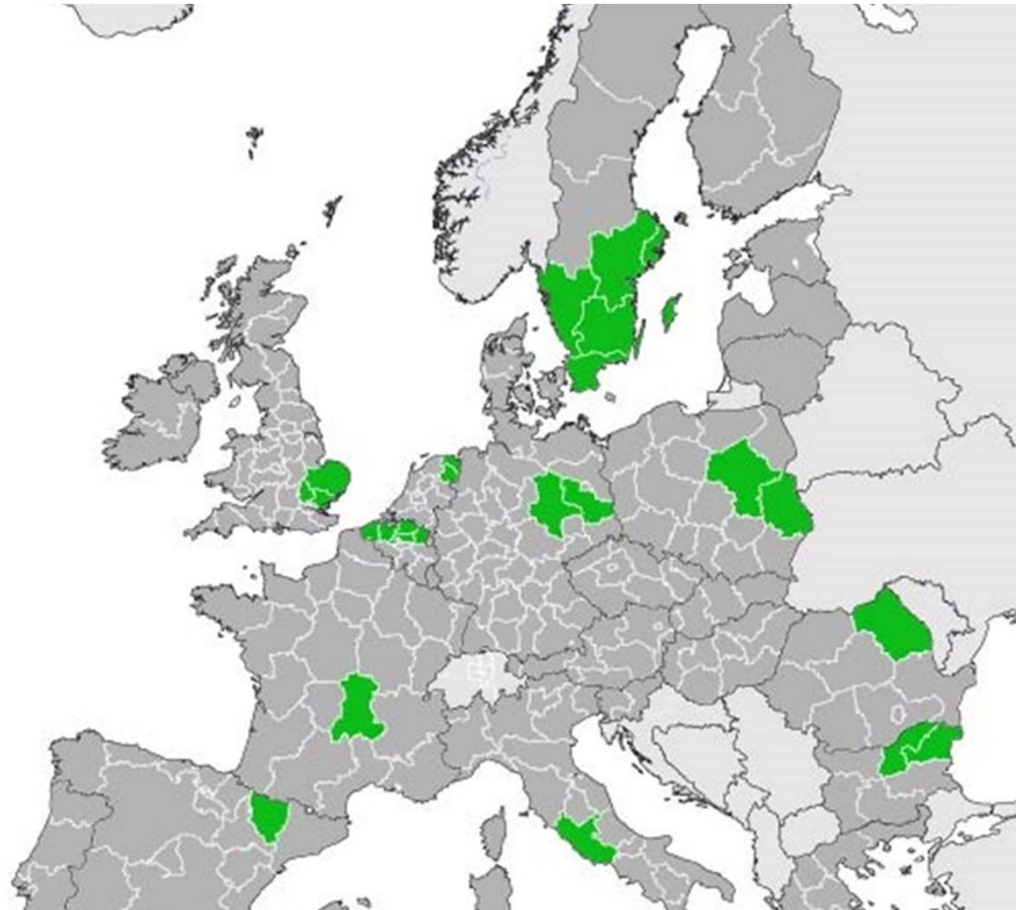
.. and by using mixed methods:



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.. in multiple systems:



Zawalinska, SURE-Farm D8.2



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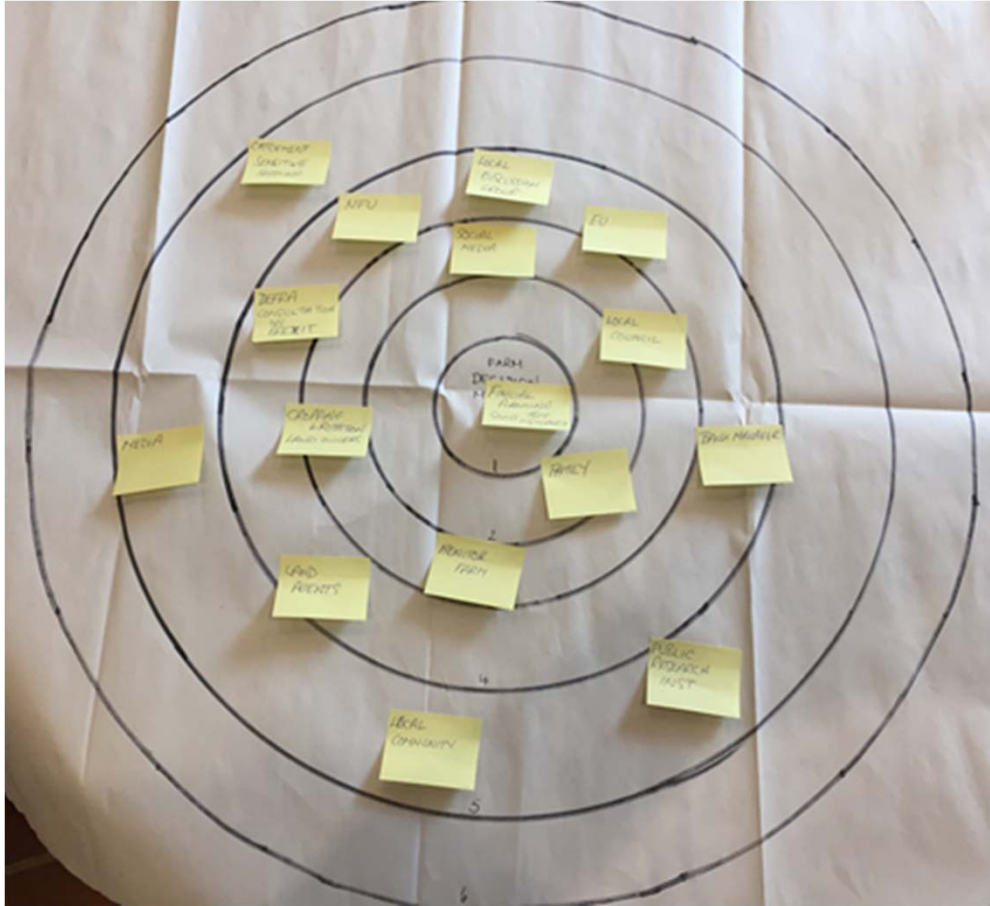


Some of the qualitative approaches



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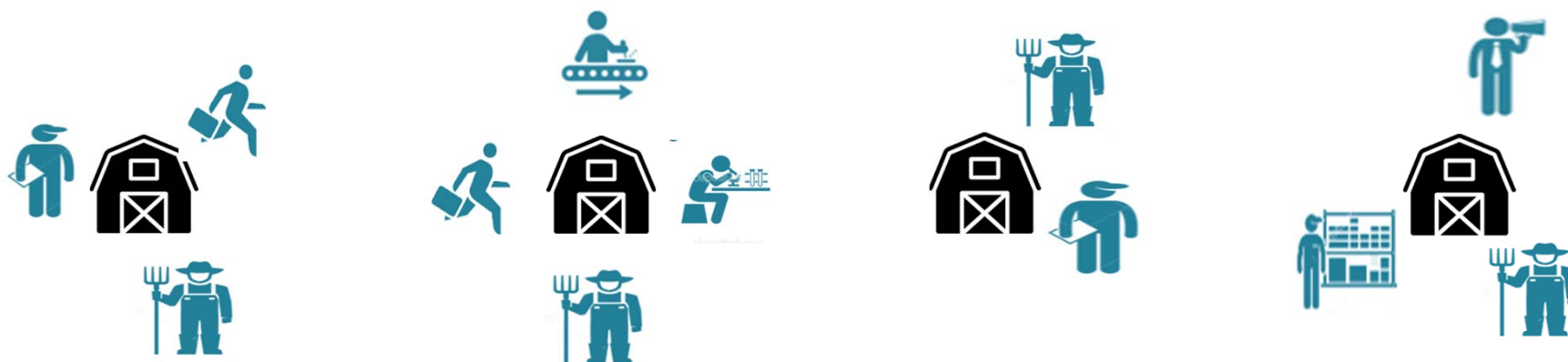
Urquhart et al., SURE-Farm D2.3



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Mini-cases



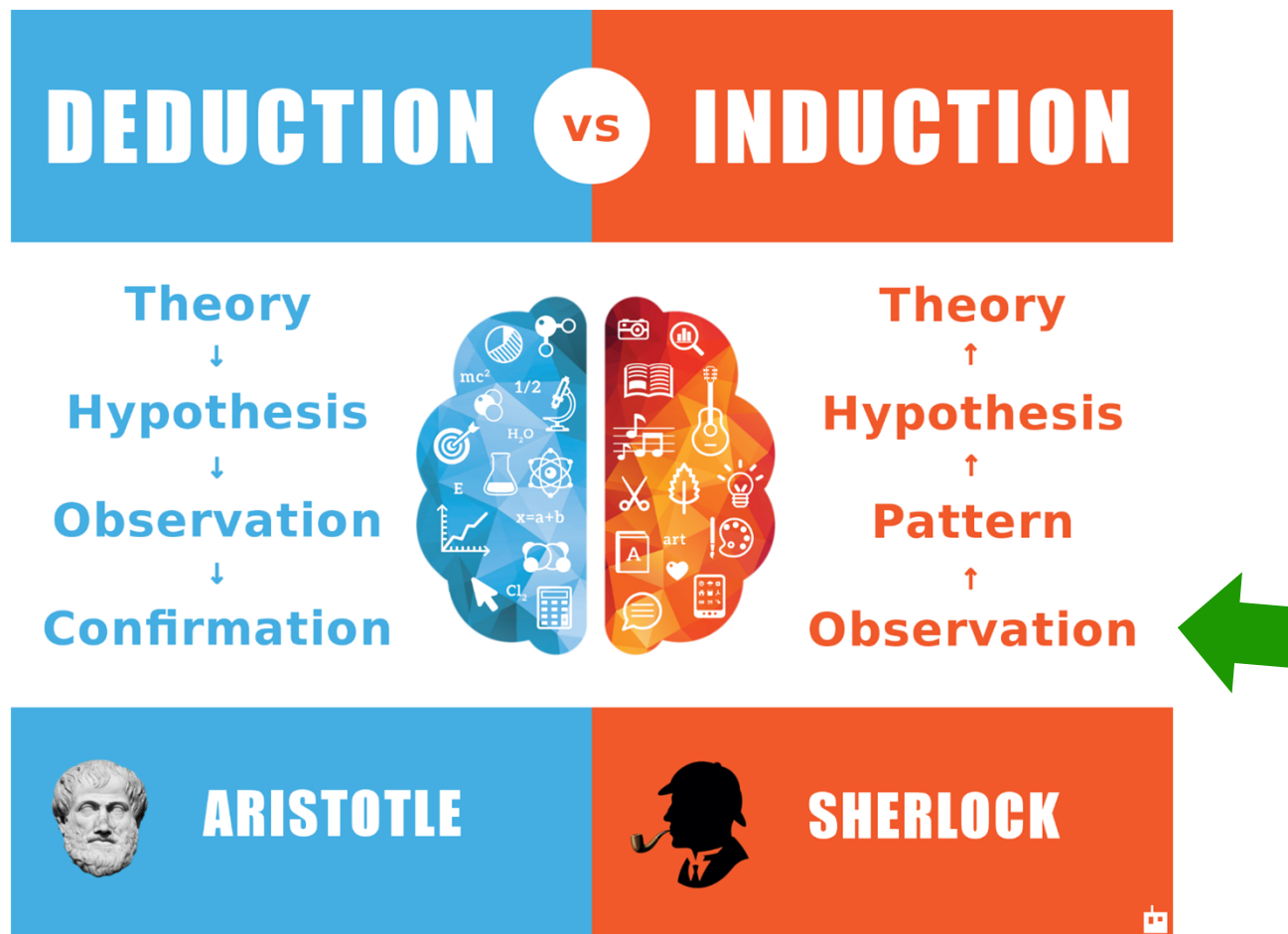
Coopmans et al., SURE-Farm D3.2



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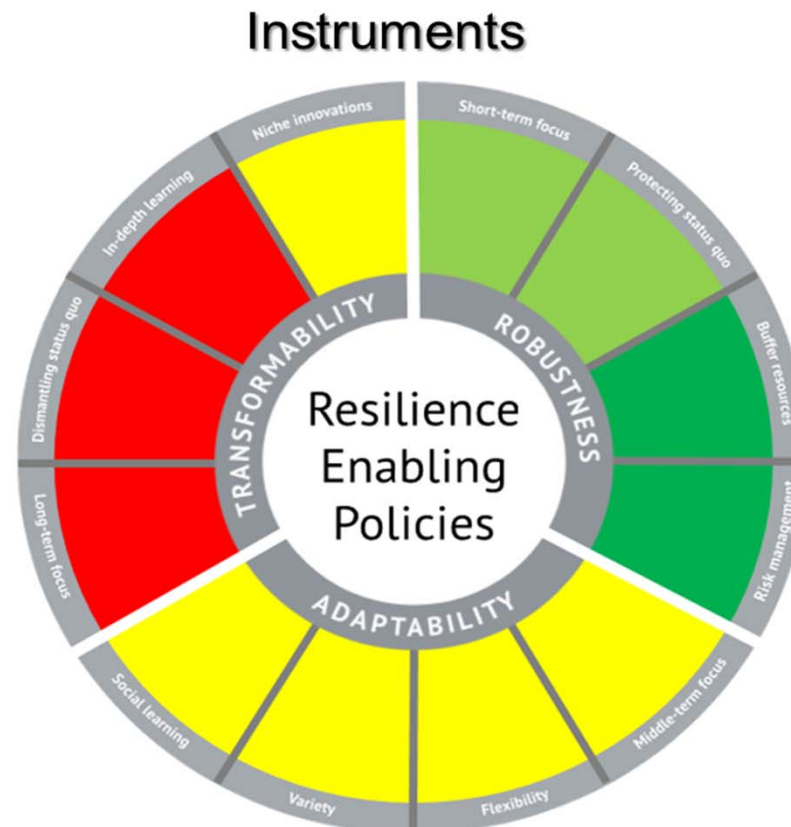
Narratives



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Review of policy goals and instruments



Feindt et al., SURE-Farm D4.2



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Participatory approaches



Reidsma, Paas et al., SURE-Farm D5.2



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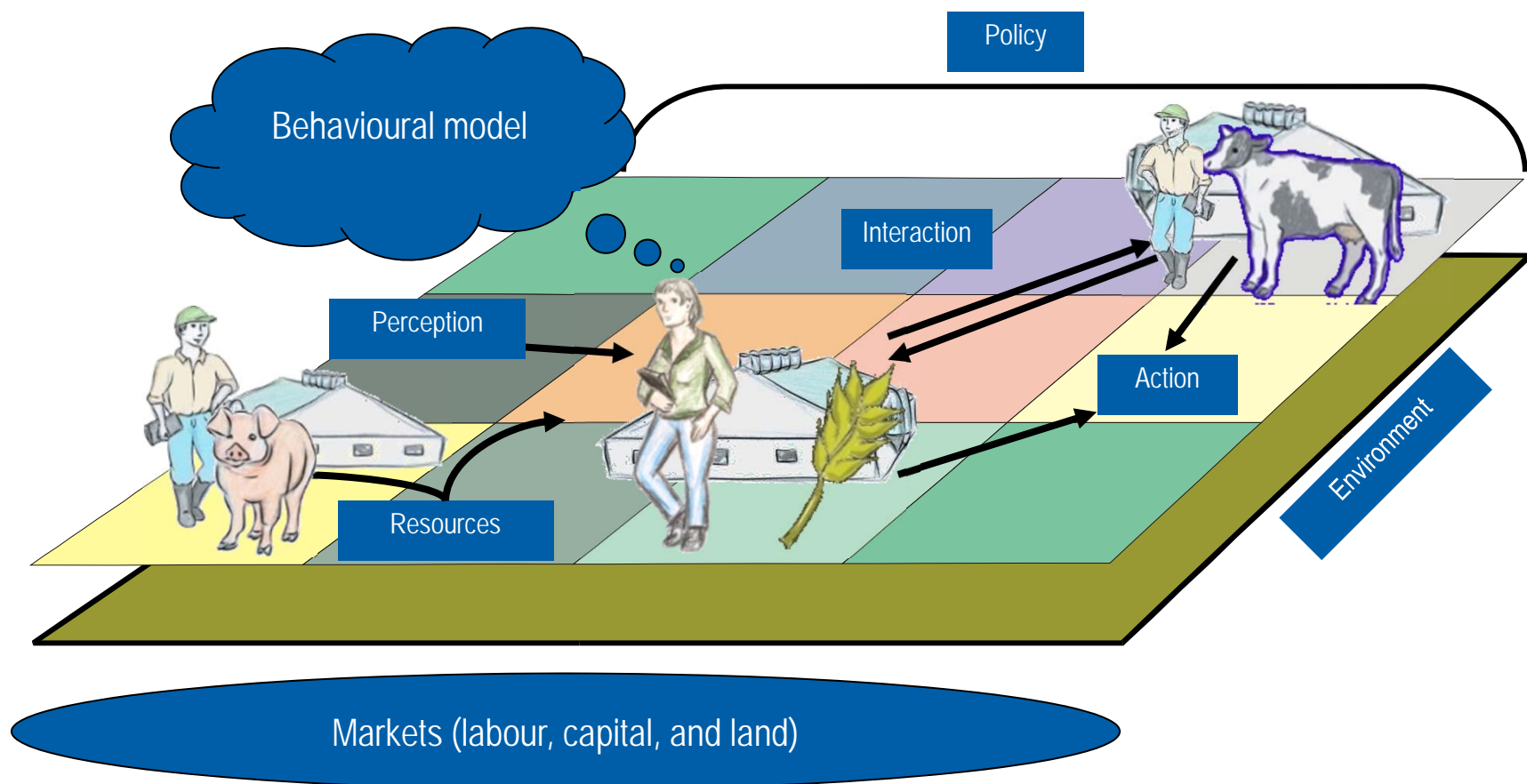
Some of the quantitative approaches



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Agent-based modelling



Appel et al., SURE-Farm D3.4



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✓ **Modelling of ecosystem services**

✓ **Statistical analyses**

✓ **Economic modelling**

✓ **System dynamics**



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How does it come together?



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By continuously linking back to the framework:

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Specified resilience

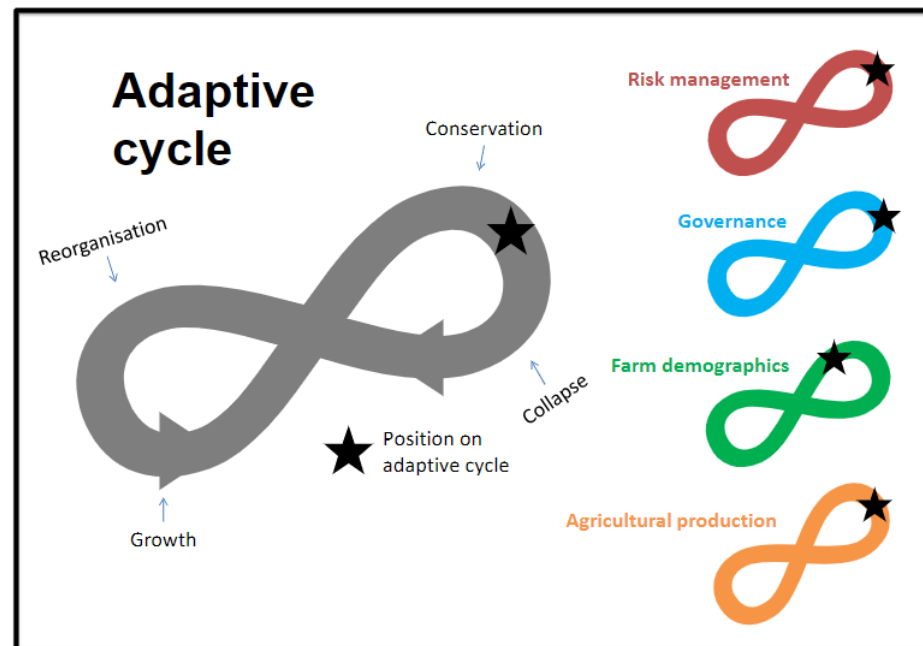
General
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.. and by understanding the adaptive cycles of a system:



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But we are not there yet.

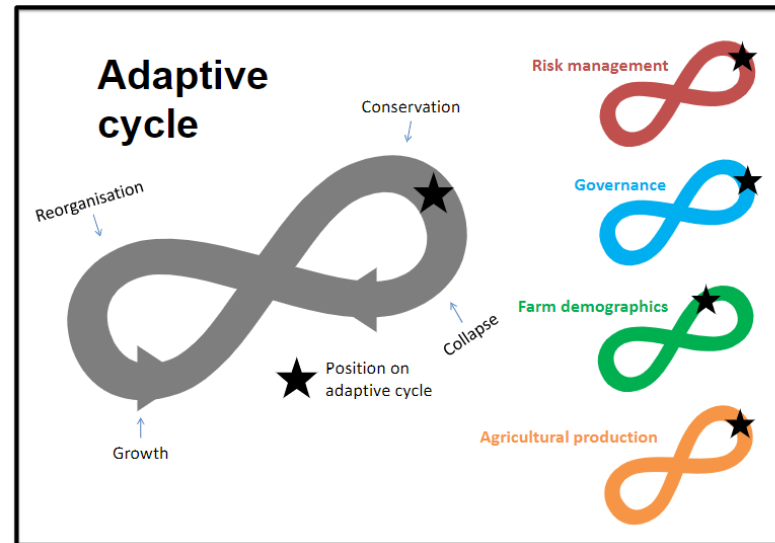
Nevertheless..



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.. Need for change is already emerging



The question is not 'how to keep what we have'

BUT: how to enable change

SURE-Farm contributions: farming **system, functions, beyond narrow view** of resilience



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This is a fundamentally different way of looking at agriculture!



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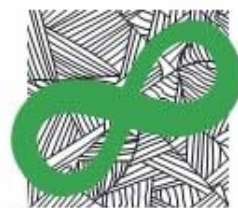
Coordinated by:

Partners:



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