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Food Systems Across Multiple Scales

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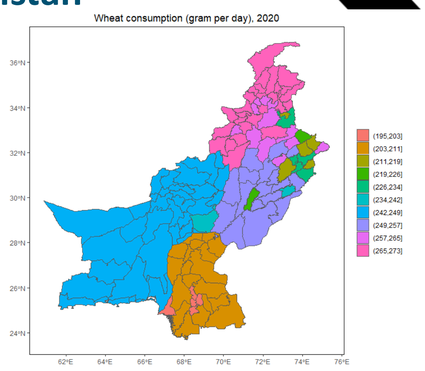
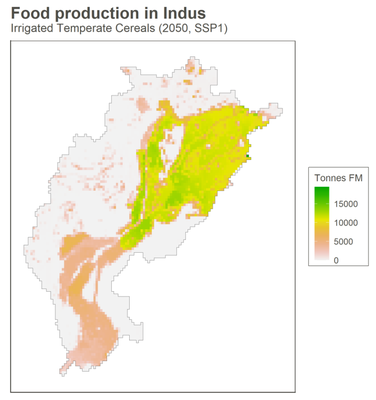
Objectives and methods

We use several models to provide an integrated assessment of food systems across multiple scales. With these models we cover economic, demographic, agriculture, energy, land- and water-use components of the food system and include the effects of climate change. We link the impact assessments of these models to the SDG-indicator framework to provide insight in the completeness of the assessment being performed and as a connecting narrative to present the model scenario results. Case studies focus on Ethiopia and South Asia.

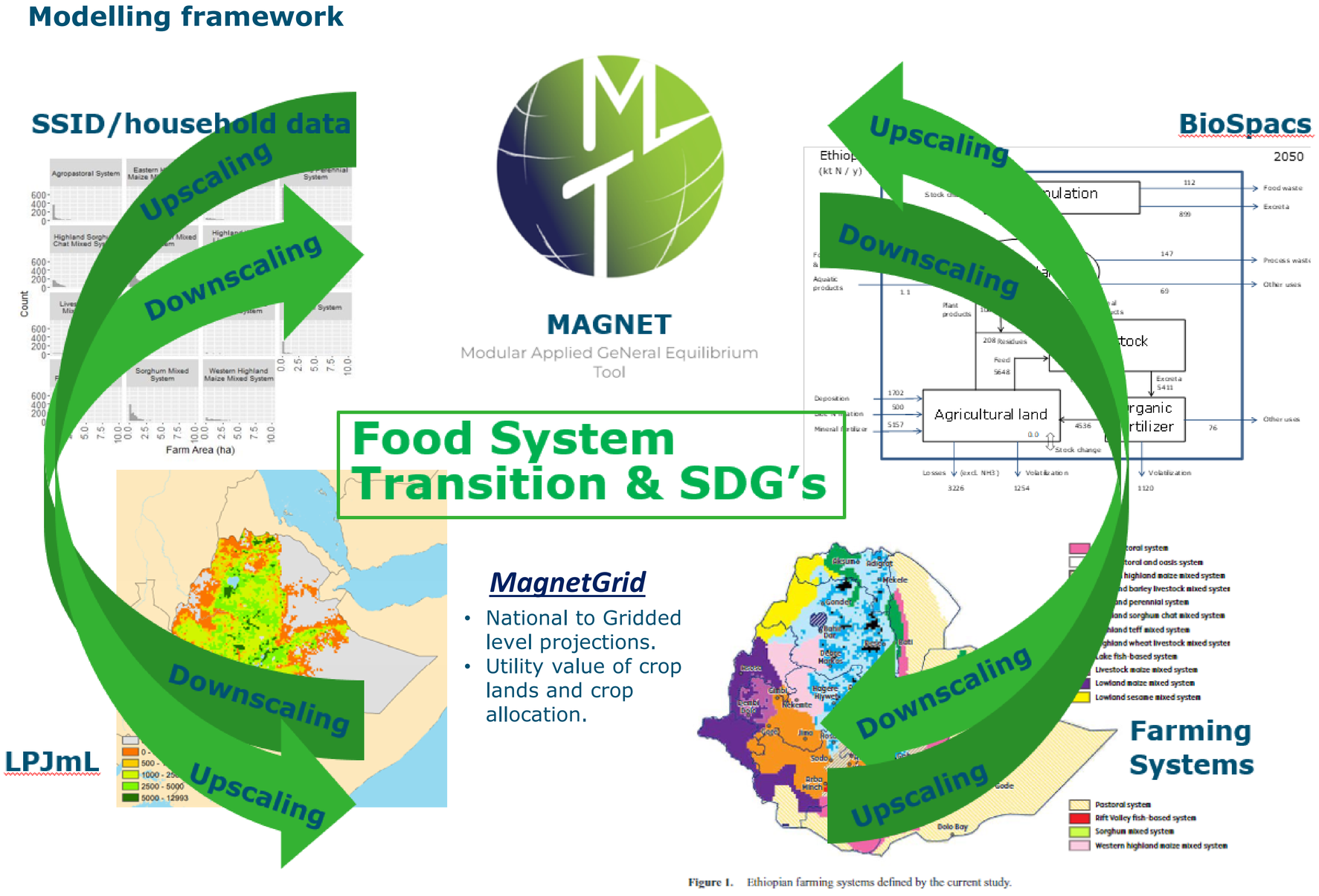
Local assessment of food demand and supply in Pakistan

- Compare food consumption projections from a microsimulation model (SSID) with food production projections from a global vegetation model LPJmL at subnational/grid level
- 'local' analysis of food supply-demand relationship is relevant because:
  - Limited consumption of imported food by poor rural populations.
  - Infrastructure bottlenecks – 'last mile' problem.
  - Differences in local demand-supply characteristics (e.g. climate change, population density, natural resources).
  - Local supply is more sustainable.





Modelling framework



- Develop global irrigation scenarios of water demand from agriculture.
- Link a hydrological and crop model with global coverage (LPJmL) together with a macro-economic model with global coverage of world food demand, and the wider economy (MAGNET)

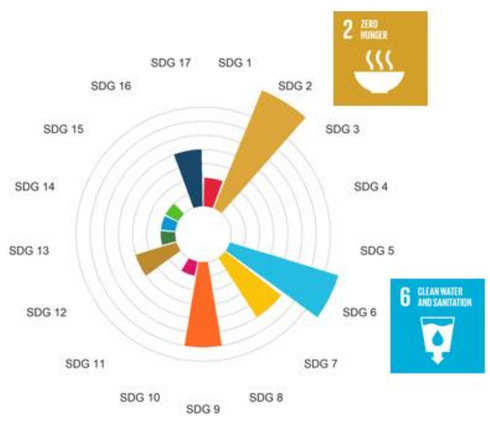
Further in 2024

- Consolidate and publish joint work.
- Collect insights from model collaboration between institutes.
- Further develop the collection of models in the project into a toolbox with a clearly identified problem space and name recognition.

Developing a multi-model assessment tool based on the SDGs to:

- Show if and how model output relates to SDGs
- Work towards a common narrative for presenting model results
- Condition: usable on different scales

Sub-national	National	Global
• Case study: Pakistan • Models: SSID & LPJmL	• Case study: Ethiopia • Models: BIOSPACS, MAGNET & LPJmL	• Models: MAGNET, MagnetGrid & LPJmL



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Question for audience

- How can we help you quantify across domains & scales?