



# Trade-offs and synergies in food system transition pathways (KB35-103-001)

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## Background and objectives

Transition pathway approaches are increasingly being applied in the context of sustainable and inclusive food system transitions for food and nutrition security. Inherent in these food system transition pathways are trade-offs and synergies within or between different dimensions of sustainability (social, environmental, economic); between different temporal and spatial scales; and between different types of actors. Understanding and assessment of these trade-offs are important to development of sustainable and healthy food systems. This project aims to expand and strengthen WR capacity to assess trade-offs & synergies, in the context of supporting multi-stakeholder processes for development of transition pathways towards sustainable and healthy food systems.

## Methods

Literature search was conducted to identify relevant approaches and tools for assessment of Trade-offs & Synergies (TO&S) in food system transition pathways, which was followed by workshop in WUR on characterizing and representing TO&S. The identified approaches are applied to 3 cases from ongoing food system transition processes in Bangladesh, Ethiopia and Ghana. Assessment of TO&S in identified transition pathways in these cases is in development context, and not on systemic tradeoffs, using food systems framework by van Berkum et al (2018). Multi-stakeholder engagements are crucial in TO&S analysis.

## Partners

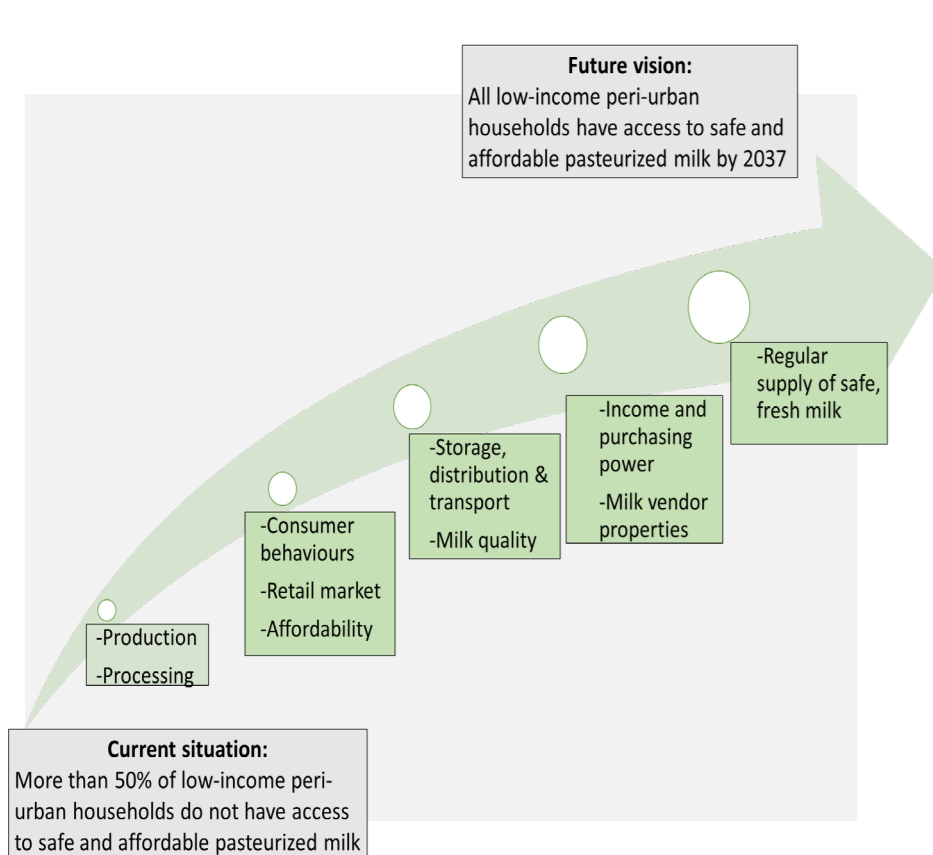
Within WUR – WLR, WEcR, WEnR, WFBR, WPR

External Partners:

- Ethiopia – SNV, local universities, dairy sector stakeholders
- Bangladesh – Solidaridad (NGO), CGIAR, MoA, FAO
- Ghana – Solidaridad Ghana (NGO), charcoal sector stakeholders

## Outcomes

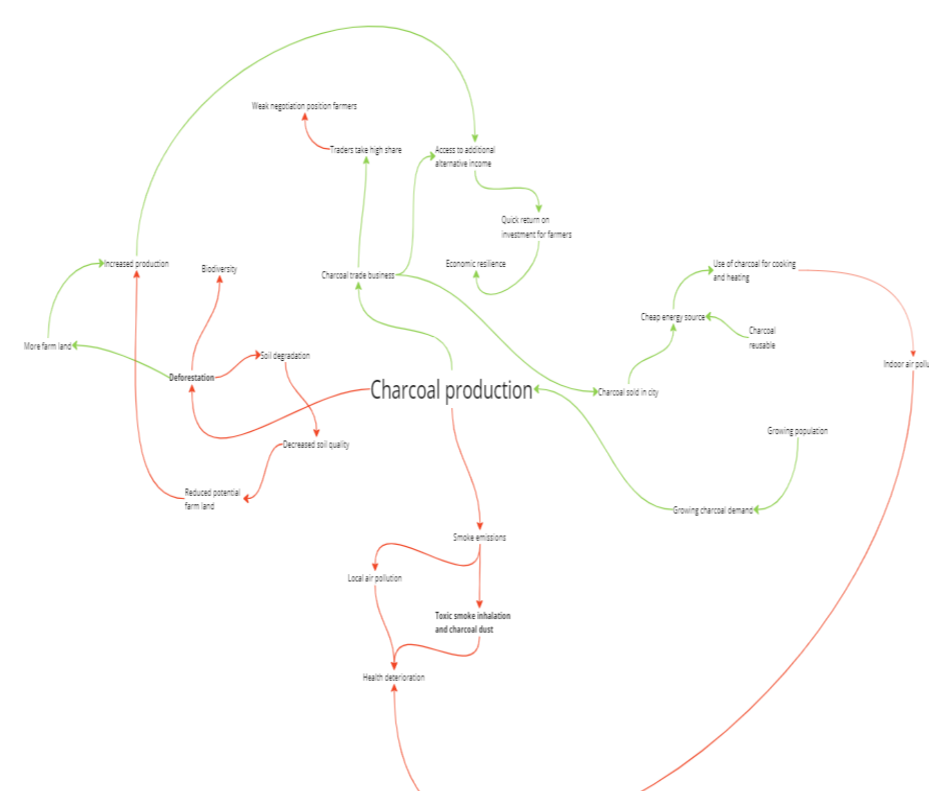
- Co-created methodologies for assessing TO&S in food system transition pathways for food system transitions in Bangladesh, Ethiopia and Ghana.
- Visualized TO&S for dairy sector transformation in Bangladesh and Ethiopia, and for transition from charcoal as cooking fuel in Ghana.



Transition pathway to increased dairy consumption Ethiopia

Trade-off	Scale	Trade-off type	Indicator	Possible synergies
1. Milk off-take or milk for sale	Farm/household	Within socio-economic dimension	Total milk yield (litres/cow/day), milk off-take	Improved milk yield per cow
2. Milk for sale vs household consumption	Farm/household	Between economic and human health	Volume of milk sold, volume of milk consumed	Significant increase in milk sold per cow, less milk consumed
3. Milk quality vs affordability by subsistence population	Region, national	Within socio-economic dimension	Milk fat content, volume of milk sold (litres/day)	Higher fat content, higher milk yield
4. Land for forage vs crop (food/feed competition)	Farm/household	Within socio-economic dimension	Area of land for forage and for crop	Practice alley cropping
5. Household labour for animal husbandry vs labour for other household activities	Farm/household	Within socio-economic dimension	Household labour in dairy equivalent per day	Household labour in dairy
6. Use of crossbred cows vs indigenous breeds (genetic diversity)	Region, national	Within environmental dimension	Population of crossbred and local breeds in the region	Population of crossbred and local breeds in the region
7. Use of crossbred cows vs local cows	Farm, region	Within economic dimension	Feed cost, milk revenues	Lower cost ration for crossbred cows, improved management for increased milk yield per cow

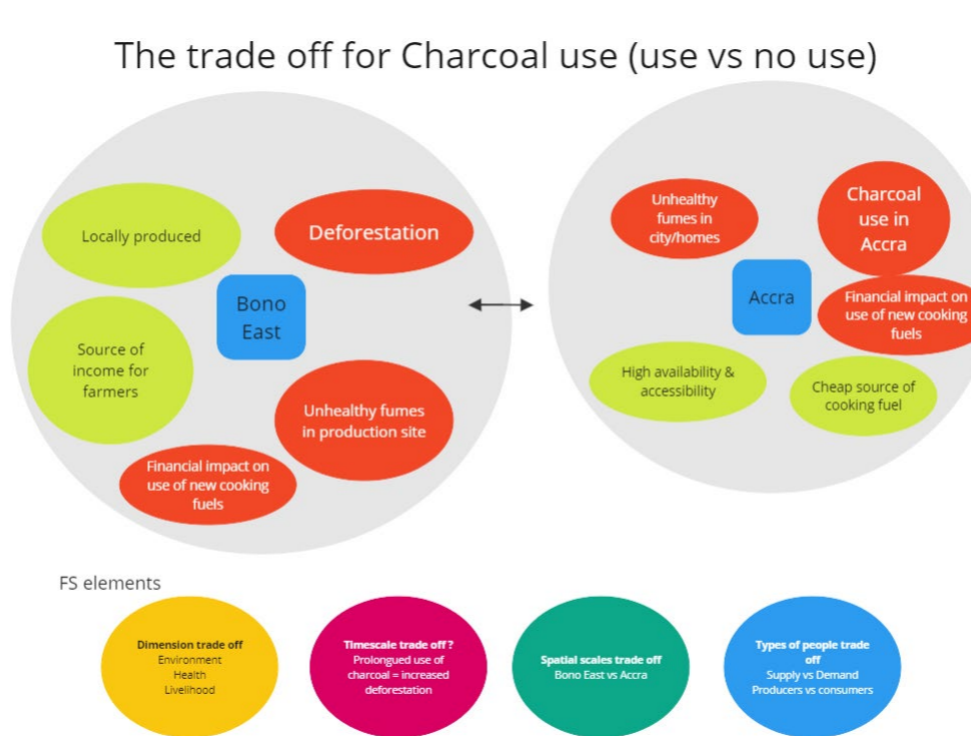
Trade-offs and synergies in dairy transformation in Ethiopia



Concept of causal loops for tradeoffs in charcoal production in Ghana

## Outcomes

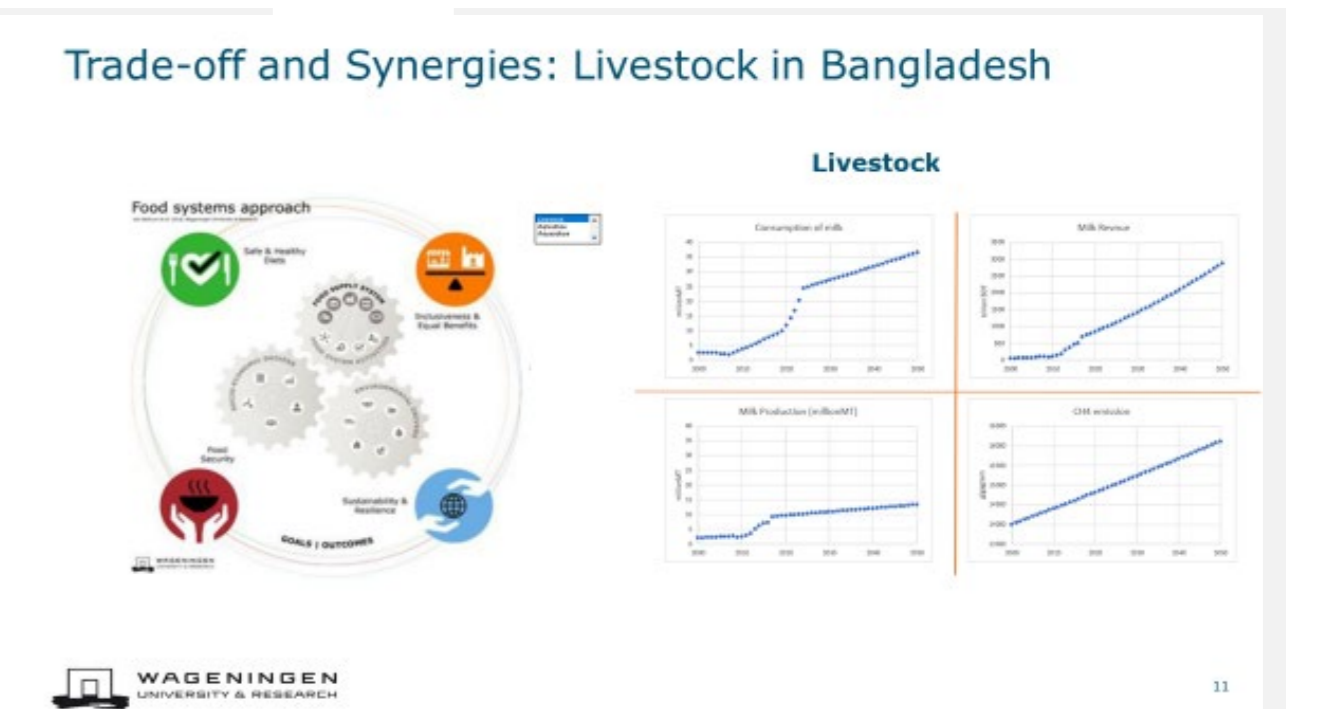
- Practice briefs on co-created methodologies for assessing TO&S in food system transition pathways to inform decision making on food system transitions in Bangladesh, Ethiopia and Ghana.
- Capacity of WR to assess TO&S in food system transitions expanded and strengthened.



Brainstorm on tradeoffs in different dimensions in charcoal production in Ghana



Milk collection point Bangladesh

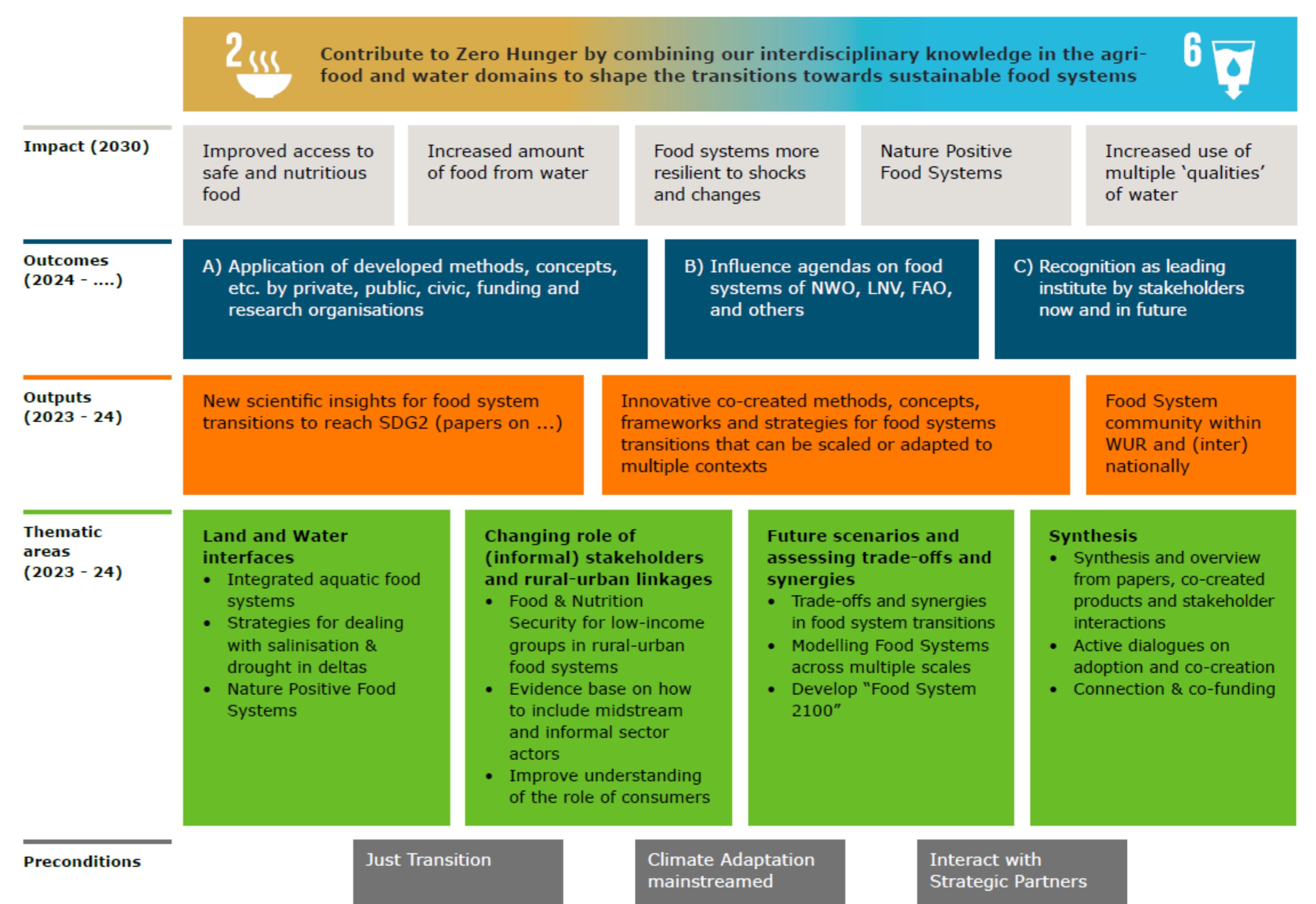


Visualizing trade offs and synergies for livestock in Bangladesh based on water and food systems analysis (work in progress) (collaboration with KB35 Deltas)

## Link to Theory of Change KB35

As shown in KB35 ToC below, this project addresses the thematic area on future scenarios and assessing TO&S and will contribute to SDG2 (Zero Hunger) and food system outcomes of KB35. Expected outputs are new insights and co-created methods for analyzing food systems which will contribute to enhanced actionable insights on TO&S in food systems analysis. The impact is expected to be improved access to safe and nutritious food, and more resilient food systems.

## Theory of Change Food and Water Security



## References

Van Berkum, S., Dengerink, J., & Ruben, R. (2018). The food systems approach: sustainable solutions for a sufficient supply of healthy food (No. 2018-064). Wageningen Economic Research. <https://library.wur.nl/WebQuery/wurpubs/fulltext/451505>