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Involving stakeholders in crop-livestock systems analysis: Innovation Platforms in Burkina Faso and Niger, West Africa

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Abstract

The development of markets and agricultural productivity need participative research approaches that involve farmers, stakeholders and actors in the value chains of agricultural products and inputs. This study illustrates the use of multi-stakeholder platforms to address critical issues that often curtail effective implementation of development strategies and achievement of objectives. The process used to facilitate stakeholder participation and achieve enhanced understanding of collective actions to achieve objectives is illustrated by case studies in Niger and Burkina Faso. The process that determines the causal relationships among the various problems is also presented; results from the process can be used to determine entry points for addressing system challenges. Finally, the study offers specific insights and analysis related to small-ruminant and feed value chains within Niger and Burkina Faso. The strengths and weaknesses of each node of the value chain are assessed and appropriate upgrading, management, and development strategies suggested. Entry points for action and strategies for intervention are identified to improve functioning of the crop-livestock value chain and the productivity of agro-pastoral farming systems. Participative analysis and understanding of the functioning of agricultural value chains enable farmers and actors to improve agricultural productivity and marketing. The multi-stakeholder platform approach is a more suitable tool for socio-economic analysis of integrated systems, and identification and implementation of development strategies, than traditional disciplinary research approaches.

Introduction

In the drylands of the West African Sahel (WAS), especially in both Burkina Faso and Niger, there is high potential to increase the quantity and diversity of animal-sourced food production. To unlock this potential, these countries will have to address a range of barriers and challenges. The growing human and livestock populations generate high pressure on cultivated lands and rangelands. This pressure, together with increasing climatic stress, results in increased tension between pastoral and agricultural communities. Experience in and knowledge of these complex agricultural systems may tempt people to point out obvious problems and to select the best technological fixes to redress these problems. However, this assumed “knowledge” often results in the proposal and implementation of simple solutions with individual technologies that are based on linear thinking (van Rooyen et al., 2020) without taking into account the context and socio-economic constraints.

A realistic approach to improve the complex agro-pastoral systems that provide the well-being of rural populations should first analyze the constraints and challenges that limit the production, the development of local markets for agricultural products and specific actions that could stimulate the development of crop-livestock value chains (Nederlof et al., 2011). Systemic challenges in the complex crop-livestock value chains can only be unlocked if the interrelationships among the problems are addressed. This requires addressing both technical and socioeconomic issues within their specific contexts while ensuring the cooperation and commitment of a range of stakeholders. Instead of individual approaches, this research aims at identifying strategic interventions, from production to market, which could facilitate both the functioning and development of crop-livestock value chains. We hypothesized that global and participative analysis of crop-livestock production systems with farmers and stakeholders should identify strategies and context-specific actions that should be implemented to improve the productivity and the marketing of agricultural products. The novelty of this study is the use of the multi-stakeholder platform approach to identify strategic interventions for improving the functioning of agricultural value chains enabling actors to improve productivity, marketing and incomes for mutual benefits.

Methods and Study Site

Two countries representative of the WAS (Burkina Faso and Niger) were selected for this study. Within each, two research sites were selected for a total of four sites (Torodi and Maradi in Niger and Korsiromo and Sampalga in Burkina Faso). The research involved a baseline survey and implementation of innovation platforms (IPs) in the four sites. The baseline survey involved 191 and 200 households in Niger and Burkina Faso, respectively, to solicit descriptions of the production systems and crop and livestock value chains (CL-VC) of the areas. The IP implementation process involved the primary stakeholders in the following stages: (I) stakeholder identification, (II) problem diagnosis and possible solution identification, (III) value-chain analysis, and (IV) identification of entry points of intervention (Figure 1)

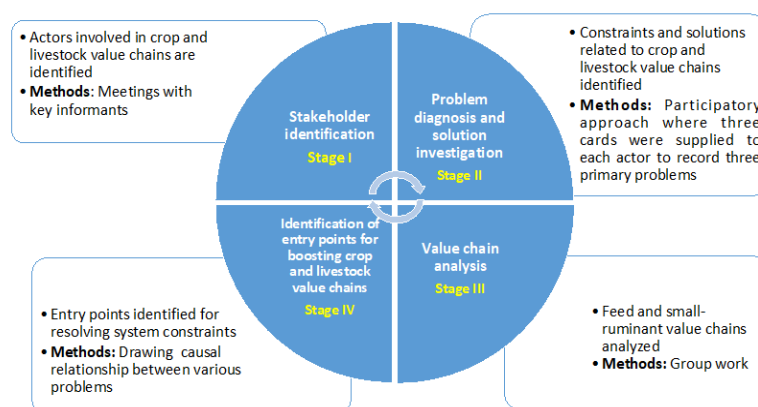


Figure 1. Four-step approach used to establish Innovation Platforms in four sites within the two countries, Niger and Burkina Faso (source: authors)

Results

Key findings from the baseline survey

Our findings indicated that households owned, on average, 3.7 ha in Niger and 3.6 ha in Burkina Faso. Female-headed households owned less land than male-headed households. Millet and sorghum were the primary cereal crops while cowpea and groundnut were the primary legumes crops. Crop residues were the primary food fed to animals in both Niger and Burkina Faso. Almost all (99% and 100%) households (99% and 100% in Niger and Burkina Faso, respectively) kept livestock for cash income and to purchase food in case of crop failure. Only 33% and 42% of farmers in Burkina Faso and Niger, respectively, were members of farmers' organizations. Access to formal credit was a constraint to households in the four study locations, especially in Korsiromo. As an alternative, many households sought credit through informal sources. Households reported that their involvements in crop-livestock activities were based on concerns about food security and source of income. In Niger and Burkina Faso, respectively, approximately 75% and 86% of households explained their involvement in crop-livestock activities as due to the need to secure food for their households' consumption, and 13% and 24% reported that their involvement was to earn income.

Innovation platform process

Stakeholder identification: Stakeholders were identified during discussions with local government, extension personnel, NGOs, traditional leaders, and known farmer groups or associations. Care was taken to involve critical players within the production system: farmers and their associations or local structures, input markets, butchers, support services (extension, veterinary), and local market players.

Problem identification: System challenges included access to inputs, feed shortages, poor veterinary care, low prices, and poor markets, as well as lack of knowledge and access to credit. Feed shortage was the primary challenge constraining livestock-value chains for all sites. Animal diseases, as well as the high mortality of animals, were also reported as significant obstacles to livestock production. The other common

challenge to the development of crop and livestock value chains was the lack of, or weakness within, organizations, especially farmers' organizations. Crop-livestock value chains have been constrained by the low technical capacity of the stakeholders involved. Common marketing problems included poor market organization, low product prices, and lack of opportunity to access international and/or regional markets. In most cases, access to external markets was an obstacle. Another constraint in crop-livestock value chains was institutional gaps.

Relationships between problems: In the systemic approach to problem analysis we determined interdependencies among problems. Identifying linkages between challenges clearly illustrated the strong relationships among market, inputs, production, and weak knowledge. If the market does not function well, farmers do not have the resources to purchase farm inputs. The limited access to inputs impacts farm productivity negatively and results in fewer products, which are also of lower quality, that are delivered to the market. Analysis also indicated that inputs and capacity-building were strongly related. With limited inputs, capacity-building that relies on the use of inputs will not be vigorous enough to benefit stakeholders. Conversely, inputs without knowledge about how to use them are not useful either. The market is also related to financial resources. If the market does not function, stakeholders cannot find a way to repay their debts. Access to credit has a significant impact on farm productivity. Farmers facing severe capital constraints tend to use lower levels of inputs in their production activities.

All of the challenges identified were linked to organization in some way. Stakeholders without organization impact the system at different nodes of the chain. The system will not function effectively if contributors do not organize themselves well enough to buy inputs, to sell products, to build capacity, and to access credit. If the system overall does not work, there will be less tax revenue and the government will not have as many resources to invest in infrastructure, including agriculture and livestock infrastructure, roads, and more. Examining the relationships connecting challenges places problems within a larger context, illustrating clearly that addressing individual problems will not result in systemic and sustainable change.

Value-chain mapping from the Innovation Platform meeting. Analysis showed that the feed and small ruminant value chains were not well-structured. The primary actors involved in the feed value chain included: (i) feed-input suppliers who controlled the supply of imported and locally produced feed inputs; (ii) feed producers; (iii) feed marketers and traders; (iv) feed processors (in many cases, groups of women who chop cereal grain stover and sell the chopped roughage or mixed feeds locally); and (v) livestock farmers. The main stakeholders involved in small ruminant value chain were: (i) Producers, mainly farmers and groups of women engaged in sheep and goat production and fattening; (ii) Aggregators/livestock traders (private traders who collect animals from farmers or local market); (iii) Meat processors (butchers, small-scale processing units that produce meat and Kilishi, a popular sun-dried and seasoned meat consumed and sold in local markets in Niger); and (v) consumers. Lack of organization, lack of capacity and weak institutions/policy were the main constraint on the development of both feed and small ruminant value chains in Niger and Burkina Faso.

Entry points for action to improve crop-livestock value chains

In Torodi (Niger) capacity-building must address the skills required by farmers and other support services. It should pay particular attention to production technologies, the establishment and support of markets, and the skills farmers need to access credit. Helping farmers organize themselves to access input and output markets, and establishing functional farmer organizations, can serve as strategic entry points. In Maradi (Niger), production and markets were also identified as important entry points, but here access to credit and interest in becoming more commercially oriented were also highlighted. Analysis showed that farmers' organizations should be at the center of all activities for the best impact, since the primary issue underlying all constraints was the lack of organization of the various stakeholders involved in the crop-livestock value chains.

In Burkina Faso (Korsimoro and Sampelga) improving production, resolving market-related problems, and infrastructure and equipment factors should be entry points for innovation platform activities. Planning smart marketing activities has been seen as an innovative way to boost producers' market opportunities.

Discussion [Conclusions/Implications]

Innovation platforms have gained momentum as positive factors in agricultural development. Their strengths lie in the participatory and multi-stakeholder approach, which relies on cognitive diversity and the collective identification of problems, innovation around solutions, new actor constellations, and transition toward improvements of the system (Nederlof et al., 2011). This research has shown that diagnosing problems is key in innovation platforms.

The process of diagnosing problems helps IP participants obtain a solid understanding of the full system and pushes them to approach system challenges in innovative ways, and as a team rather than as individuals operating in isolation. The identification of constraints and opportunities helps to narrow the focus of the platform.

We found that determining the interdependencies among the “problems” provided insights into the systemic challenges crop-livestock systems face. To be successful, all parties need to attend and cooperate in IPs. Building a common vision is an essential step for the success of any IP. In short, the incentives to change behavior need to be very clear. Therefore, interventions must start by addressing the dynamics among the major problems and ensuring that there are functional feedback mechanisms among them. Investments in production must have a clear return in the marketplace. Profit increases drive the adoption of technology, not just increases in production (see Michler et al., 2019).

The most important task in system analysis is to determine which activities must be engaged in a project to improve the flow of information, resources, and interactions among the components and stakeholders in the system. To facilitate this process, our study asked the following questions: ***Who are the stakeholders that can address the problem? What do they need, or what elements must change (information, capacities, resources, linkages), or what needs to change to resolve the root causes of the problems?***

This study illustrates the value of problem analysis within a systems-thinking framework for identifying key entry points for improving value chains. The systems-thinking literature stresses that interventions aimed at the parts, or components, of the system will have limited impact and, at best, result in incremental change. The interactions, integration, and interdependencies among the parts of a system determine its behavior. Therefore, interventions aimed at intersection points are much more likely to bring about transformational change. Constructing influence diagrams that illustrate the relationships among the parts of the system and associated problems reveals the systemic nature of the problems. Embedding these diagrams into conceptual models of the system facilitates the identification of strong leverage points for interventions, avoiding linear reactions to problems.

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