

Introduction to learning module on **Long-term Sustainability Issues**

Anticipating & Managing Synergies and Trade-offs in Food and agricultural systems

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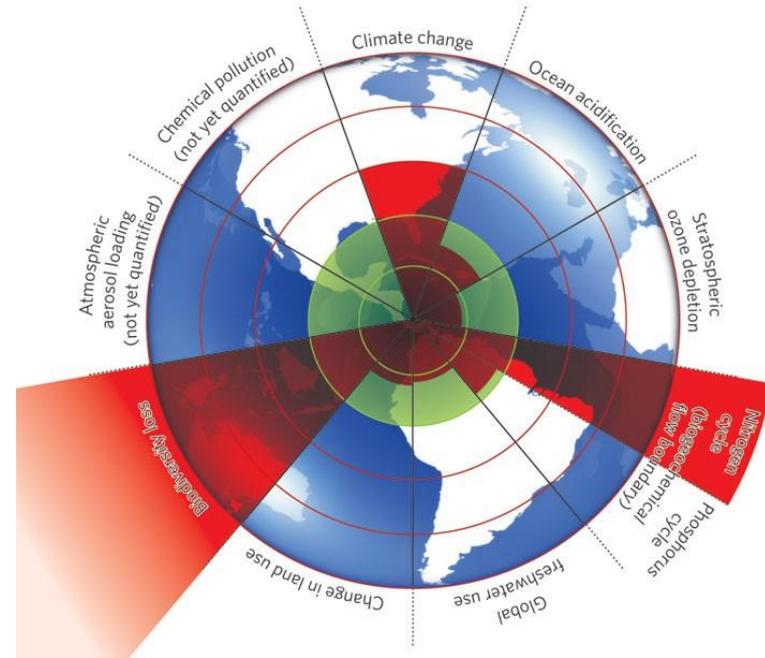


INTERACTIVE LEARNING MODULES

Synergies and tradeoffs
in food, land and water systems

Long term sustainability issues

- We are challenged to improve human wellbeing whilst remaining within ecological planetary boundaries
 - Biophysical and socio-economic sustainability issues
 - Production systems are often associated with adverse effects on
 - Environment, animal welfare, exploitive labor demands – and more



Trade-off analysis

- Often focus on trade-offs, not on synergies
- Studies done from the desks of researchers
 - Relying heavily on tools without incorporating the full complexity of factors needed for meaningful interpretation.
- Currently more emphasis and efforts to actively include community/stakeholder involvement
- **Moving forward:** extending the reach/impact of trade-off analysis



Adding value to trade-off and synergy analysis

- Discussions center around identifying trade offs
 - often at the expense of “one or the other”
- **Moving forward:** more focus on
 - managing trade-offs
 - Searching for a situation that satisfies multiple objectives instead of optimizing one
 - strengthening synergies
 - Requires systems transformation



Long-term sustainability?

- System transformation and paradigm shifts might be needed
 - for a vibrant, resilient and productive agricultural sector, and reaching the Sustainable Development Goals
 - Gender issues need to be taken into account
 - Focus on production optimization should shift towards aiming for whole-systems sustainability
 - Focus on resilience and ecosystem health

Further reading?

- Look at the learning materials in this module!
- Selected literature:
 - Scheffer, M., Brock, W., Westley, F., 2000. **Socioeconomic mechanisms preventing optimum use of ecosystem services: An interdisciplinary theoretical analysis.** *Ecosystems* 3, 451–471. <https://doi.org/10.1007/s100210000040>
 - Nyström, M., Jouffray, J.B., Norström, A. V., Crona, B., Søgaard Jørgensen, P., Carpenter, S.R., Bodin, Galaz, V., Folke, C., 2019. **Anatomy and resilience of the global production ecosystem.** *Nature* 575, 98–108. <https://doi.org/10.1038/s41586-019-1712-3>
 - Pahl-Wostl, C., 2009. **A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes.** *Glob. Environ. Chang.* 19, 354–365. <https://doi.org/10.1016/j.gloenvcha.2009.06.001>