SAIRLA
Sustainable Agricultural Intensification Research and Learning in Africa

Project Brief

Exploring socio-economic-environmental trade-offs in the livestock sector in Tanzania

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Introduction

This brief offers an overview of the results of a multi-stakeholder workshop that was held in Lushoto District, Tanzania, on 6-7 July 2017 (figure 1). It is an output of the **Research and Learning for Sustainable Intensification of Smallholder Livestock Value Chains (ResLeSS)** project (2016-2019) being implemented in Tanzania, Ethiopia and Burkina Faso. ResLeSS is one the five projects in the **Sustainable Agricultural Intensification Research and Learning Alliance (SAIRLA)** program in Tanzania. The aim of our project is to integrate the three components environmental, economic and equity considerations into decision making around livestock intensification. To achieve this, we take an innovative step forward in the use of analytical tools for the management of environmental and livelihood change in developing country contexts, combining a rapid ex-ante environmental impact assessment and a participatory economics approach in an on-going learning process.

There is a need to enhance the sustainability of the rapidly developing Tanzanian livestock sector. Its social, environmental and economic performance needs to improve if the sector is to remain viable in the long-term. Within the political arena, environmental impacts linked to livestock systems have been a major area of concern. The sector's impacts on air quality, water-soil quality, as well as on climate change are well-known. While great achievements have been made in reducing environmental impacts, the sector needs to take further steps to improve its overall sustainability. It is crucial to identify and analyze current and future socio-environmental environmental trade-offs in the livestock sector for policy making.

Ultimately the project aims to support decision makers to increase food production from existing farmland in ways that place far less pressure on the environment and that do not undermine our capacity to continue producing food in the future. There is increased support for sustainable agricultural intensification (SAI) as a policy goal for many national and international institutions. Our project will help to realize greater production with fewer environmental impacts ma-

Figure 1: Participants' group photo during Workshop 1 held in Lushoto, Tanzania

jor challenges (e.g., ecosystem degradation, failing crops and grazing, declining quality and quantity of fresh water and loss of tree cover). As, we implement our project, key questions we have asked ourselves include what are the changes in policy processes, research and investment needed to better respond to the growing challenges and greater demands being placed on agriculture in Tanzania? To ensure that SAI interventions make a positive contribution to addressing food security and agricultural and environmental imperatives, there is a need to focus on production increases as part of a multi-pronged strategy.

Project Process

The environmental assessment in this project is done using the Comprehensive Livestock Environmental Assessment for improved Nutrition, a secured Environment and sustainable Development (CLEANED) tool, which provides a rapid assessment of livestock production system changes in data poor environments undergoing fast change. Four environmental impacts, i.e. water, land/soil, biodiversity and greenhouse gases emissions, are assessed at landscape scale, using modeling to generate maps showing the distribution of environmental change.

The participatory economic data gathering is applied to co-identify, with the stakeholders and boundary partners, the list of economic indicators and scenarios to prioritize investments and to measure the success of these investments.

Sustained participation in development decisions regarding equitable, long term production rest upon a continued and inclusive participatory 'social learning' and adaptive process to engage all stakeholders. This process should include both policy makers and those frequently marginalized from decision making, such as smallholder farmers and women. To support this, we will operationalize our project through an environmental and production trade-off 'learning', that can be continued beyond the life of the project.

Methods used

Workshop 1 mapped existing livestock production systems, identified stakeholder-specific priorities for success, and started to explore current and future socio-economic-environmental trade-offs in the livestock sector. Although stakeholders during Workshop 2, in June 2018, will assess and quantify these trade-offs more elaborately, it was considered useful to use the current stakeholder engagement to openly debate if more trade-offs exist and how severe they are relative to the livestock sector.

i) Mapping the dairy and livestock feed production

In mixed stakeholder groups, participants mapped the dairy livestock keeping, feed production and support infrastructure and services in operation across the district and discussed the distribution of production in relation to the environmental context supporting the dairy system.

ii) Identifying social and economic priorities of what it means to be successful

In stakeholder-specific groups, participants described what a good, successful life means to them, by creating a story of one day in the life of their chosen character who lives in Lushoto and is somehow linked to the dairy system. From their story, participants identified 5 key indicators of success.

Stakeholders joined the workshop from all parts of the value chain: livestock keepers, milk collection cooperatives, milk processors, milk traders, meat traders, hoteliers, environmental conservation, extension officers, a dairy learning alliance, village leaders and regional government officials. The workshop discussions yielded a wealth of relevant information describing the state of dairy production and natural resources in Lushoto, for input into the CLEANED Tool. Outputs from the workshop are:

i) current and future livestock system definitions for the Lushoto cattle, providing validated data to parameterise the CLEANED tool for Workshop 2, including study area delineation;

ii) definition of the priorities of each group of what it means to be successful, captured in a narrative and 5 key indicators of success; and

iii) a better understanding of the relationships between stakeholders and requirements for maintaining an equitable decision-making process.

Current and future livestock production systems

In the highlands of Lushoto, households typically have a few dairy cows and regularly deliver milk to Tanga Fresh Dairy or to local customers and businesses. These dairy cows are mainly kept at home and fed by cut and carry, or let out to graze on nearby road verges or stream banks. In the lowlands of Lushoto, to the north, there are still some dairy, but primarily much larger herds of free ranging beef cattle.

Figure 2: Participants discussing one of assigned livestock production systems during Workshop 1 held in Lushoto, Tanzania

At the beginning of the day, the facilitator presented four systems that had been discussed among the facilitating team during the previous two training days. The participants endorsed these four systems and split into four groups (figure 2):

- Dairy intensive upland
- Dairy semi-intensive upland
- Dairy semi-intensive lowland
- Extensive lowland

For each system, participants defined the average number kept by farmers and characteristics of the animals, feed basket per season, manure management, equipment and market needed while indicating on the map where the animals are and where the feed comes from. Envisioning the future, participants felt that there will not be a change of practices but practices will intensify. They defined how their system would intensify in the future, defining the same parameters for the future of that system.

Stakeholder-specific priorities for success

In the participatory economics exercise, stakeholder-specific groups, participants described what a good, successful life means to them, by creating a story of a normal day in the life of an imaginary character in Lushoto in 2030 who is somehow linked to the dairy system. While livestock is still imagined to be a large part of the livelihood for all four stories, three of the characters have a second livelihood in the form of a shop or restaurant.

Common characteristics are:

- planting forage in addition to food crops or forestry;
- having hired labour;
- having a biogas plant.

From their story, participants identified 5 top indicators of success, chosen by individual vote in each group. The resulting indicators expose the variety of priorities that stakeholders in Lushoto have. Common indicators featuring in all stories, although the details may vary, are:

- ownership of land although the amount of land that should be owned ranges from 1 to 4 hectares;
- education of their children; one group specified that it should only be 2 children (with family planning); and
- something improved about their livestock keeping, be it improved breeds, improve management practices or improved housing.

Indicators specific to just one or two stories are:

- having food security, either sufficient food all year round, or a balanced diet with sufficient to offer to guests;
- owning a car to carry fodder;
- having a stable, healthy and happy family; and
- building a modern house for the family.

One group also observed that, while everyone agreed that all their chosen indicators are important, men emphasized land ownership and infrastructure, while women emphasized food security and education. All unanimously agreed that improved livestock were the most important indicator.

This variety of socio-economic indicators will provide a rich picture by which to monitor progress of the community, once the stakeholders have defined how to measure them. Some are straightforward to measure (having built a house), whereas others will require some deep and creative engagement (having a stable, healthy and happy family).

Equity by design

The project aims to develop a process that is inclusive, part of which is to practice 'equity by design': to ensure that the activities within the process engage all relevant stakeholders, create an enabling space within which all stakeholders can express their views, promotes the acknowledgement of all views by others, and facilitates the creation of new knowledge and a common and shared strategy that has taken all stakeholders' priorities into consideration.

Participants and facilitators reflected that this workshop did create an enabling space, with participants engaging freely and eagerly. The shifting structure and dynamics, ranging from one-to-one discussions, the eight-member-core group discussions and plenary sessions, worked well to offer opportunities for all, and even quieter participants contributed eloquently.

Some participants were surprised at the level of participation. However, a few were less confident after the workshop that they were able to express their views and that their views had been heard than they had been before the workshop. This will be followed up in the next steps and Workshop 2.

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The way forward

At the end of the workshop, participants strongly felt that they together had learnt about the preferred livestock practices in the area, how different stakeholders together can agree on how to describe system characteristics, such as feed use and management, and how a small group together can envision possible future livestock production systems in the area. At large, the workshop created an enabling environment where participants and facilitators engaged in open discussions and activities. Participants put forward the following draft recommendations related to how the socio-economic-environmental trade-offs in the livestock sector could be addressed in Tanzania:

i) Improve feed production, conservation and feeding practices. Improved land use planning is crucial to balance demand for food and fodder, and to increase both production and productivity. Farmers should be encouraged to plant more fodder crops in contours and on terraces, devote sections of land to fodder, store farm crop residues, grow better varieties of fodder and conserve fodder by making hay. Furthermore, education on livestock keeping that considers the stocking rate (the number of livestock depending on the available area) is needed.

ii) Invest in improving access to livestock value chains, market information, technologies and implementation of best practices improving market access and value chains for small holder livestock producers can serve as an incentive to adopt best management practices and keep stocking rates in line with fluctuating carrying capacity, while improving livelihood security.

iii) Improve dairy cattle breeds from current traditional low yielding varieties to high yielding animals, with higher feed conversion efficiency. To be able to achieve this desirable productivity gain, farmers should be trained both on better livestock keeping methods and selective breeding, including for example better bulls and artificial insemination.

iv) Improve livestock infrastructure and extension services. Farmers should be assisted to: construct more drinking water pans/dams for livestock, cattle dips and animal health centres and/or increase the availability of spray equipment and medicines; and to increase the number of extension officers and the market for milk and other products, including more milk collection centres.

v) Governments and their development partners must invest in strategic capacity building to attain the goal of safeguarding the livelihoods of livestock dependent households, ensuring that smallholders also can benefit from the ongoing commercialization. Capacity building across stakeholders, sectors and skill sets is required. Strategic areas of importance for capacity building include research, management, advocacy, communication and enterprise development.

vi) Emphasis must be placed on increasing private sector investment in production, processing, marketing and trade to enhance livelihood options and opportunities for the rural poor. There is increased awareness of the critical role of the private sector in sustainable development. Government and civil society cannot provide all the necessary incentives to ensure livelihood security. Therefore, increasing private sector investment at local and national levels is necessary to reduce poverty and encourage sustainable use of natural resources.

Project participants

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- Environment and Climate Research Center, Ethiopian Development Research Institute (EDRI)
- Sokoine University of Agriculture (SUA)
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