

Introduction to tools and methods for assessing and anticipating synergies and trade-offs

Getting started

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RESEARCH
PROGRAM ON
Water, Land and
Ecosystems



INTERACTIVE LEARNING MODULES

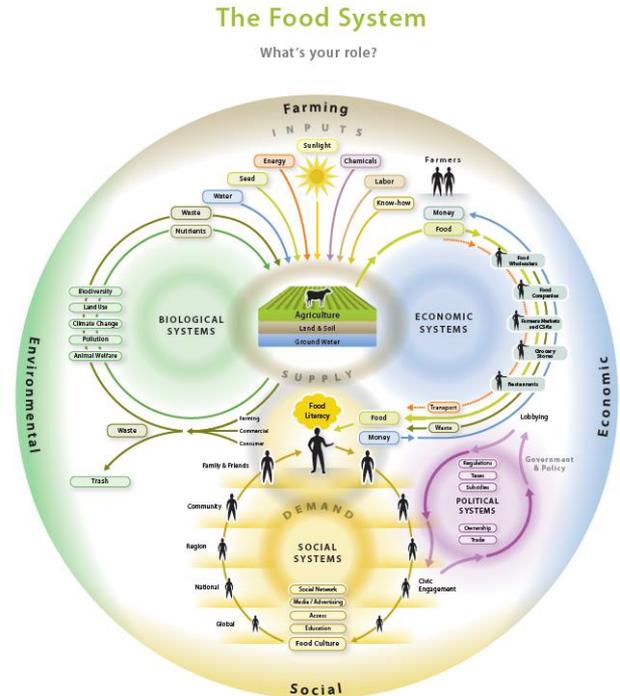
Synergies and tradeoffs
in food, land and water systems

Tools and methods for Assessing and Anticipating Synergies & Trade-offs

- Why do we need tools and methods for anticipating and managing synergies and trade-offs?
- What are examples of existing tools and methods for assessing synergies and trade-offs at different scales and levels?
- When to use which tool or method?

Why do we need tools/methods for anticipating and managing synergies and trade-offs?

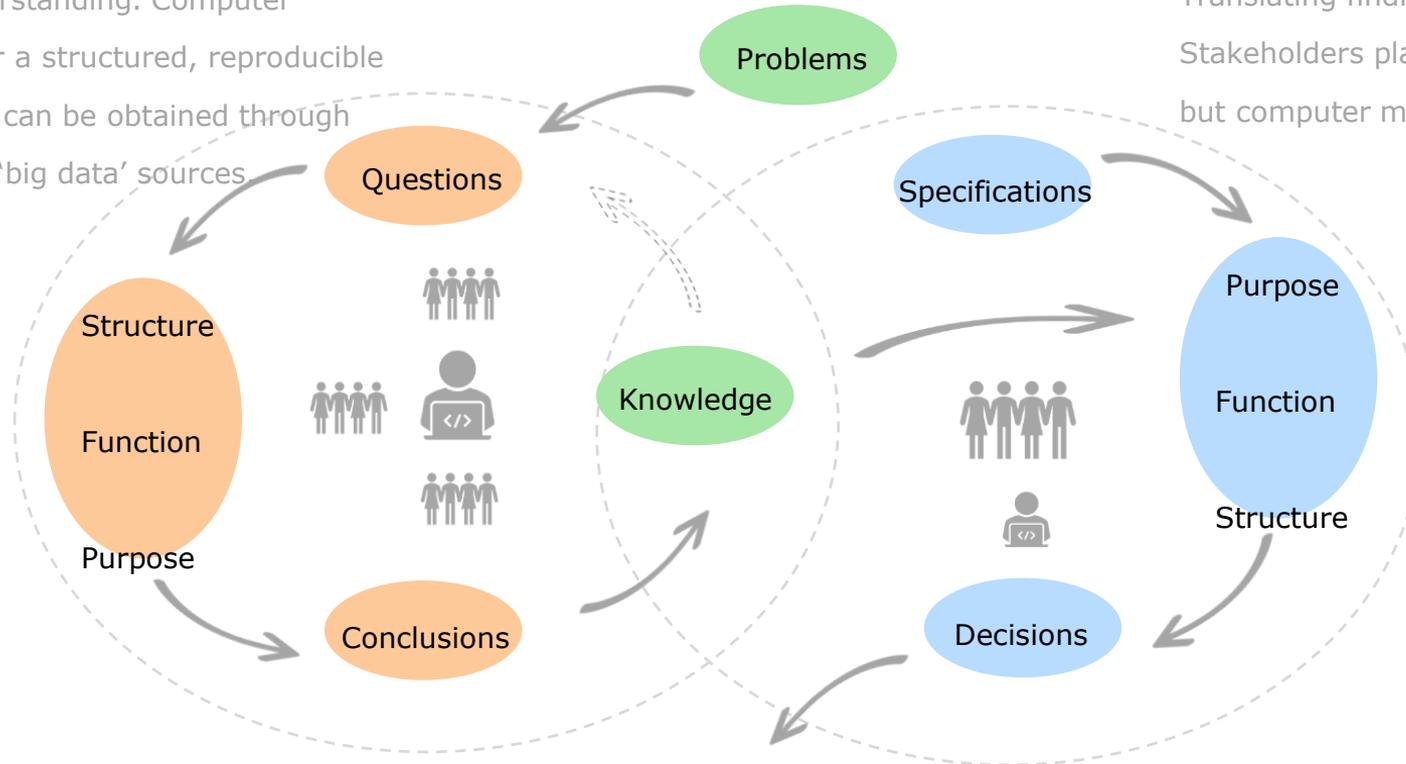
- Food, land and water systems are complex
- Models/methods to promote systems understanding
 - Deliberate choices to be made, e.g.
 - Where to place system boundaries
 - Which parts of the system to omit



Analysis & design in a real world

Research

Deepening understanding. Computer models can offer a structured, reproducible way. Input data can be obtained through stakeholders or 'big data' sources



Implementation

Translating findings for end-users. Stakeholders play a central role, but computer models can assist.

What are examples of existing tools and models for assessing synergies and trade-offs at different scales and levels?



- Different spatial levels
- Can be used sequentially
- Mostly designed for researchers in collaboration with other stakeholders

When to use what?

- This learning module contains tool & method descriptions and case studies to show how the model can be used.
- Consider from the start:
 - What is the purpose that the modelling/use of the method serves?
 - Who are the users of the tool/method?
 - Who are the intended end-users of the results?

Further reading?

- Groot, J. C. J., Rossing, W. A. H., Tichit, M., Turpin, N., Jellema, A., Baudry, J., ... van de Ven, G. W. J. (2009). **On the contribution of modelling to multifunctional agriculture: Learning from comparisons**. Journal of Environmental Management, 90(SUPPL. 2), 147–160. <https://doi.org/10.1016/j.jenvman.2008.11.030>
- Jager, W., Mosler, H.J., 2007. **Simulating human behavior for understanding and managing environmental resource use**. J. Soc. Issues 63, 97–116. <https://doi.org/10.1111/j.1540-4560.2007.00498>
- Van Wijk, M.T., Klapwijk, C.J., Rosenstock, T.S., Van Asten, P.J.A., Thornton, P.K., Giller, K.E., 2016. **Methods for Measuring Greenhouse Gas Balances and Evaluating Mitigation Options in Smallholder Agriculture**, in: Methods for Measuring Greenhouse Gas Balances and Evaluating Mitigation Options in Smallholder Agriculture. pp. 1–203. <https://doi.org/10.1007/978-3-319-29794-1>