

Biodiversity and food systems

10-12-2019 Workshop with WUR colleagues

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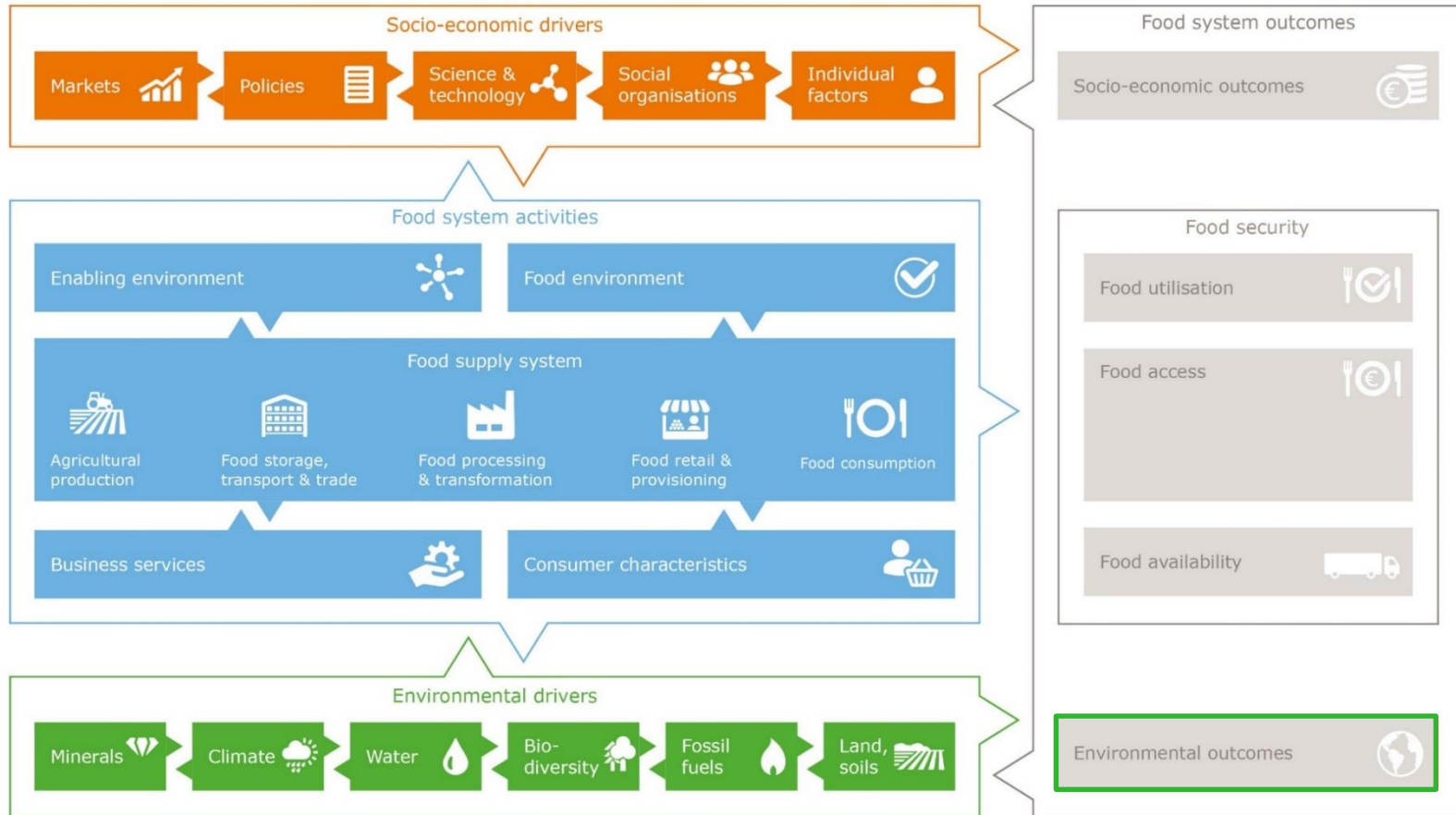


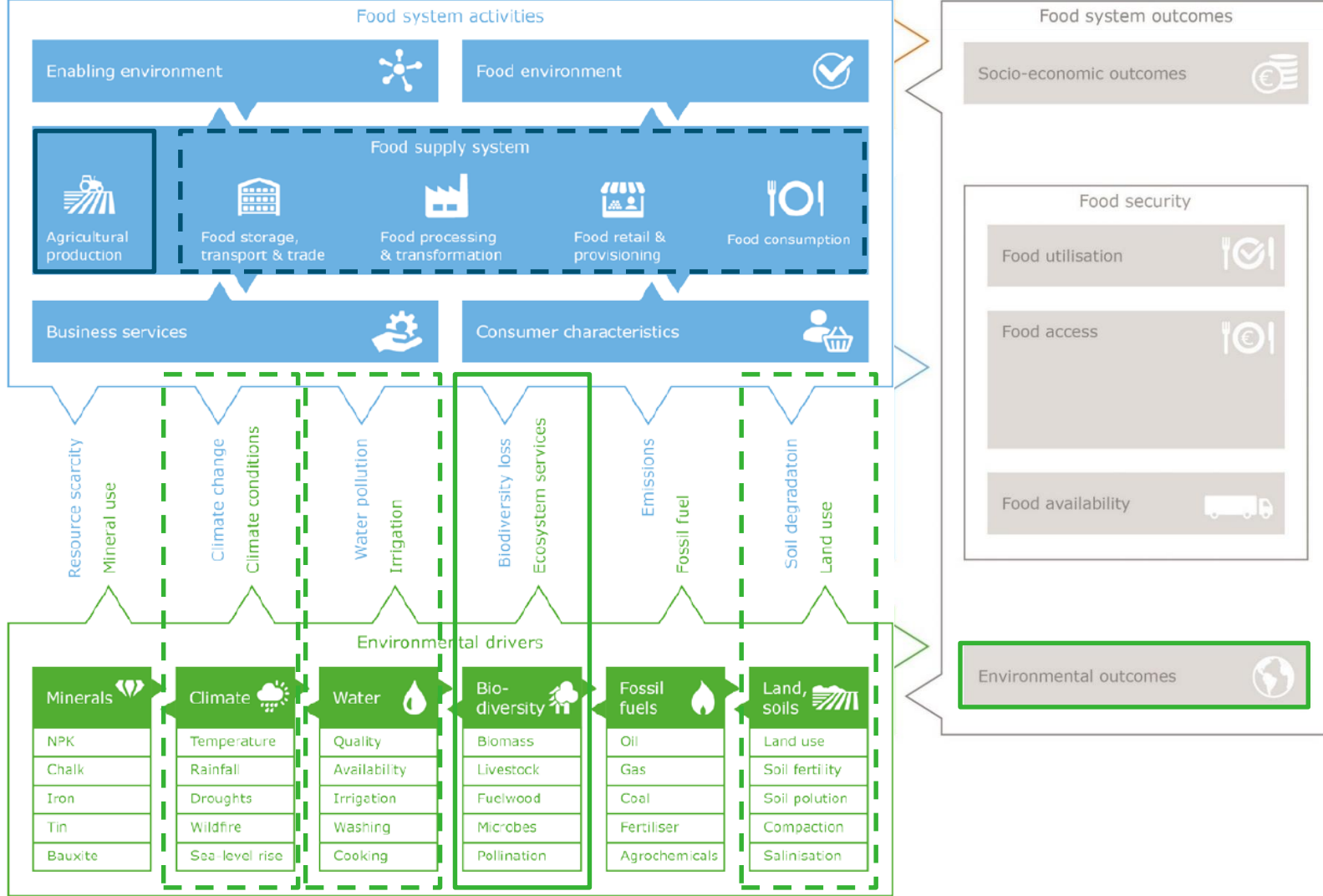
KB food security and valuing water

- Funding from the Wageningen University & Research "Food Security and Valuing Water" programme that is supported by the Dutch Ministry of Agriculture, Nature and Food Security. Project number: KB-35-007-001
- Mission of the KB programme:

We will contribute to Zero Hunger by combining our interdisciplinary knowledge in the agri-food and water domains to shape the **transitions towards sustainable food systems**
- Focus Africa and Asia

Food Systems Approach at the basis of the KB



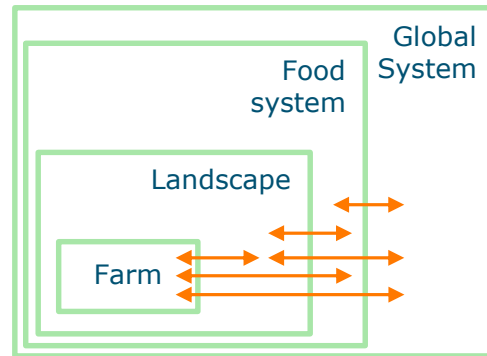


Aim of project

- To develop an assessment framework to support relevant stakeholders to:
 - assess transition pathways for more sustainable and resilient food systems that make use of and value the contribution of biodiversity for resilient food systems and food and nutrition security,
 - allow them to address and minimize the impact of food systems on biodiversity, or improve the positive effects of the food systems on biodiversity,
 - understand feedbacks and trade-offs between food systems and biodiversity
- The assessment framework should be applicable under different contexts and at different spatial and temporal scales.

Aim of the project

- The assessment framework should be applicable under different contexts and at different spatial and temporal scales



Questions to address

- The framework should eventually allow us to address questions like:
 - How could management practices and production methods on farming system level be adapted to support greater biodiversity?
 - How to use genetic diversity to improve resilience of food production systems (varieties, breeds, mixed production systems and diversity at landscape level)

Questions to address

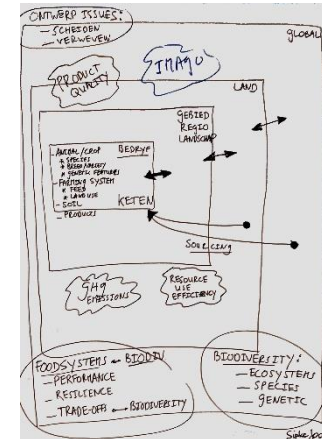
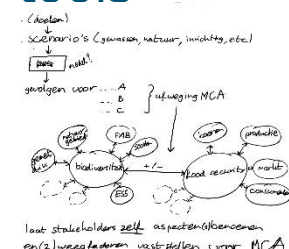
- The framework should eventually allow us to address questions like:
 - How to optimize food production and at the same time protect biodiversity, at different scales and contexts (incl. the land sharing vs land sparing discussion)
 - What role can wild foods play to improve food security in resilient food systems in Africa and Asia and what is its future perspective?

What we have done so far

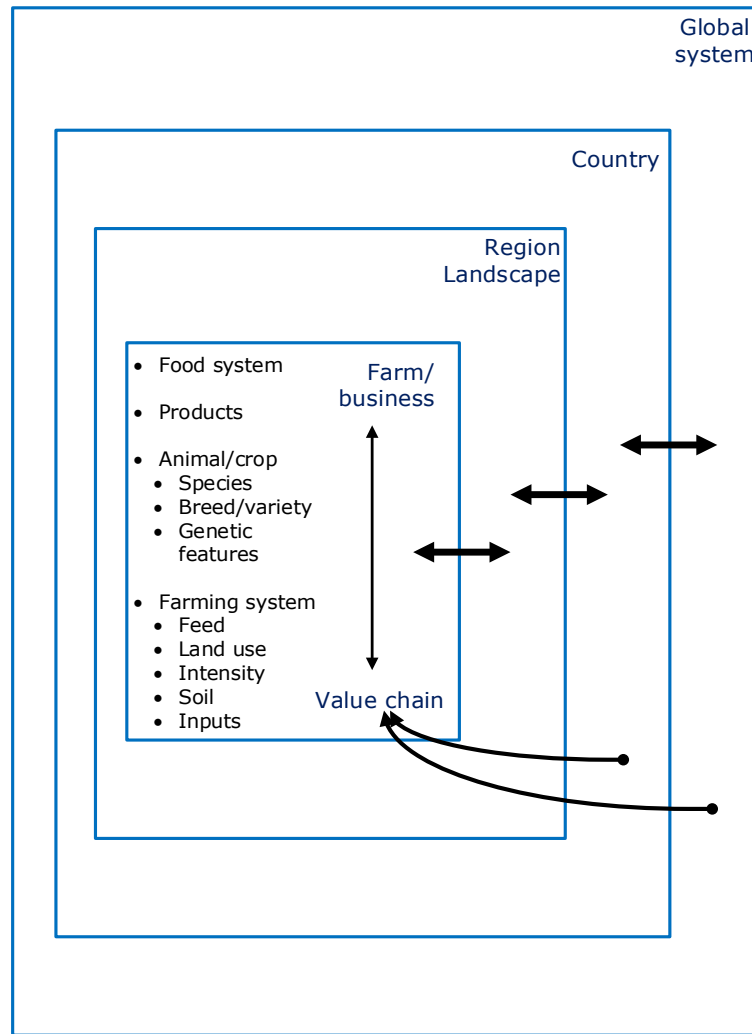
- Interviews with potential stakeholders



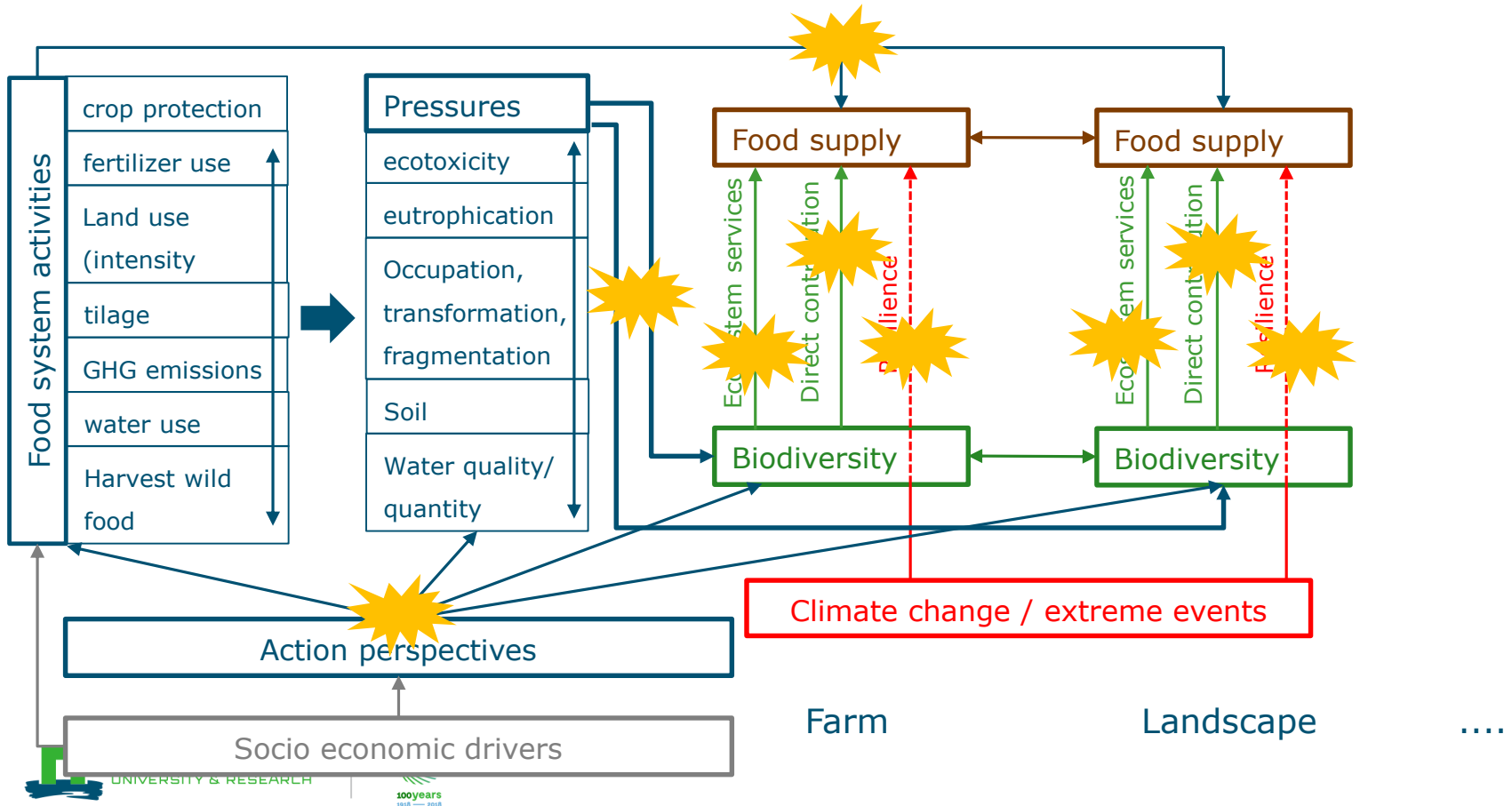
- Inventarisation of stakeholder views, strategies & needs
- Literature review on existing knowledge and tools
- Brainstorm and draft framework



Framework - scales



Assessment framework



Response functions?

L.C. Braat, R. de Groot / *Ecosystem Services 1* (2012) 4–15

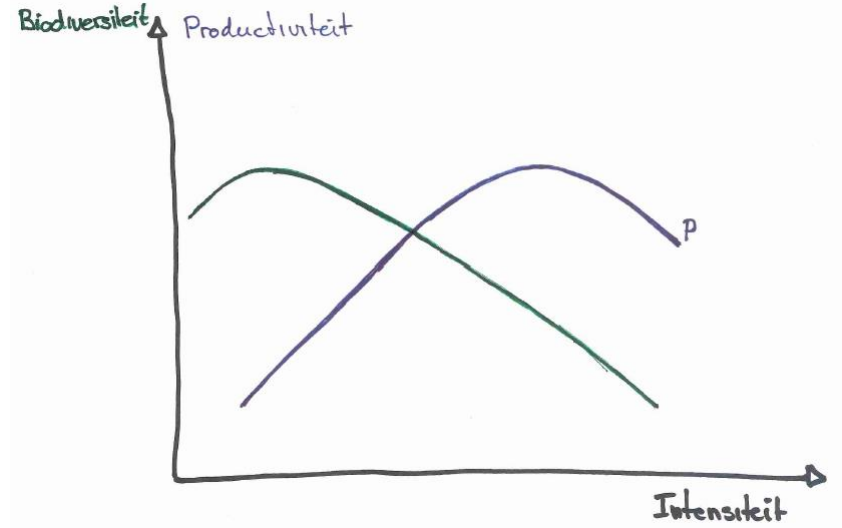
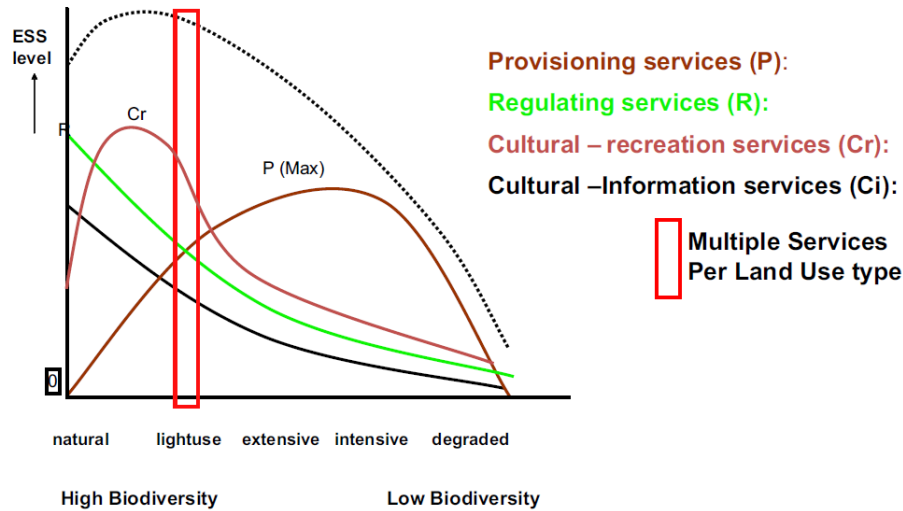


Fig. 5. Land use, biodiversity and multiple ecosystem services (after Braat and ten Brink, 2008).

Dilemmas and action perspectives

- Dilemma examples are the sharing/sparing debate, debate about intensifying or extensifying agricultural systems or prioritization of production systems from different societal perspectives.
- Different action perspectives to enhance biodiversity in food systems and to minimize the impact of food systems on biodiversity can be identified for farmers and other stakeholders like regional and national governments and companies
- Outcomes may differ depending on the chosen functional unit

Biodiversity indicators

- Many biodiversity indicators exist, but which biodiversity indicators are most relevant for the biodiversity and food systems nexus?
- Quantity? Quality? Functional? Evolutionary? Genetic?
- At different scales and for different contexts?
- What should those indicators be able to express and what are the relationships between different indicators?

Food system indicators

- How to express food supply? What would be relevant indicators? Quantity? Energy? Nutritional?
- Food security is not a simple outcome of producing enough food, but also depends on food prices and distribution. Especially for poor people, affordable food is a main concern.
- So, we need to define a number of indicators for different scales to monitor the development of food supply as affected by biodiversity-related measures (and vice versa).

Pressure factors

- Food system characteristics and a variety of external factors will positively or negatively impact biodiversity at different scales (e.g. land-use (intensity), climate change, eco-toxicity).
- Limited budget will require us to make choices and prioritise pressure factors to include

Resilience

- Resilience theory provides a valuable framework for understanding dynamics in production systems. However, assessing and measuring resilience are challenging, not least because of the multiple interacting factors that need to be taken into consideration. Further research is needed to study
 - a) the contribution of biodiversity to the resilience of production and food systems,
 - b) resilience promoting strategies that integrate diverse components of biodiversity at different scales.

Trade-offs with other sustainability targets

- Companies also indicated that it would be important to consider biodiversity in relation to other sustainability targets, to quantify and weigh trade-offs between sustainability factors
- Relates to multi-criteria type of analyses
- Not yet foreseen, but how could we best take this into consideration?

Timeline

2019	2020	2021	2022
<ul style="list-style-type: none"> • Draft framework developed • Stakeholder perspectives inventoried • WUR expert meeting organised • Draft research agenda developed 	<ul style="list-style-type: none"> • External expert group meeting to: <ul style="list-style-type: none"> -Further refine framework -Refine research agenda • Identify and prioritise indicators and pressure factors • Finalise framework and start quantifying relations and dose-response functions • Identify 4 case studies for verification, validation and testing of the draft framework 	<ul style="list-style-type: none"> • Quantifying relations and dose-response functions in the framework (make it operational) • 4 Case studies aimed at verifying, validating and testing and further quantifying the framework 	<ul style="list-style-type: none"> • Verified assessment framework that is applicable at multiple scales • Evaluation how biodiversity supports production in different food systems

Questions or feedback?

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