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# Innovation platforms at work: Supporting the transition to agroecology in Nicaragua

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## Introduction

In the tropics, the global zone with the highest biodiversity, largest potential bioproductivity, and which has already been hit heavily by the impacts of climate change, the use of farm management practices that increase productivity and enhance resiliency of farming systems is crucial to ensure their long-term agronomic viability (IAASTD 2009). Agroecology, the science of applying ecological concepts and principles to the design and management of sustainable agriculture, can provide the tools for creating and maintaining such productive, resilient agroecosystems (DE SCHUTTER 2010). Beyond science, agroecology can also be characterized as a strong social movement fostering alternative ways of farming (SAGE 2014). Focusing on Nicaragua, a tropical country in Central America, this paper examines how farmers may be supported in adopting and using agroecological practices through an analysis of the contributions of an innovation platform.

The broader adoption and use of agroecological practices (i.e. scaling agroecology up and out) by smallholder farmers, a grassroots phenomenon spearheaded in Nicaragua by Programa Campesino a Campesino (PCAC) since 1981, was recently recognized by the Nicaraguan government as an important element for national food security. In 2011, Law 765, the 'Agroecological or Organic Production Law', entered into force alongside the Nicaraguan Mandatory Technical Standard (NTON), which creates a blueprint for tools that develop agroecological production. However, even though the legal framework is in place and there is widespread knowledge amongst farmers of the benefits of using agroecological methods, the adoption of agroecological practices is stagnating. How can smallholders be better supported in adopting and using agroecological methods? To find answers, we zoom in on a territorial innovation platform in Estelí and Condega, two municipalities in the Las Segovias mountains of northern Nicaragua.

Innovation platforms (IPs), consisting of key actors in a territory (e.g.. farmers' organizations, government and research institutions, non-governmental organizations (NGOs)), are bridging institutions that facilitate interactions between actors working towards a common goal; they provide dynamic spaces for knowledge-sharing and problem-solving by heterogeneous stakeholders and contribute to resolving different types of barriers (technological, social,

institutional) to agroecology adoption (KILELU ET AL 2013). One of the goals of the 'basic grains & ranching' IP in Estelí and Condega is to better support local smallholder farmers in sustainably intensifying their production systems through the use of agroecological practices. Based on Kilelu et al.'s work on how platforms fulfill intermediary roles in innovation processes and enhance co-evolution between technological, social, and institutional components of agricultural innovation, this study provides empirical evidence of how an IP functions to support smallholder farmers in adopting and using agroecological methods (KILELU ET AL 2013; KILELU ET AL 2011). By focusing the investigation on the processes happening in the IP, we explore how these dynamic processes - these functions - can be optimized, particularly amid complex situations involving scarce resources and multiple stakeholders in the global tropics.

**Theory and Methods**

Since the adoption of agroecological practices is a dynamic, co-evolutionary process, in which technological innovation occurs with related social and institutional change, an exploration of the activities that are performed during the processes of change recognizes and attempts to grasp these dynamics (KILELU ET AL 2013; HOUNKONNOU ET AL 2012). This study is based on qualitative data gathered using: semi-structured interviews with actors engaged in the 'basic grains & ranching' IP and the broader Nicaraguan agroecological innovation system; two workshops (one with (non)agroecological smallholder farmers; one with IP actors) based in Rapid Appraisal of Agricultural Innovation Systems methodology (SCHUT ET AL 2015); personal observations from workshops, meetings, and field visits; informal conversations with local inhabitants and IP actors; and a review of scientific and grey literature. Information from the workshops and interviews was triangulated with data from scientific literature; reports from different branches of the Nicaraguan government; reports from national and international NGOs; articles from newspapers in Estelí and Nicaragua; official statistics from the Nicaraguan government; and reports from regional and international research institutions. A process analysis of IP activities was constructed from meeting notes, memoria, maps, workshop reports and its territorial analysis (NICANORTE 2015). An analysis of the IP identified strengths and weaknesses of its six functions and their associated sub-functions (see Figure 1; KILELU ET AL 2013; KILELU ET AL 2011). This study is an optimization-oriented analysis, seeking entry points to optimize the 'basic grains & ranching' IP's functioning.

**Results and Discussion**

The IP has succeeded particularly well at network brokering and innovation process management. Because the gate-keeping and match-making sub-functions were well executed, the organizations working together on the IP found enough common ground in their goals and institutional processes to facilitate the alignment of agendas, easily mediate their relationships, and constructively engage in co-learning processes during workshops. Gate keeping may have, indeed, functioned too well, with important partners - such as the private and banking sectors - not engaged in the IP. As the IP is a young institution (since 2013), it made sense to focus on bringing the most similar organizations to the table first; now that the core institutions have forged common points of reference, a challenging next step would be to expand its match-making horizons by constructively engaging interested and willing actors from e.g. the local banking sector (such as the Estelí branch of the Banco Produzcamos, the government-mandated bank for small and medium-sized producers).

The functions demand articulation, institutional support, and knowledge brokering each show specific points for improvement. Although the IP has been very good at aggregating and articulating producers' demands and needs, it has failed to diagnose an important aspect of any production system: the demand side of consumers' interests, market possibilities, and value chain capacities. Looking at institutional support, the IP has functioned very well as an interface between its members. Although IP actors have learned from each other, they have not yet (likely also due to the short time horizon of the IP) effected institutional changes within their own organizations. As a knowledge broker, the IP has succeeded at linking knowledge demand (from producer organizations) with knowledge supply (local, national and international research institutes). So far this communication has been one-way, from producers to research, with no appropriate research products disseminated back, but this is due more to a lack of financial resources on the part of the research institutes. Another aspect that is lacking is the dissemination of information on the benefits of purchasing agroecological produce to local consumers.

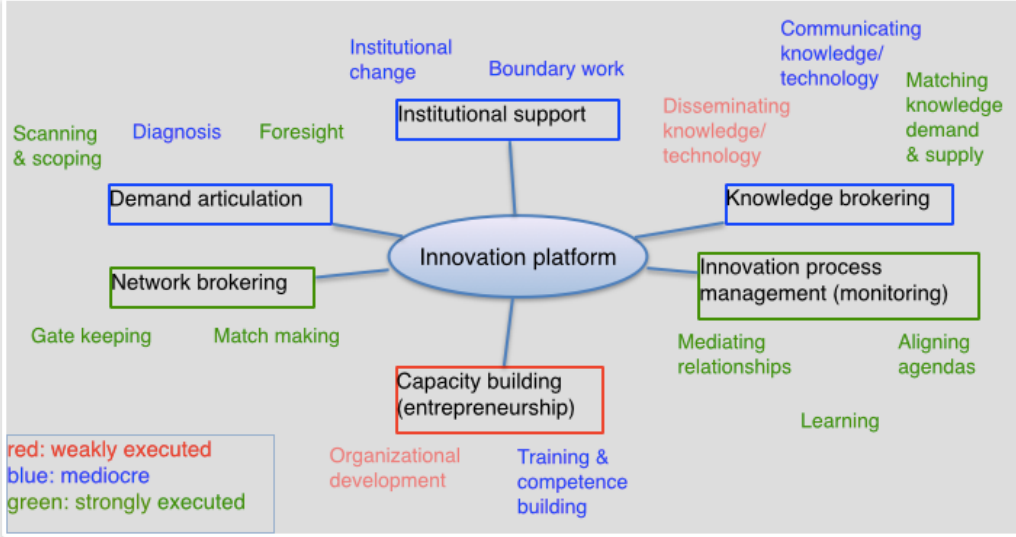


**Figure 1: Results - functional analysis of the 'basic grains & ranching' IP (after KILELU ET AL 2011)**

The IP shows the most room for improvement in the capacity building function. Considering training, it has reached out to young producers to educate them on the links between environmental issues and farming practices, through youth groups and public fairs. However, technicians and older farmers expressed a desire for more exchanges with other farmers and field days, specifically on topics such as designs for farm diversification, drought management and water harvesting methods, crop rotations, and integrated pest management. As few actors had knowledge of NTON, training on these standards - for farmers, technicians, and IP actors - would be a very beneficial next step to begin the process towards marketability of agroecological products. Considering organizational development, the IP strengthened internal group dynamics, but has not incubated any new enterprises. In interviews and workshops, farmers assessed lacking sufficient and timely access to bio-inputs (clean native seeds; organic fertilizer; bio-pesticides) as a key constraint to farming agroecologically: This presents an opportunity for the IP to support lead farmers in becoming seed producers or plant nurseries, and to engage with seed exchange networks.

## Conclusions and Outlook

This analysis highlights the extant strengths of the transition to agroecological practices in Nicaragua, such as the strong agroecological knowledge base amongst producers, the many formal and informal structures encouraging interactions and exchanges, and particularly the deep motivations of many different actors and their strong engagements in co-learning processes.

**Table 1: Entry points to optimize IP functions**

| Sub-function | Entry points |
|---|---|
| Match making | Constructively engage the local banking sector, to begin discussion on the creation of financial products specific to agroecological producers (ie crop diversity vs. one-crop focus) |
| | Linking to market actors: outlet and value chain opportunities |
| Diagnosis | Detailed analysis of demand side:<br>a. Consumer's knowledge, interests, and willingness to pay for agroecological products<br>b. Local outlet interest<br>c. Value chain possibilities |
| Disseminating knowledge & technology | Organization of consumer awareness events on the benefits of purchasing local agroecological produce |
| Training & competence building | Working with IP organizations to organize (technical) capacity building events for farmers, technicians, and IP actors |
| Organizational development | Explore supporting farmers in becoming bio-input entrepreneurs |

The IP has taken important steps in connecting and aligning the visions of like-minded organizations working in agroecology with smallholders around Estelí and Condega, as well as diagnosing bio-physical production-related aspects (see maps from NICANORTE 2015). Specific entry points that the IP could leverage to further support agroecologically oriented smallholders are listed in Table 1. General insights on optimizing the IP's actions point to the need for a concerted alignment of IP functions, e.g. around exploration of and connection to consumer and marketing aspects; and the greater use of synergies between IP functions, such as between disseminating knowledge and match making. Going beyond the IP's core functions, organizing the training, initial support of, and network-building for lead farmers to become involved in bio-input production may be a way for the IP to support local agroecological smallholders in accessing new market opportunities.

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