



Figure 1. The hillock

Background

- The Winter Institute (WI) is a collaboration between Washington University in St. Louis and the Foundation for Ecological Security (FES) in order to incorporate systems thinking and methodology into FES' village perspective planning (VPP) process.
- WI took place in Andhra Pradesh Province, specifically with the community of Chennappagaripalle, and the members of their Tree Growers Cooperative Society (TGCS).
- Chennappagaripalle is made up of 57 families, with a population of approximately 219 people. Agriculture has been the main source of income for the families, primarily through groundnut cultivation. However, due to water shortages many are shifting to animal husbandry to stabilize their livelihoods. Throughout the year families are able to sell livestock, and milk to supplement their income.

Methodology



Figure 2. PRA activity with women



Figure 3. PRA focus group discussion

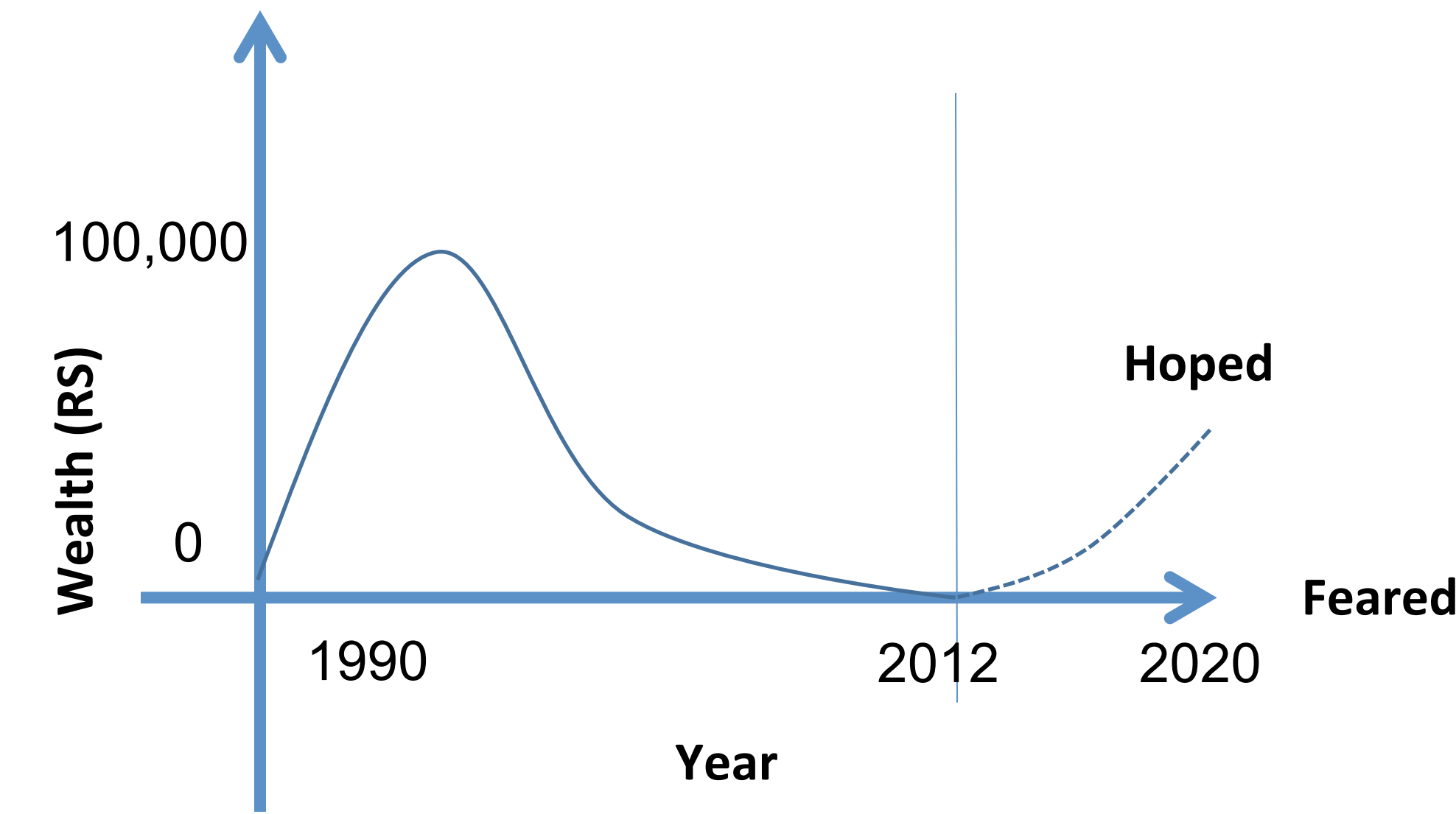


Figure 4: Modeling with the village

- Field Work
- SD, group model building (GMB) and participatory rural appraisal (PRA) were combined—
- The first field visit** consisted of resource mapping with village men and social mapping with village women (see Figure 2). Additionally, we took a transect walk to see the physical features of the village.
- The second field visit** consisted of several PRA activities carefully selected and tailored to answer our questions (see Figure 3). FES leaders engaged the community participants through activities that included prioritizing local concerns and creating a cause and effect chart.
- In the third field visit** we presented the community with a nascent causal-loop diagram (CLD) written in Telegu, the local language (see Figure 4,9).
- Throughout, the team built iterations of the model while recognizing critical insights about the problem.

Problem Structuring

Graph 1. Reference Mode



- We understood the problem as analyzing the effect of collective action on the community's well-being. We regarded increasing wealth for households as the priority issue to address in the village because it determined their well-being.
- Wealth was regarded as a stock in the model, and was defined as the average amount of money that is accumulated throughout years for each household.
- The behavior of wealth has been goal seeking, is now stagnant, and they hope it will increase.

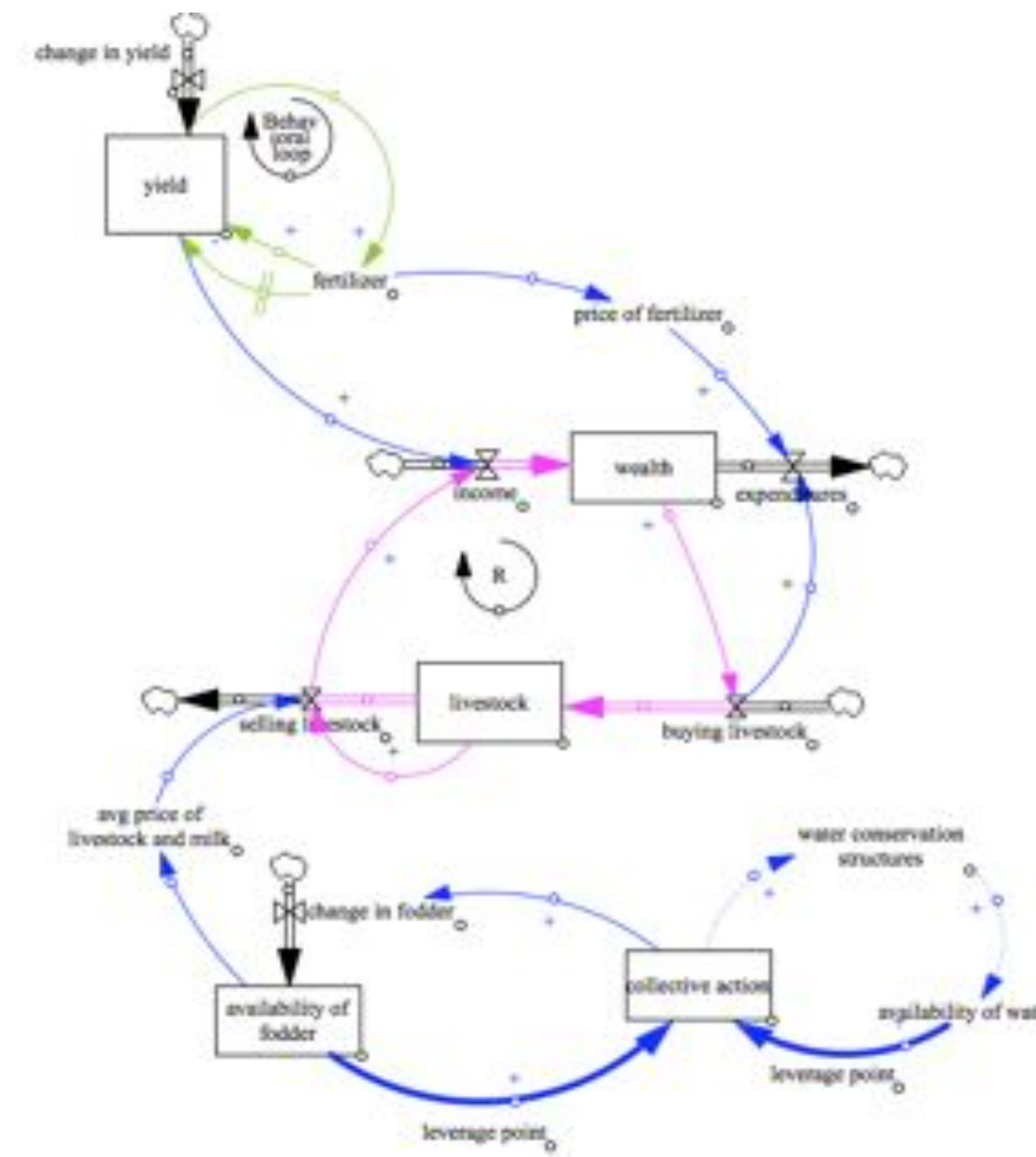


Figure 5. Conceptually Simplified Model

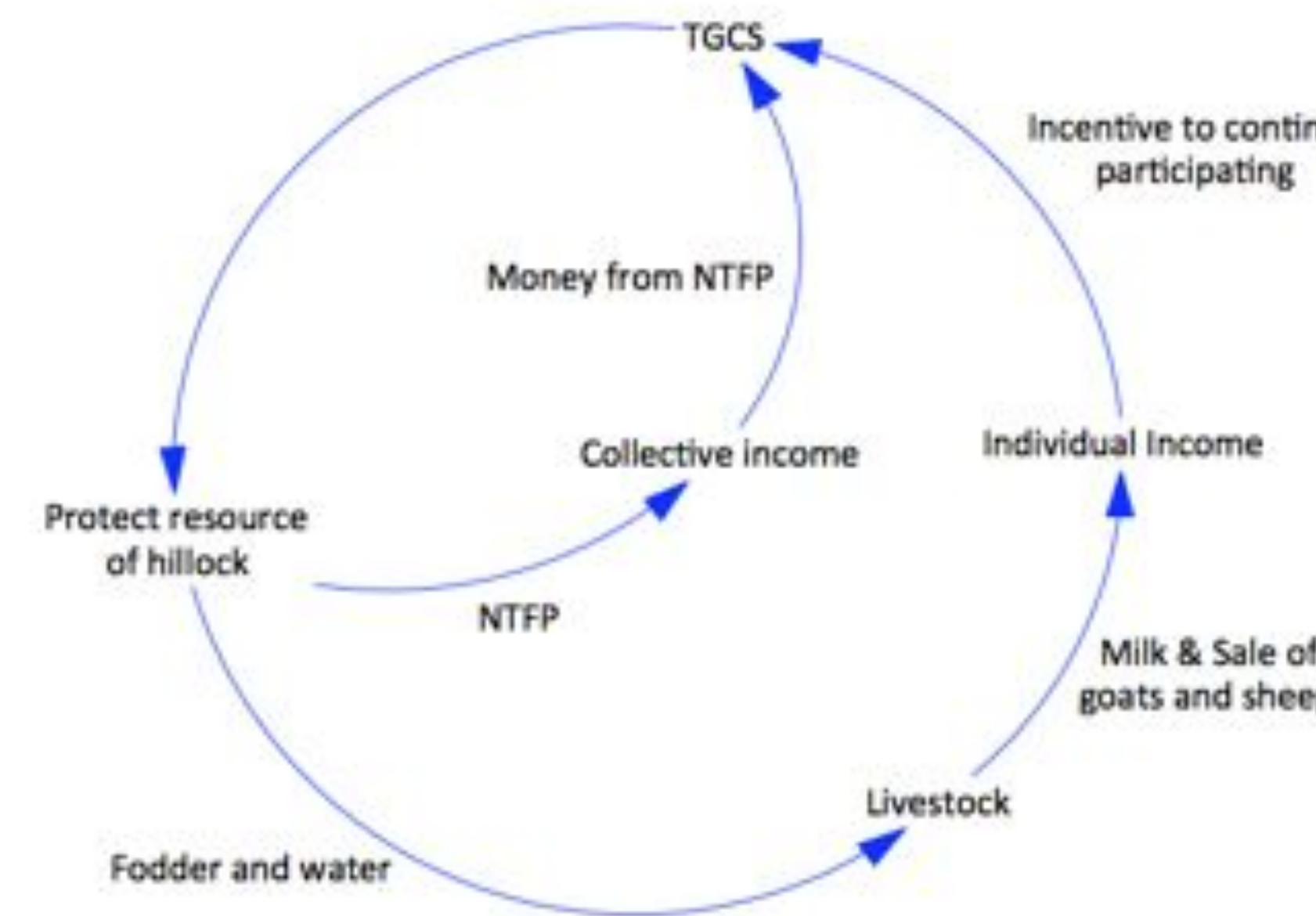
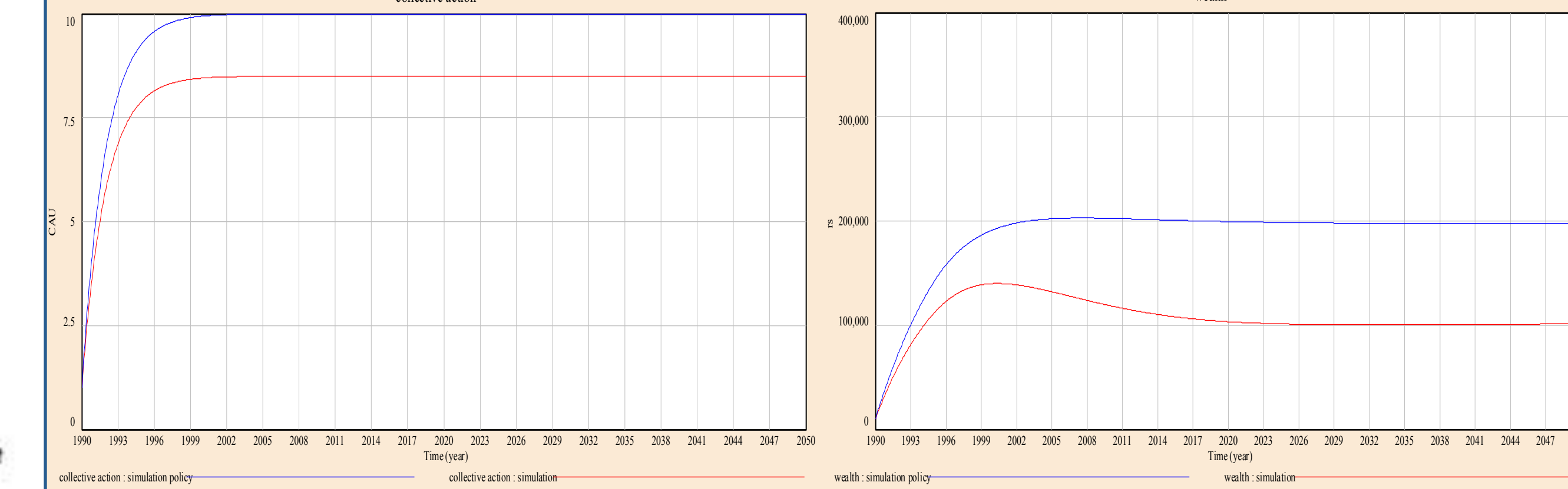


Figure 6. Collective Action: TGCS

Discussion and Next Steps

- The visual representation of community action articulates how it enables a steady income from livestock, and also reveals the insight that cooperation has potential to create other leverage points in the future.
- Farmers will not change their occupations, and it is not our role to suggest such a drastic change, therefore we recommend that they utilize their community institution in novel ways to further uphold their livelihood and improve sustainable management of resources.

Exploratory Intervention



Utilize the collective action to advance the management of resources: allow the land to heal from over use of fertilizer

- SD lends itself very well to village perspective planning. Our model and insights can be used to tell the story of rural Indian farmers who face decreasing soil fertility, complex government interventions and increased reliance on livestock.
- This model can be shared with various communities to tailor recommendations for the protection of collectively managed land, and to support the livelihood of the community at large. Additionally, this work can serve as a useful example for FES when approaching new communities to establish cooperatives.

Model and Simulation

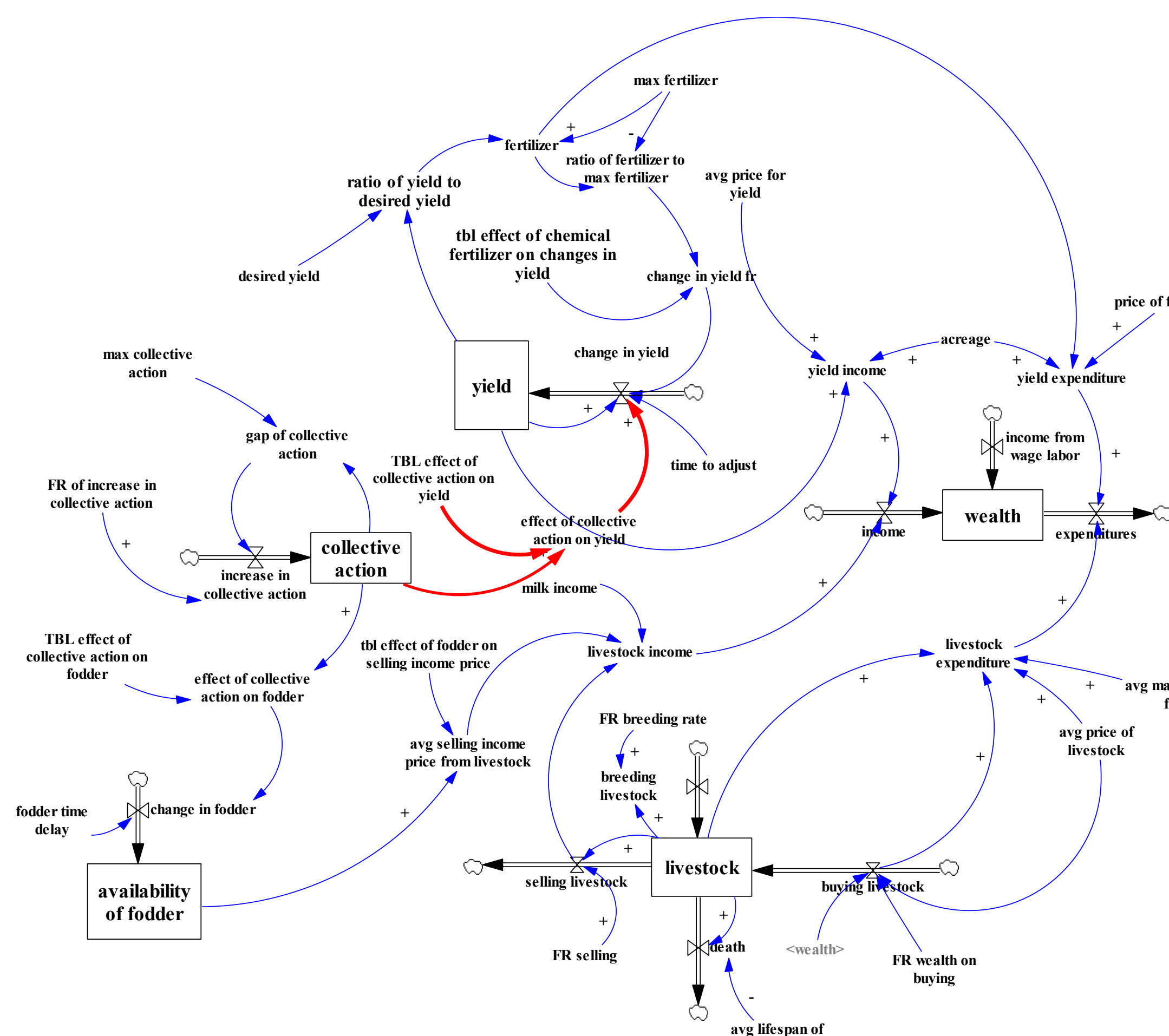
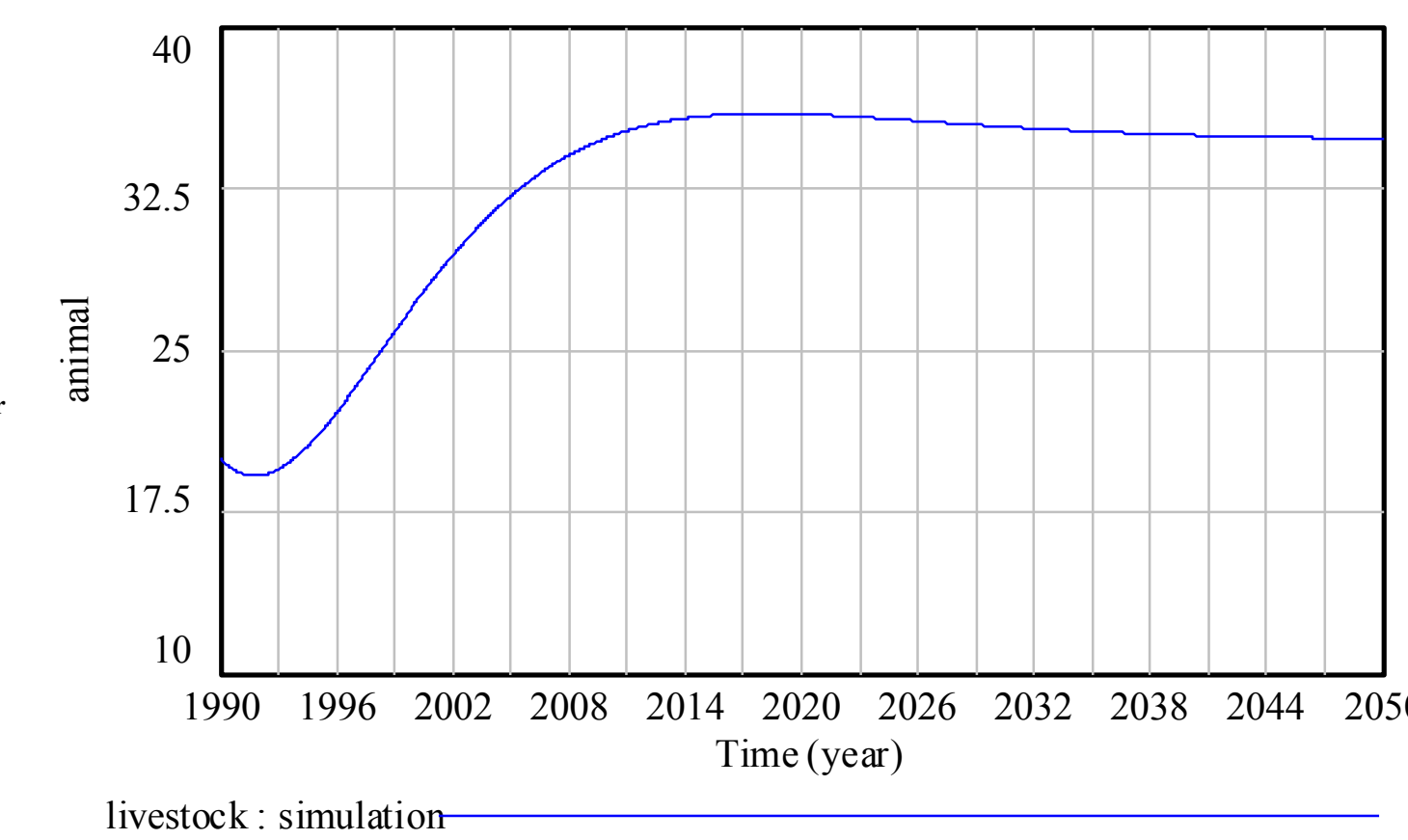
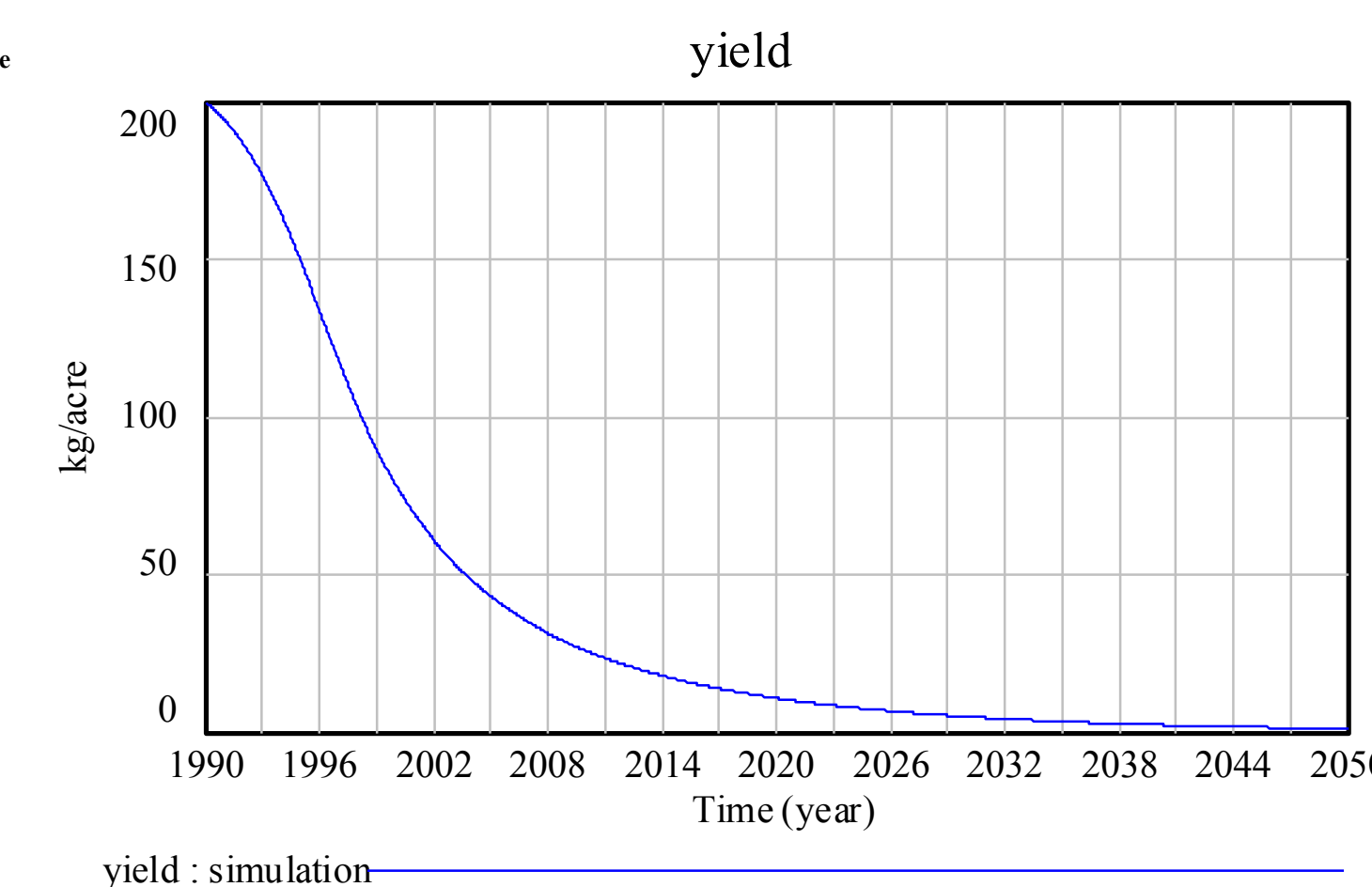


Figure 7. Full Model

Graph 2. Simulation Result, livestock



Graph 3. Simulation Result, yield



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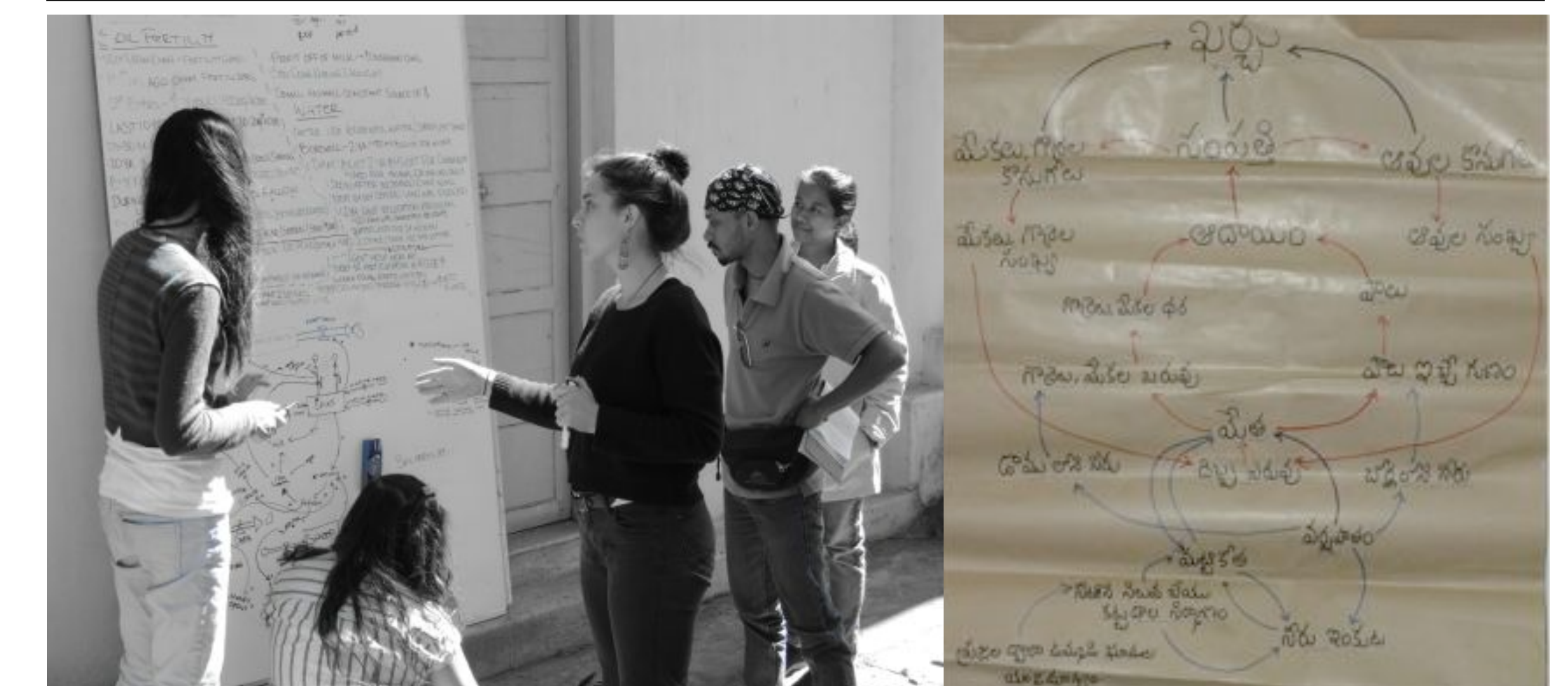


Figure 8. Group members at work

Figure 9. CLD in Telegu