**Operationalizing inclusive innovation: lessons from innovation platforms in livestock value chains in India and Mozambique**

Kees Swaans\*,a, Birgit Boogaarda, Ramkumar Bendapudia, Hailemichael Tayea, Saskia Hendrickxa, and Laurens Klerkxb

\*to whom correspondence should be addressed: k.swaans@cgiar.org

a International Livestock Research Institute (ILRI)

b Knowledge, Technology and Innovation Group, Wageningen University

**Abstract** Various authors have identified the potential relevance of innovation system approaches for inclusive innovation, i.e. the means by which new goods and services are developed for and by the poor. However, it is still a question how best to operationalize this. Innovation platforms are a way of operationalizing interaction and learning among actors, and enable reshaping of relations and institutions. This paper explores the formation and functioning of innovation platforms with the aim to provide lessons on the conditions and factors that play a role in making them effective; it draws on a small-ruminant value chain project in India and Mozambique, making use of document review, detailed process reports, outcome mapping, and project team reflections. In addition to various structure and process components of inclusive innovation known from the literature, the study shows the importance of social organization, representation, and incentives to ensure a ‘true’ participatory innovation process, which is based on demand and embedded in the context; incremental change through so-called innovation bundles (i.e. combination of technical, organizational and institutional innovations) and reflexive learning (systematically challenging constraining factors) are critical to this. Furthermore, local institutions embedded in norms and values were crucial to understand people’s decisions. Due to weak linkages between value chain actors, (external) innovation brokers have a vital role to play to facilitate the innovation process. Overall, innovation platforms are a promising model for inclusive innovation, but they require a careful assessment of and adjustment to the (institutional) context.

*Key words: innovation system approach, multi-stakeholder platforms, AR4D, agricultural development, agricultural systems*

1. **Introduction**

Over the last decade, growing populations, urbanization and economic growth in developing countries have led to an increased demand for high value agricultural commodities, including livestock (Delgado et al. 1999; Hall et al. 2004; McDermott et al. 2010). Growing local and informal markets provide opportunities for the poor, but also various challenges; smallholders are confronted with problems regarding inputs, such as feeds, breeding and health service delivery, while outputs are constrained by weak linkages between farms and markets, and a lack of supportive policies (McDermott et al. 2011).

The means required to develop and deliver new goods and services incorporating the needs and interests of the poor is known under different names such as ‘pro-poor innovation’, ‘grass roots innovation’, or ‘under the radar innovation’, but in this paper we will refer to ‘inclusive innovation’ (IDRC 2011; Foster and Heeks 2013). There is an increasing interest to use a ‘value chain approach’ to reach development objectives, but market failures often result in sub-optimal performance of the chain and limited participation of the poor (Vorley et al. 2012).

In recent years, innovation platforms – spaces which allow individuals and organizations to come together to address issues of mutual concern and interest – have been promoted as a mechanism to stimulate inclusive innovation in the context of agricultural value chains (van Rooyen and Homann-Kee Tui 2009; Nederlof et al. 2011; Ayele et al. 2012; Nederlof and Pyburn 2012).1 Innovation platforms are based on innovation systems thinking: a holistic and comprehensive framework for understanding innovation as emerging from a broad network of dynamically linked actors within a particular institutional context (see Klerkx et al., 2012 for an overview of evolution of this thinking in agriculture).

Although various authors have identified the potential relevance of innovation system approaches for inclusive innovation it is still a question how best to operationalize this (see Foster and Heeks 2013). By investigating the formation and functioning of innovation platforms in a project on pro-poor small ruminant value chains in semi-arid areas in India and Mozambique, we hope to provide some key lessons on the conditions and factors that play a role in making them effective. This can yield insights in relation to several of the structure and process elements listed by Foster and Heeks (2013) essential to inclusive innovation, such as incorporating local needs, making research demand driven, fostering contextualized learning, rearrange formal and informal relationships, and foster institutional change to counteract negative impacts of formal and informal institutions.

This paper is organized as follows. First a description is given of the conceptual framework in section two, before introducing the case study in section three. In section four and five, we will present the methodology and main findings. Finally, the findings will be discussed in relation to key elements of inclusive innovation in section six.

1. **Conceptual framework**

This section first discusses what innovation platforms can mean for inclusive innovation by relating key principles of innovation platforms to concepts of inclusive innovation; we will then develop a framework based on these principles for analyzing innovation platforms in terms of their formation and functioning.

* 1. **Innovation platforms and inclusive innovation**

Innovation can be stimulated by learning emerging from relevant networks of actors working together based on some mutually agreed institutional arrangements. In generic innovation literature, concepts such as strategic alliances and innovation networks have been used to indicate this process (Pittaway et al. 2004). In the agricultural sector, such multi-actor arrangements have been captured using different terminologies and in different contexts, such as coalitions (Biggs 1990); innovation networks (Leeuwis and van den Ban 2004), Public Private Partnerships (PPP) (Spielman et al. 2010) and innovation platforms (Adekunle and Fatunbi 2012; Nederlof et al. 2011). However, most of these are analytical concepts instead of approaches for intervention, with the exception of Innovation platforms and PPPs (Kilelu et al. 2013).

There are several principles that can be derived from innovation systems literature for well functioning innovation platforms (see Njuki et al. 2010; Ngwenya and Hagmann 2011; Adekunle and Fatunbi 2012; Nederlof et al. 2011; FARA 2009): they are inclusive and follow participatory processes; there is a common vision and an agreed set of operating modalities; members are committed and have adequate incentives to participate; diversity of members capacities, resources, skills, knowledge, interests and needs are acknowledged; there is an efficient and effective process of communication, knowledge and information sharing; there is joint identification of challenges and opportunities and options to address them though collective action; and there is an appreciation for learning by doing and monitoring and evaluation. Furthermore, for innovation platforms to be effective they need to have a basis in trust. However, innovation platforms usually do not emerge by themselves, but interactions between members need to be facilitated and coordinated (Leeuwis and van den Ban 2004).

In relation to the structure and process components of inclusive innovation, innovation platforms are a way of operationalizing interaction and learning among actors in pro-poor value chains, and enable reshaping of relations and institutions (see table 1)

**Table 1: Innovation platforms in relation to structure and process components of inclusive systems of innovation (after Foster and Heeks 2013)**

|  |  |  |
| --- | --- | --- |
|  | Inclusive systems of innovation | Innovation platforms |
| Scope | Development as socio-economic inclusion. | Identification of development challenge; development of a common vision. |
| Innovation | Incremental innovation with a focus on diffusion processes (local needs oriented, demand and context driven, non-technical innovation, reverse innovation). | Join problem solving process based on key constraints and opportunities and by acknowledging and making use of the diversity of members; enhance innovation through (the development of) incentives. |
| Actors | Main focus on: low-income producers and/or consumers; non-traditional, less formal, demand-side innovators, chain of intermediaries, linking supply and demand. | Selection producers based on socio-economic characteristics; identification of other actors based on scoping and analysis; membership not fixed, but dynamic, based on need; innovation brokers as intermediary facilitating platform formation and functioning. |
| Learning | Contextualized (supply, demand, other); learning by interacting and using and doing (learning about diffusion and use; leaning about wider social processes including non-instrumental processes; survival and utility-maximization as guides). | Learning through communication and information exchange among actors and experimentation and/or implementation; leaning based on systematic and iterative process of action, monitoring, reflection, and adaptation. |
| Relations | Necessity (but also limitation) of informal, loose, but socialized relations. | Establishing linkages through interactions between actors inside the platform and other informal/formal actors necessary to achieve the overall objective of the platform. |
| Institutions | Complex institutional terrain of informal and formal; indirect impact of core, formal institutional forces; importance (including potential negative impact) of informal institutions at local level. | Identification and addressing key institutional constraints and opportunities through joint analysis; institutions can be informal and formal. |

* 1. **Key issues in IP formation and functioning**

The functions of an innovation platform can be categorized into two – establishment and maintenance functions, which are directly related to IP formation and functioning (see Njuki et al. 2010). IP formation refers to a phase of design and structuring of the platform, while IP functioning refers to a phase of learning and innovation through regular and iterative planning, action, and reflection, which may lead to shifts in focus and priority. Below we describe these two phases in more detail, in order to derive key issues for analyzing IP formation and functioning.

**IP formation**

Wennink and Ochola (2011) distinguish three steps in the formation of innovation platforms: scoping, analysis and planning. Every step has some key aspects that need to be addressed and which are related to the key principles of well-functioning innovation platforms*.* ‘Scoping’ refers to the initial effort to narrow down the platform’s topic or focus, and to better understand it, along with the context where the platform is to be inserted; this may affect the level of operation (local, national, etc.), the type of stakeholders and the organization and governance of the platform. The ‘Analysis’ contributes to the identification of the knowledge, skills and interests – including capacity needs, and joint analysis of problems and opportunities related to the topic of the platform. It often includes a stakeholder or network analysis to map the linkages between the different actors in the agricultural innovation system to make sure that all key stakeholders – including the poor and women – are invited (see also FARA 2009). Finally, ‘Planning’ is related to a further narrowing down of main points raised during the analysis and agree on who must do what and when and the development of an action plan (FARA 2009; Nederlof et al 2011); this also refers to decisions regarding the modalities of the platform, how exactly and by whom it will be governed, and the use of resources.

**IP functioning**

After rules and modalities for the platform have been set, a routine of regular IP meetings with feedback of agreed upon actions becomes established (see Njuki et al. 2010; Nederlof et al. 2011); there are a number of issues that are essential for a smooth operation of a platform and which are in line with the key principles mentioned before. First, it is important to ensure that members of the platform actively participate, are committed and feel a sense of ownership of the process. An effective and efficient process of information sharing and communication needs to be in place, taking into account the diversity in knowledge, skills and interest of actors. To stimulate a culture of continuous learning, an iterative process of planning, action, and reflection has to be established (Adekunle and Fatunbi 2012); which is further enhanced through human and institutional capacity building. Facilitation and management has a critical role to play (Ngwenya and Hagmann 2011); often this involves a transition from an external led initiative to a self-organized platform; resource mobilisation, both in terms of human, physical and financial resources, as through endorsement and support will be crucial to sustain the process beyond the lifetime of the project.

Key parameters for the analyzing IP formation and functioning are summarized in table 2.

**Table 2: Key parameters for analyzing IP formation and functioning**

|  |  |
| --- | --- |
|  | Key parameters |
| IP formation | * Inclusion and representation
* Focus, tasks and roles
* Identification of constraints and opportunities
* Inventory of knowledge, skills, interests
* Organizational structure and governance
* Resources
 |
| IP functioning | * Participation, commitment and ownership
* Information exchange and communication
* Use of diversity in knowledge, skills, interests
* Systematic planning, action, and reflection
* Capacity building
* Facilitation and management
* Resource mobilization
 |

1. **The imGoats project: a case description**

‘ImGoats’ is a project on small ruminant value chains to increase income and food secu­rity among the poor in semi-arid areas in India and Mozambique. The project was implemented from January 2011 to June 2013 (30 months) with the aim to transform goat production and marketing to a sound and profitable enterprise and model that taps into a growing market. The main target beneficiaries of the project were poor goat keepers, especially women and other marginalized groups. Other beneficiaries included goat value chain actors (VC actors) such as small-scale traders and providers of inputs and services (ILRI 2010). The overall project was managed by ILRI in partnership with BAIF and CARE because of their experience and interest in the innovation system and value chain approach. An ILRI post-doctoral researcher was based in each location to support the project team with research and documentation.

The specific project area in India was Rajasthan State with 2600 target households in Jhadol and Sarada blocks of Udaipur district. These households constituted about 240 goat keepers groups, with 10-15 families per group. In Mozambique, the project targeted 500 households in Inhassoro district of Inhambane Province, of which 25% were female headed households; this represented about 3800 direct beneficiaries in 18 villages. Goat keepers were organized in 23 producer groups. Key characteristics of the project sites are described in table 3.

**Table 3: Key characteristics of the project sites**

|  |  |  |
| --- | --- | --- |
| **Topic**  | **Udaipur district – Rajasthan State – India\***  | **Inhassoro district – Inhambane Province - Mozambique**  |
| Size (km2) | 13,419 | 4,746 |
| Population density (number/km2) | 196 | 11 |
| Project households | 2,595 | 504  |
| Literacy levels  | 58.62% | 51% (for Mozambique; no info on province or district) |
| Average annual rainfall | 600mm | 600–800 mm |
| Livelihoods | Small land and livestock holdings (subsistence agriculture); wage labor important source of income | Small land and livestock holdings (subsistence agriculture); crop production main occupation; cattle numbers very low |
| Main crops  | Maize, wheat, barley, chickpea, rape and mustard | Maize, groundnuts, beans, cassava, millet |
| Goat population | 1,093,432 (about 200,000 in project area)  | 44,222  |
| Average goat herd size | 6.2 (range 1-16)  | 8.4 (range 1-30) |
| Marketing practices  | During main festive period (October to December) and ad hoc throughout the year to meet household demands | During festive period (December) and ad hoc throughout the year to meet household demands |
| Nearest goat market | 50Km (Udaipur)  | 200Km (Massinga)  |
| Main goat value chain constraints | Lack of improved bucks; limited access to animal health services; low number of goats available for sale; limited knowledge about improved husbandry practices | Low number of goats; limited access to animal health services; lack of organization of producers; lack of infrastructure; limited knowledge about improved husbandry practices |
| Main VC actors  | Producers ; CAHWs; local traders/butchers; long distance traders; local pharmacist; Animal Husbandry Department; BAIF; research (ILRI, veterinary college)\*\* | Producers; CAHWs; local traders/butchers; local retailer; District (SDAE) and Provincial (SPP) Veterinary Services; CARE; research (ILRI)\*\* |

\*The imGoats project worked in 2 of 12 blocks of Udaipur district; \*\*CAHW = community animal health worker

Source: imGoats baseline studies 2012 2

Innovation platforms were used to facilitate communication and collaboration and promote joint action and innovation among the actors along the value chain. They followed an iterative process and met at regular intervals to discuss and implement opportunities to improve markets, production and related policy issues (following van Rooyen and Homann-Kee Tui 2009). Figure 1 provides an overview for both India and Mozambique of the key issues discussed or decided in IP meetings, and the main actions resulting from those in terms of activities undertaken by IP members, research for and on the innovaton platform, and capacity building to support initiated activities.





**Figure 1: Timeline of IP meetings (O) and related activities (implementation, research and capacity building) in Rajasthan, India (A) and Inhassoro district, Mozambique (B)**

In both countries producer groups met regularly with the community animal health workers (CAHWs) and there was an increased interaction with other VC actors. In India, goat mortality rates dropped from 30 to 40% in 2011 to around 10% in March 2013. In Mozambique the producers also reported a sharp decrease in mortality figures. This is likely related to improved treatment of animals, but improved goat management practices may also play a role. In Mozambique, communal grazing areas were established in 8 out of 18 communities with an estimated 100 out of 504 producers using these areas. Producers were also building improved shelters for goats. The number of goats kept increased by at least 1 or 2 animals per household in India. There is also anecdotal evidence of increased herd size among producers in Mozambique, with some reporting an increase of more than 10 animals.

Data from India further shows that producers were selling more animals: from 1 animal on average in 2011 to 2 in 2013, and they received higher prices as result of increased weight and castrating the males. In Mozambique, producers were generally interested in selling animals but a lack of local demand of goats has made the situation difficult. In both countries, the organization of goat markets was tried with mixed results and alternative sales strategies were explored (in India producers started transporting animals to Udaipur; in Mozambique a private investor and a slaughterhouse were approached).

1. **Methodology**

The research design is a comparative case study based on the imGoats project. A case study allows for an in-depth understanding of the dynamics in the innovation process and multi-stakeholder collaboration (Yin 2003). Moreover, by analyzing the innovation process, more insight will be gained on the factors and conditions that make innovation platforms effective. The comparison of platforms in two very different settings further enhances the analytical power of the study. Data, mainly qualitative, was collected throughout the project duration (from 2011 to 2013).

Various methods were used to analyze IP formation and functioning: review of project documents, IP process reports, outcome mapping, and project team reflections. Each of these will be shortly described below:

* *Review of project documents* Various project documents were reviewed to better understand the intention and actual implementation of the project, the context in which the innovation platforms were implemented and the specific characteristics of the value chains (i.e. through project proposals, progress reports, baseline and value chain analysis reports, and other reports on specific topics).
* *IP process reports* To document the IP process, detailed reports were made from the IP meetings by the project teams in each site (i.e. project staff from BAIF/CARE and a post-doctoral researcher employed by ILRI). Reports included records on participation, the issues discussed, feedback from field activities, and decisions taken.
* *Outcome mapping* Behavioral changes among VC actors (in terms of relations, practices, and activities) were documented using outcome mapping (Earle et al. 2001). In Mozambique these were documented and discussed in two monthly project team meetings; in India this was done at mid-term and end of project.
* *Project team reflections* Regular reflections were conducted by the project team in each country to reflect on progress made and underlying reasons, in particular during a mid-term evaluation in July 2012 and towards the end of the project in April 2013.

Qualitative data were subjected to thematic content analysis based on the key elements of the analytical framework. The enhance validity of the data triangulation of various sources and methods was applied. Data analysis and preliminary findings were discussed in-depth amongst the authors. In the course of theorizing, challenging and making sense of the data observed in the two sites, we have endeavored to reveal the mechanisms, factors and conditions that underlie the performance of the innovation platforms. Two of the authors (RB and BB), resided in the research area throughout the project duration, so that what took place was encountered first-hand and could be well understood in relation to the context.

1. **Findings**

The main findings of the study are presented according to the different stages of the IP implementation process, i.e. formation and functioning. The influence of contextual factors is mentioned where appropriate and relevant. In doing so, we have taken a ‘birds eye’ view to describe the key issues that were at play.

* 1. **IP formation**

As mentioned in the analytical framework, inclusion and representation, a clear focus, tasks and roles, the identification of constraints and opportunities, an inventory of knowledge, attitudes and skills, organizational structure and governance, and resources are important aspects to consider during IP formation. They will be discussed below.

**Inclusion and representation**

Critical to the IP formation process are the inclusion of the poor and the representation of key actors along the chain. The VC actors in India and Mozambique were identified by respectively BAIF and CARE based on previous experience and consultation (a planned baseline and value chain analysis were postponed till after the establishment of the platforms due to the late start of the project). Actors were categorized as producers (producers and CAHWs), input and service providers (CAHWs, retailer/pharmacist and veterinary services), post production actors (mainly traders) and enabling agencies (community leaders, government agencies, CARE/BAIF and ILRI) (in some cases, actors were part of more than one group; see also table 3).

The main challenges in India were the large geographical and the high number of actors (producers and traders). For logistical reasons, the number of goat keeper groups participating in the innovation platform was limited to those in the radius of 10-12 km from Jhadol town (IP meeting location). This resulted in 18 project villages being part of the platform, covering about 1000 producers (88 groups). All participating households (9% female headed) belonged to the Scheduled Tribes, which are historically disadvantaged people below the poverty line. Traders were identified based on their interest and through (informal) leadership among traders. In Mozambique the innovation platform covered the entire project area (Inhassoro District); producers (504 in total; 32% women) were organized in 23 groups and selected based on having goats and who had an interest in a goat production and marketing project. There were few local traders and private investors in Inhambane province.

In both countries there was a clear mechanism for representation of the producer groups in the platform. In India, producer groups were represented by two representative goat keepers nominated by community members in each village, while CAHWs (serving 100 households, or about 7-10 groups, each) participated as well. In Mozambique, each producer group was asked to elect a representative and a CAHW, which was done in a democratic and participatory way.

**Focus, roles and tasks**

Innovation platforms are most effective when they have a clear focus with identified roles/tasks for its members. The vision and objective were conceptualized by the project partners at the start of the project and shared at the first IP meeting, but at least in Mozambique not all actors had the same understanding, It was initially difficult for goat producers and other community representatives to think beyond ‘production’ and to focus on the whole value chain with a commodity focus. During the baseline survey in Mozambique – which was initiated after the introduction of the innovation platforms, it became apparent that goat husbandry, which was a low input-low output side occupation in the area, was closely intertwined with crop production at the ‘*machambas’* (agricultural subsistence plot), the main source of food security at the household level. Hence, what was described as an “activity with low input, carried out at an ad hoc, risky and informal basis with little benefit to the communities” (ILRI 2010), may in fact carry less risk than engaging in an adventure with unknown outcomes.

The lack of common vision building in both countries may also explain that while actors had a clear understanding of their ‘position’ in the value chain, their roles and tasks (how each actor can contribute to a growing market with win-win situations) were insufficiently explored. For example, although CAHWs had a clear role in provision of services (for payment) to producers (in terms of animal treatment, provision of information, aggregation of animals), the role of traders and government agencies was rather passive/supportive, instead of taking a pro-active role, e.g. by providing information on markets and consumer preferences and creating incentives for access to inputs and services.

**Identification of constraints and opportunities**

The identification of constraints and opportunities helps to further narrow down the focus of the platform. In both countries constraint and opportunity identification was done in a participatory manner facilitated by the project partners. In the first IP meeting in India and Mozambique, the IP members were divided into groups: producers, post production actors, input and service providers, and enabling agencies. Each group mapped out their issues that needed action, followed by a prioritization process to select the most important issues. The issues identified were related to production (animal health, husbandry practices, infrastructure) and marketing (through organization of producers). These issues were seen as closely interlinked that needed to be addressed concurrently; in later stages also other issues emerged as key constraints for production (e.g. lack of feeds and water) and marketing (e.g. transport problems, lack of cash among traders, lack of processing facilities); it showed the importance of a flexible approach to deal with various interrelated issues simultaneously.

**Identification of knowledge, attitudes and skills**

As knowledge, attitudes and skills have implications on planning and problem solving, it is important to make an inventory of knowledge/skills among actors across the chain at the start of the project. The initial assessment was based on previous experiences of BAIF/CARE; this was later supplemented with information from the baseline study, providing more insights in the context and the specific needs of producers. In both countries producers had limited knowledge and skills of goat husbandry practices and had had minimal training on production and marketing, which made it challenging to move from irregular ad hoc emergency sales to pattern of regular sales. No assessment was held or planned on knowledge and skills among other VC actors. Although a value chain analysis was conducted later in the process, this was mainly focused on market constraints and opportunities.

**Organizational structure and governance**

In both countries innovation platforms were newly established, as there were no comparable existing structures. BAIF/CARE and ILRI took the lead at the initial stages in facilitating and coordinating the IP meetings, but mechanisms were put in place to hand this over to local actors. In India, it was envisaged that CAHWs or active goat keeper representatives would take over this role after members would have a better understanding of the process. In Mozambique, at the first IP meeting an IP secretariat was elected which consisted of four functionaries: President, Vice President, Secretary and Councilor. The frequency of IP meetings was tentatively set by the IP members at an interval of every two months. In Mozambique, the location of the meetings was not fixed, whereas in India it was always the same location.

**Resources**

Resources for the platform were provided by project funding through BAIF and CARE, which included mainly human resources, but also expenses incurred on transportation and food for participants; members of the IP secretariat in Mozambique also received credit for mobile phones to mobilize members for upcoming meetings. In Mozambique, travel costs were provided for government representatives while other participants were actively collected to reach out to possible IP members whose locations were spread out. It was the intention to stop providing transport after the first meeting, but in practice this decision was only taken in the fifth meeting after a discussion on sustainability of the platform among the IP members.

The key findings of the IP formation process are summarized in box 1.

|  |
| --- |
| **Box 1. Summary of the IP formation process*** The IP formation process was ‘rather’ inclusive; members were representative of VC actors involved; mechanisms were put in place for representation of producer groups.
* The vision and objective were conceptualized by the project partners; in Mozambique, producers initially did not link the platform with commercialization, but with production; potential tasks/roles of VC actors were insufficiently explored.
* Problem identification was ‘rather’ participatory with focus on production and marketing; key constraints along the chain were closely interlinked.
* Assessment of knowledge/skills among producers and CAHWs was initially based on project partners’ experience, and later more thoroughly assessed through baseline studies; no assessment was planned among other VC actors.
* Project partners took lead in facilitation and management; mechanisms were established to hand this over to local actors.
* Resources were provided through project funding; in Mozambique, provision of transport was a main of issue of debate due to the spread out locations of the project villages.
 |

* 1. **IP functioning**

After the rules and modalities of the platform have been set, a routine of regular IP meetings with feedback on agreed actions becomes established. Key processes that determine IP functioning are: participation, commitment and ownership; information sharing and communication; use of the diversity of knowledge and skills; a systematic process of planning, action, and reflection; capacity building; facilitation and management; and resource mobilization. In this section we assess how these processes were designed and applied.

**Participation, commitment, and ownership**

For a well-functioning IP, the members need to participate actively, be committed to a common cause, and perceive the process as their own. Project reports showed that there has been a continuous effort to keep different VC actors involved. In both countries producers were well represented in the meetings, but there was also large inconsistency in terms of who participated. In India, other activities and events (onset of cropping season, religious festivals) interfered, while in Mozambique the change in meeting locations played a role. Moreover, in Mozambique the average number of producers dropped after the fifth meeting, most likely due to a combination of the decision to stop providing transport and unclear incentives for participants; when in the eighth IP meeting a private investor was involved with potential to buy goats, the number of producers – coming to the meeting by their own transport – increased again. CAHWs and government officials have been active throughout the process; BAIF and CARE worked closely with the CAHWs as service provider and link between the platforms and producer groups, and maintained regular contact with the government agencies.

The involvement of traders and women was problematic. In India, the traders who participated in the first IP meeting made it clear that they would be available in case there are goats to be sold but they did not see the need for their participation in every meeting. Also in Mozambique traders were initially interested and stimulated the organization of producers, which allowed them to buy an agreed amount of goats at certain dates. However, after the first few goat fairs, their interests faded. Also participation of women in the IP meetings had been low. Women were mainly found in the producer groups and not among other VC actors. In India, low participation was generally due to the local cultural setting whereby traditionally women do not come out and participate or speak before men. In Mozambique, initially women participated but the number decreased after few IP meetings. This may have been related to an increased interest of community leaders to participate, possibly replacing the female participants as representative for the community but also the strong focus on commercialization and marketing – which are considered men’s tasks – and domestic chores may have played a role.

Although various VC actors have been very committed in the platform, not all of them perceived the platform as their own. The ownership of the IP process appears to be more with some of the individuals who have been closely involved with activities such as CAHWs and so called model farmers (farmers selected for demonstration purposes in Mozambique), although also other producers have shown an increased appreciation for collective action.

**Communication and information exchange**

To enhance innovation, effective and efficient communication and knowledge sharing is important, not only between IP members but also beyond the platform. In both countries, information on goat management practices and marketing, constraints and opportunities were well communicated and shared among VC actors within the platform, but also with producer groups and other VC actors. In India, CAHWs were the main link with the producer groups, while in Mozambique both CAHWs and model farmers took a leading role. So far, transferring information from the innovation platform to producers during monthly group meetings has been good, but weak on bringing issues for discussion to the platform; also sharing of information within the producer groups did not always go well. Still, as result of the interventions, information flows between producers and government was strengthened, with community leaders and CAHWs acting as linkages in Mozambique, while in India CAHWs started to communicate directly with the veterinary officer and other VC actors. Information flow with traders has been weak so far – although slightly better in India compared to Mozambique, while both BAIF and CARE project staff remained playing a key role in communication with other VC actors.

**Use of diversity in knowledge and skills**

There were several specific actions throughout the process that can be related to the use of knowledge/skills of different VC actors. In India, IP meetings were used to tap into the knowledge from the veterinarian to prepare action plans based on issues that emerged during the meeting; it also exposed CAHWs to a systematic approach to dispensing medicine (e.g. faecal sample tests to identify wormloads before taking up deworming). Apart from this, information from the pharmacist was also used to understand what medicines were locally available and what could be ordered in bulk in case the CAHWs wanted to make the purchases collectively. Also in terms of marketing, awareness among the producers and CAHWs increased because of interactions with traders (even if limited) and while preparing action plans to conduct goat fairs or organizing exposure-cum-sale visits to markets in the nearest town. In the case of Mozambique, producers’ knowledge and practices on grazing areas were assessed for the development of communal pasture, while subsequently local government, community leaders and CAHWs provided knowledge for the identification and legislation of communal pasture areas. In addition, five model farmers were identified to share their experiences to other producers, e.g. with improved shelters and the provision of water to goats on a regular basis. In general though there was less attention for the diversity in knowledge and skills within each group of VC actors and how these could have been exploited.

**Systematic planning, action and reflection**

In both countries IP meetings were characterized by a systematic and iterative process of planning, action, reflection, and adaptation. In India, village-wise action plans (e.g. on disease diagnosis and animal treatment) were prepared with clear accountability on who does what, when and what support was needed. The implementation of these plans and results were reviewed in the subsequent meeting, before a next round of follow up actions was planned. In Mozambique, for some activities (e.g. goat fairs) dates, locations and tasks were planned during the IP meeting, whereas for others (e.g. communal grazing areas), planning was more flexible and adapted in response to daily activities of project staff and IP members. In general, technical issues were concurrently addressed with issues of social organization and institutional issues. In the case of Mozambique there were also regular reflections with members of the platform on the IP process; although increased insight did not lead to drastic changes in terms of goals and strategy, some changes were made in terms of the design (e.g. it was decided to stop providing transport and choose for a central location for the meeting after the fifth meeting).

**Capacity building**

Capacity building was one of the core elements to further improve the innovation process. Trainings were based on existing experiences from BAIF and CARE, which were further informed by the baseline surveys and issues that emerged during the IP process. In both countries, trainings focused mainly on producers and CAHWs. Gaps in technical knowledge were addressed through technical trainings and refresher courses with support from government training institutes and project partners. In both countries, regular visits by CAHWs and exchange and exposure visits were important to improve awareness of good goat husbandry practices and marketing. However, also the exchange of information between members of the platform was seen as an important source for learning. These were often informed by regular feedback of research results, e.g. on baseline surveys and studies on specific topics; crucial in this respect has been the timely feedback and the development of easy understandable flyers with key findings and graphics.

What has been lacking though is the identification of training needs among other actors. This may have negatively affected the innovation process. For example in the case of Mozambique, it was assumed that traders had interest in buying goats and a certain degree of entrepreneurial skills. A consumer study in Mozambique revealed however, that local traders were largely unaware of consumer preferences and behaviour. Based on this and in retrospect, it can be questioned if more attention should have been paid to traders, e.g. by providing specific trainings on entrepreneurial skills. Training is a key tool for capacity building, but also for trust building and to create commitment and ownership, what was clearly illustrated by the commitment of the CAHWs to the project.

**Facilitation and managment**

The management process within the IP can be seen as the role of the innovation brokers, defined as the persons and organizations that catalyse innovation bringing actors together and facilitating their interaction (Klerkx et al. 2009). BAIF/CARE and ILRI were responsible for the implementation and facilitation of the innovation platform. However, in addition to the main purpose of innovation brokers – to create linkages and facilitate multi-actor interaction in innovation, they also conducted activities related to strategic networking, technical backstopping, mediation, advocacy, capacity building, and reporting. The ILRI post-doctoral researchers played a significant role as part of the project team in the organization and support of activities, and in terms of research and documentation. The research element was new to BAIF and CARE and highly appreciated; they mentioned that it had played an important role in better understanding the local context and the identification of constraints and solutions.

The multiple roles of BAIF/CARE and ILRI within the project revealed their active dynamism that allowed them to adapt to new challenges. However, BAIF/CARE and ILRI did not only act as innovation broker in both countries, it also included ‘constructing’ the goat value chain, raising questions to what extent the different VC actors (especially traders) felt mutually dependent and whether more emphasis should have been paid to enhance this perception during the inception phase (see Leeuwis 2000).

Furthermore, since the beginning of the project, BAIF/CARE and ILRI expected that the CAHWs and the IP secretariat would get a strong role in the IP facilitation and management, however, in practice – despite training and personal coaching – they still needed a lot of guidance. For these reasons, most of the decisions related to the design of the platform were influenced by former experiences of BAIF/CARE and ILRI. These experiences allowed a quick start of the project, mainly regarding the formation of the producers groups and the link with some of the other stakeholders. However, in Mozambique previous experiences with other projects (e.g. on cattle) were not always a good guideline for working with goat producers; this also applied for the use of the value chain approach based on past ILRI experiences.

**Resource mobilization**

Resource mobilization is a strategic concern for the IP functioning and its continuity. As the IP reports reveal, the project assumed the costs of the IP organization, expecting that the members would later contribute their own resources to sustain the platform. However, IP facilitation and management were highly resource intensive, especially in terms of human resources; it is important to emphasize the innovation platform as a process, with meetings and follow activities in between the IP meetings. In India, BAIF continued to reimburse the expenses for public transport (which was very nominal). In Mozambique, IP members made suggestions to create a fund to sustain the platform. This suggestion, however, was not put into practice.

Extra efforts were made to obtain necessary endorsement and support. In India, a separate meeting was held with community leaders on request of the CAHWs. They felt that it would be easier to organize activities when community leaders would understand the purpose of the project and the innovation platform. In Mozambique, a meeting with community leaders and representatives of producer groups was held after the third IP meeting to get their support, as decisions taken in the platform were not followed up at the field level. Apart from this, strategic linkages were made in both countries with government agencies. So far, however, the platforms are too weak to continue on their own and there were no clear strategies (or resources) for continuation.

The key findings on the IP functioning are summarized in box 2.

|  |
| --- |
| **Box 2. Summary of the IP functioning process*** CAHWs and government staff were actively engaged, but producers’ participation was inconsistent; it was difficult to involve traders and women.
* Information flow from platform to producer groups was good, but weak in bringing issues back for discussion to the platform; CAHWs formed an important link with producers, while project staff maintained relations with other actors.
* The innovation platform tapped into the knowledge/skills of VC actors; especially in India, knowledge/skills from the veterinarian and pharmacist were used to improve interventions; diversity in knowledge/skills within each actor group remained largely unexplored (except for identification of model farmers in Mozambique).
* Problem solving followed a systematic process (with technical, organizational and institutional elements); in Mozambique stronger reflection on IP process.
* Capacity building through training and exposure/exchange visits was important, but main focus on producers and CAHWs; IP meetings were also recognized as form of capacity building through systematic reflection.
* Innovation brokering included multiple diverse tasks; start of handing over facilitation to CAHWs (India) and IP secretariat (Mozambique), but their capacity remained weak; the contribution of research was highly appreciated.
* Extra meetings were held to get endorsement and support from community leaders and producer groups, but no clear strategies (nor resources) for continuation after project end.
 |

1. **Discussion and conclusion**

The study showed that innovation platforms can enhance production and marketing by establishing linkages between small holders and other actors in the value chain. However, the changes in terms of productivity through technical and service delivery interventions and sales were clearer in the case of India, compared to the case from Mozambique. To gain more insight in how innovation system approaches can be made more effective for the poor, we analyzed the implementation of innovation platforms in terms of IP formation and functioning; here we would like to discuss the key findings of the case study in relation to key elements of inclusive innovation (i.e. actors, innovation, learning, relations, institutions, and scope; see table 4)

**Table 4: Key issues in IP formation and functioning derived from the case study**

|  |  |
| --- | --- |
|  | Key issues in IP formation and functioning |
| Actors | * Rules and regulations (i.e. design) of the platform need to be adapted to include the poor.
* Representation of different type of VC actors is critical (but flexible for individual members).
* Due to weak linkages between VC actors, intermediaries play critical role.
 |
| Innovation | * Importance of incentives to ensure demand driven and contextualized innovation process.
* Flexible approach to support incremental change and bundles of innovation (technical, social, institutional).
* Social organization of producers important for learning and demand articulation.
 |
| Learning | * Learning through interaction and learning by doing; (technical) learning through conventional training, demonstration and exposure.
* Reflexive (transformative) learning by challenging (underlying) critical constraints; important role for research.
* Learning/alignment of VC actors to work towards a common cause.
 |
| Relations | * Important to nurture socialized informal (flexible) relations to foster innovation.
* Necessary to ensure some consistency in (more formal) relations to reduce risk and uncertainty.
* Innovation brokers are critical to link producers to the innovation platform and to establish linkages between VC actors (there may be different intermediaries).
 |
| Institutions | * Formal institutions (and change thereof) are important to support the innovation process.
* Informal institutions such as trust and norms and values are important for people’s behavior, and may require specific methods to address them.
 |
| Scope | * Scoping /analysis of context and development challenge is critical before implementing an innovation platform.
* Actors need to feel mutually dependent before engaging them in a process.
* Take into account diversity among target groups; may result in different focus.
 |

When we look at the type of actors that were or need to be involved, there are few key issues worth mentioning. First of all, there is the issue of inclusion and representation. Rules and recruitment of participants may unintentionally lead to exclusion, rather than inclusion (see Swaans et al. 2008). For example, in India, the decision to have the meetings in Jhadol town, made it difficult for women to attend. Also the focus on marketing of goats seems easier for those who are better off, such as model farmers in Mozambique. The design and implementation of innovation platforms needs to be adapted to and negotiated with the intended beneficiaries. Furthermore, the study showed that especially in Mozambique, the value chain was dependent on a limited set of actors (e.g. in the case of traders) and made it highly vulnerable. The weak linkages between various actors of the value chain make the role of an intermediary for innovation brokering at the initial stages essential.

Innovation in the platforms was strongly demand and context driven. Innovations were not necessarily new, but they were new in the context. Technical innovations were important and made a big difference (e.g. animal treatment, new management practices); but critical to their success was the extent to which these were nurtured and aligned with changes in ways of organization (producer groups, communal grazing areas, health camps and fairs) and institutions (legislation, rules) (see also Kilelu 2013). Organization is especially important at the producer level; not only to reach economy of scale (through aggregation of animals), but also to stimulate learning and for better demand articulation. A key factor for innovation is the issue of incentives; although this may have been clear for producers, it was less clear for traders/butchers, and shows the importance of the development of business models among the actors in the chain (following Ngwenya and Hagmann 2011).

Learning is critical to any innovation process. Besides the importance of learning through interaction and learning by doing, there were several other types of learning that were important. As knowledge among producers was very limited, conventional learning through training played an important role, including learning through exposure and exchange visits. A form of learning not often referred to is reflexive (or transformative) learning (Van Mierlo et al. 2010), i.e. the critical reflection on internal and external factors that constrain people’s lives through a systematic process of action and reflection; research can play an important role to reveal these critical factors. Furthermore, learning is important across the chain to ensure that actors are aligned and working towards a common cause, and which may provide an incentive for participation.

In terms of relations, innovation platforms need to be connected to a system that allows for information exchange, experimentation and learning among producers, e.g. through producer groups (see also Ayele et al. 2012). In the two case studies communication and information exchange among actors within the platforms was well organized, but it proved more difficult to extend this beyond the platform, especially the producers groups. The role of communal animal health workers as a ‘broker’ or ‘linkage’ between the innovation platform and the producers groups was critical. In Mozambique, also model farmers played an important role in some communities in mobilizing producers. Although informal socialized relations are important to keep the platform dynamic and able to respond to changes, some form of consistency is desirable to develop reliable relations to reduce uncertainty and risk. Hence, while the study showed the importance of intermediaries to link producers to the platform (e.g. through CAHWs), it also showed the importance of innovation brokers to establish relations with other VC actors.

This brings us to the issues of institutions. Formal institutions were important to support the innovation process, but even more important were the informal (local) institutions, i.e. norms and values on gender and the lack of trust between producers and traders. A group based approach provides the opportunity to get to know each other, build trust and stimulate learning; it provides the opportunity to challenge underlying values and relations between them. However, this may work better in homogeneous settings whereby people feel free to express themselves, than in heterogeneous groups such as an innovation platform; this may particularly be difficult in a value chain context whereby transactions and competition play an important role. Hence, innovation platforms may need to go along with other forms of interaction at the local level. Also the involvement of champions as role models and support from local leaders were crucial in this respect. To address the way different VC actors work together, requires high quality facilitation and identification of win-win situations.

Finally, considering the overall scope on socio-economic development, innovation platforms can provide an important mechanism for inclusive innovation, but a value chain approach may not be appropriate in every context. In Mozambique, the value chain was very weak or almost non-existing; moreover, goats had multiple functions in the households and not everyone – especially women – may have been interested in the commercialization of goats. Under such conditions, alternatives, such as a focus on production or diversification of livelihood strategies may have made more sense (see Amankwah et al. 2012). A scoping exercise, including value chain and gender analysis during the inception phase of project is important to gain a better understanding of the context, as well as constraints and opportunities.

Although the overall framework for inclusive innovation by Foster and Heeks (2013) remains valid, this study reveals several new aspects or variations. It is important to realize that their framework was based on a literature review and a case study on mobile phones, centered on the poor as consumers. We focused on the poor as producers – although in both cases it is about the poor as ‘co-producers’ of innovation, and although goat keepers are producers they are also consumers of certain (technological) innovations. It would be interesting though to explore to what extent elements of inclusive innovation vary across different type of contexts (e.g. producer/consumer, countries, technologies, commodities). Especially in terms of implementation, this may have important implications.

Overall, we would like to conclude that Innovation platforms are a promising model for operationalizing inclusive innovation, but it requires a careful assessment of the local (institutional) context. A concern is the requirement of high quality facilitation and resources, emphasizing the need for enhancing innovation capacity among the actors, and making it work as a self organized innovation system.

**Acknowledgement**

The authors wish to thank the project teams from BAIF and CARE for sharing their experiences with us. We also like to thank Alan Duncan from ILRI for his comments and criticisms on a previous draft of this article. This article has been written in the context of the ‘imGoats’ project, financially supported by the European Commission and commissioned by IFAD (International Fund for Agricultural Development).

**End notes**

1 In this paper, the word innovation platforms will be written in full; when combined with other words, the abbreviation IP will be used.

2 Internal project documents

**References**

Adekunle, A.A., Fatunbi, A.O. 2012. Approaches for setting-up multi-stakeholder platforms for agricultural research and development*. World Appl. Sci. J.* 16, 981–988.

Amankwah, K., Klerkx, L., Oosting, S.J., Sakyi-Dawson, O., Van der Zijp, A.J., Millar, D. 2012. Diagnosing constraints to market participation of small ruminant producers in northern Ghana: an innovation systems analysis. *NJAS-Wageningen Journal of Life Sciences* 60-63: 37-47.

Ayele, S., Duncan, A., Larbi, A., Khanh, T.T. 2012. Enhancing innovation in livestock value chains through networks: lessons from fodder innovation case studies in developing countries. *Sci. Publ. Policy* 39, 333–346.

Biggs, S.D. 1990. A multiple source of innovation model of agricultural research and technology promotion. *World Dev.* 18, 1481–1499.

Delgado, C., Rosegrant, M., Steinfeld, H., Ehui, S., Courbois, C. 1999. *Livestock to 2020: The next food revolution.* IFPRI, FAO, ILRI. Food, agriculture and the environment Discussion Paper 28. IFPRI: Washington D.C., USA. [*http://www.ifpri.org/2020/dp/dp/28.pdf*](http://www.ifpri.org/2020/dp/dp/28.pdf)

Earl, S., Carden, F., Smutylo, T. 2001. *Outcome mapping: building learning and reflection into development programs*. International Development and Research Center (IDRC): Ottawa.

FARA. 2009. *Strategy and Lessons Sharing Forum. Synthesis Report.* Sub-Saharan Africa Challenge Program (SSA CP). Available on line at: <http://www.fara-africa.org/media/uploads/library/docs/ssacp/Strategy_meeting_final_report16_feb_2010.pdf>

Foster, C., Heeks, R. 2013. Conceptualising Inclusive Innovation: Modifying Systems of Innovation Frameworks to Understand Diffusion of New Technology to Low-Income Consumers. *European Journal of Development Research* 1–23.

Hall, D.C., Ehui, S., Delgado, C. 2004. The livestock revolution, food safety, and small-scale farmers: Why they matter to us all. *Journal of Agricultural and* *Environmental Ethics* 17, 425-444.

IDRC. 2011. Innovation for Inclusive Development: Program Prospectus for 2011–2016. Ottawa: IDRC.

ILRI. 2010. *Small ruminant value chains as platforms for reducing poverty and increasing food security in dryland areas of India and Mozambique*. Project proposal imGoats*.* ILRI: Nairobi.

Kilelu, C.W., Klerkx, L., Leeuwis, C. 2013. Unravelling the role of innovation platforms in supporting co-evolution of innovation: Contributions and tensions in a smallholder dairy development Programme. *Agricultural Systems* 118, 65–77

Klerkx, L., Hall, A., Leeuwis, C., 2009. Strengthening agricultural innovation capacity: are innovation brokers the answer? Int. J. Agric. Res., Governance Ecol. 8, 409–438.

Klerkx, L., Mierlo, B., Leeuwis, C. 2012. Evolution of systems approaches to agricultural innovation: concepts, analysis and interventions. in: Darnhofer, I., Gibbon, D., Dedieu, B. (Eds.), *Farming Systems Research into the 21st Century: The New Dynamic.* Springer Netherlands: Dordrecht, pp. 457-483.

Leeuwis, C. , van den Ban, A. 2004. *Communication for Rural Innovation: Rethinking Agricultural Extension*. Blackwell Science: Oxford.

Leeuwis C., 2000. Reconceptualizing Participation for Sustainable Rural Development: Towards a Negotiation Approach. *Development and Change* 31, 931-959.

McDermott, J., Rich, K., Gebremedhin, B, Burrow, H. 2010. Value chains and innovation (pp. 151-169). In Swanepoel, F.J.C., Stroebel, A. and Moyo, S. (Eds). *The role of livestock in developing communities:* *Enhancing Multifunctionality*. CTA: Wageningen, The Netherlands.

McDermott, J.J., Staal, S.J., Freeman, H.A., Herrero, M., van de Steeg, J.A. 2011. Sustaining intensification of smallholder livestock systems in the tropics. *Livestock Science* 130, 95–109.

Nederlof, E.S. and Pyburn, R. (eds.). (2012). *One Finger cannot lift a rock: facilitating innovation platforms to trigger institutional changes in West Africa*. KIT Publishers: Amsterdam, the Netherlands.

Nederlof, S, Wongtschowski, M., Van der Lee, F. (eds.). 2011. *Putting heads together: agricultural innovation platforms in practice.* Bulletin 396. KIT publishers: Amsterdam, the Netherlands.

Ngwenya, H., Hagmann, J. 2011. Making innovation systems work in practice: experiences in integrating innovation, social learning and knowledge in innovation platforms. *Knowledge Management for Development Journal* 7, 1: 109-124.

Njuki, J., Pali, P., Nyikihadzoi, K., Olaride, P., Adekunle, A. 2010. *Monitoring and Evaluation Strategy for the Sub-Saharan Africa Challenge Program*. Accra, Ghana.

Pittaway, L., Robertson, M., Munir, K., Denyer, D., Neely, A. 2004. Networking and innovation: a systematic review of the evidence. *International Journal of Management Reviews* 5-6, 137-168.

Spielman, D.J., Ekboir, J., Davis, K., 2009. The art and science of innovation systems inquiry: applications to sub-Saharan African agriculture. *Technol. Soc*. 31, 399–405.

Swaans, K., Broerse, J.E.W., Salomon, M., Mudhara, M., Mweli, M. Bunders, J.F.G. 2008. The Farmer Life School: experience from an innovative approach to HIV education among farmers in South Africa, *SAHARAJ* 5,2, 52–64.

van Mierlo, B., Arkesteijn, M., Leeuwis, C., 2010. Enhancing the reflexivity of system innovation projects with system analyses. *American Journal of Evaluation* 31, 143-161.

van Rooyen, A. Homann‐Kee Tui., S. 2009. Promoting Goat Market and Technology Development in Semiarid Zimbabwe for Food Security and Income Growth. *Tropical and Subtropical Agroecosystems* 11, 1‐5.

Vorley, B., del Pozo-Vergnes, E., Barnett, A. 2012. *Small producer agency in the globalised market:* *Making choices in a changing world.* IIED: London; HIVOS: The Hague, the Netherlands, pp75.

Wennink, B., Ochola, W. 2011. Designing innovation platforms, pp 30-42 In: Nederlof, S, Wongtschowski, M., and Van der Lee, F. (eds.) *Putting heads together: agricultural innovation platforms in practice.* Bulletin 396. KIT publishers: Amsterdam, the Neterhlands, pp. 30-42.

Yin, R.K., 2003. *Case Study Research: Design and Methods,* third ed. Sage: Thousand Oaks.