

# Assessing the environmental impact of livestock industry development pathways

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## Challenge

Pressure on environmental resources must be considered in ambitions to meet nutritional and livelihood needs into the future.

Human population is forecast to increase from 7.7 billion today to approximately 9.48 billion in 2050, with an increase of over one billion in Africa alone. Consumption of animal source foods in Sub-Saharan Africa is forecast to increase by 25% in 2050 (fig. 1).

Meeting increased demand for livestock products will depend on a strong environmental resource base and functioning eco-system services. Decision makers and industry advocates, therefore, will need to consider alternative development pathways and the related environmental impacts.

How can such complex environmental assessments be incorporated into investment and policy decisions?

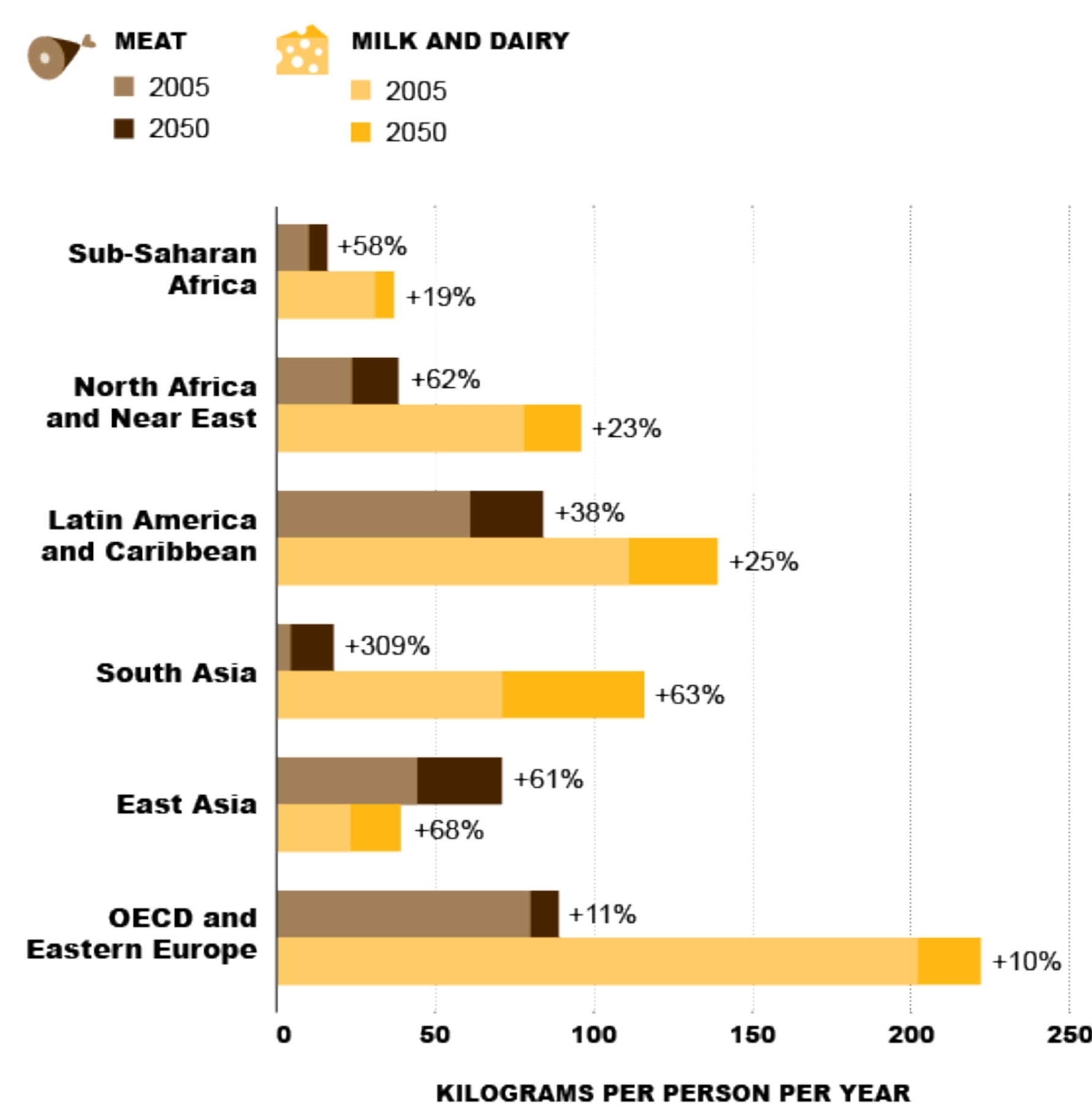


Figure 1 – Projected change in meat and dairy consumption

Source: CCAFS

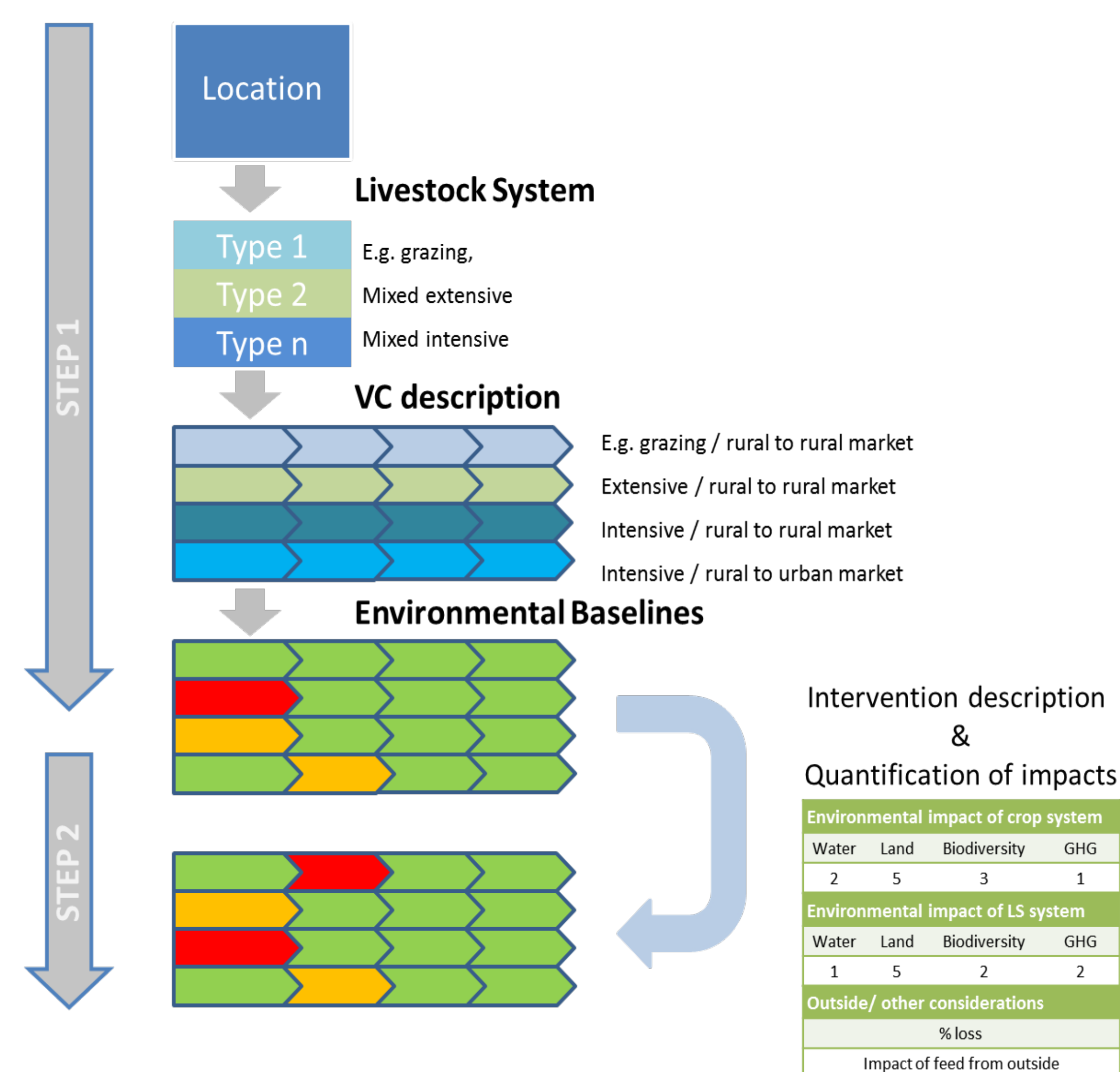


Figure 2 – Framework for environmental assessment

## Response

A framework is being developed for the purpose of assessing the environmental impact of livestock industry development scenarios (fig. 2). This framework aims to be flexible enough to cater for the diversity of livestock production systems in Africa and Asia; rapid enough to be useful for decision makers; and, sophisticated enough to improve confidence in decision making.

The framework takes a value chain approach, allowing users to add or remove value chain steps as necessary. Stocks and flows are modeled across spatial and temporal scales, providing results for key indicators in four impact categories. Impact categories and indicators include:

- depletion of available **water** resources, changes in soil water holding capacity, and change in water quality;
- **Soil** erosion, change in soil organic matter, change in soil fertility
- **Global warming potential** from emissions of methane, nitrous oxide, carbon dioxide
- **Biodiversity** and landscape multi-functionality

The framework has been piloted on dairy development in Tanzania and will be extended for other species and systems in 2015.

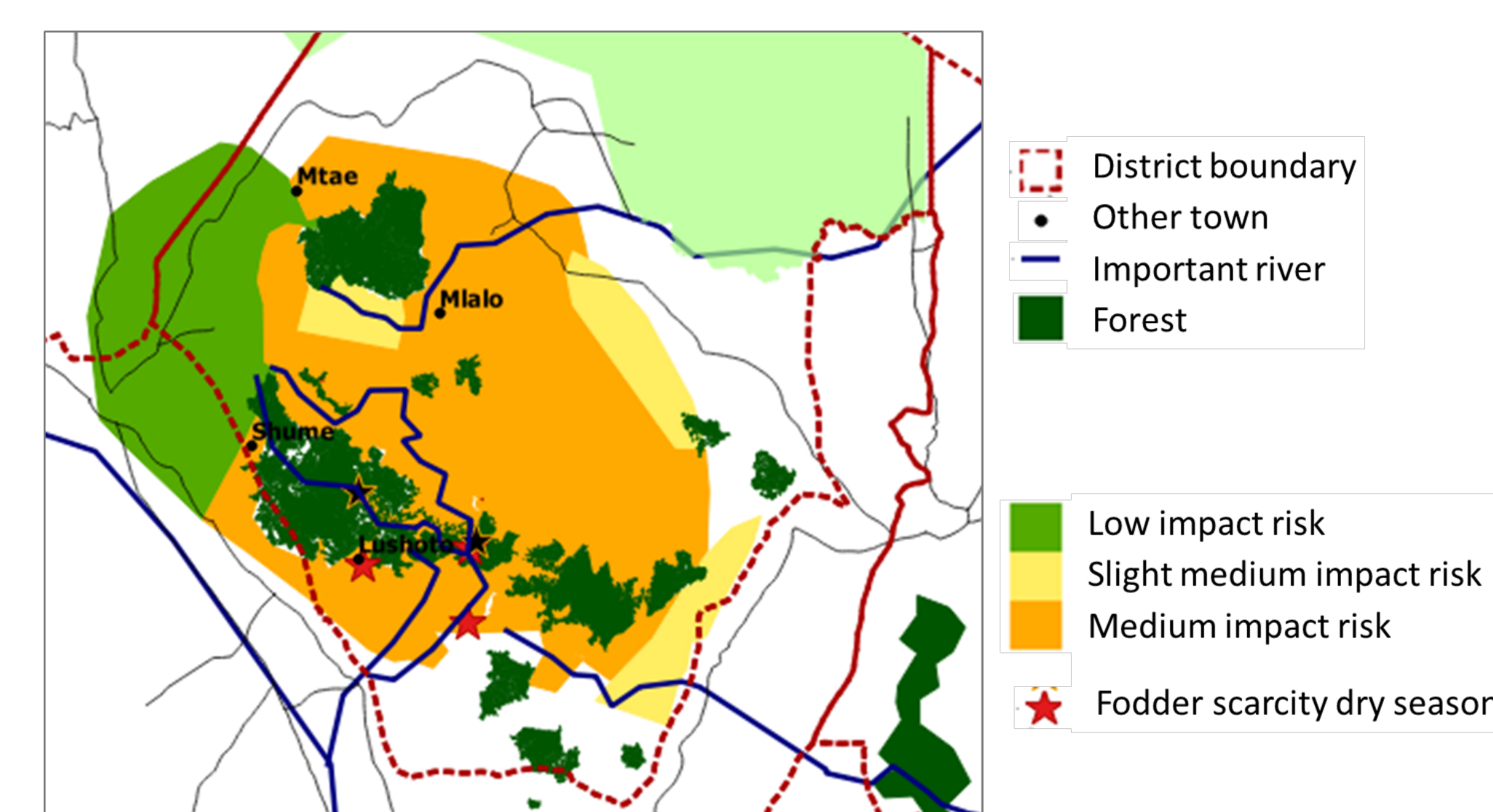
## Evidence

An initial pilot test of the framework was undertaken for proposed interventions in the MoreMilk in Tanzania project. Interventions were targeted at increasing milk yield through farm level activities.

Preliminary results suggest that these interventions will have minimal impact on water resources, moderate increase in nutrient mining and a moderate net increase in emissions. Net impacts vary by system (depicted in map 1). All environmental impacts were less on an efficiency / per unit product basis.

In Lushoto district, 18 threatened or endangered species were identified. Impact for biodiversity could not yet be quantified, but management strategies can be put in place promote biodiversity.

This pilot test supports the notion that environmental risks and benefits can be identified ex ante.



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Acknowledgements: This is a collaborative research agenda between ILRI, CIAT, SEI and CSIRO  
Funding: Bill and Melinda Gates Foundation

