Learning Alliances in Sawah Rice Technology Development and Dissemination in Nigeria and Ghana

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Abstract: Millions of dollars are spent each year on research and development initiative on rice in order to improve the livelihood of farmers and other stakeholders in the rice value chain, however little has been the impact. Major reasons for this failure include the limited collective learning that occurs between various stakeholders and the neglect of building a multi-stakeholder innovation systems for rice in West Africa. This has made research results less relevant and the impact making farmers worse off. This paper describes how Sawah rice production technology has evolved through learning alliances that involves social learning and innovation systems and brings Japanese institutions, research institutes, Ministry of Agriculture, extension agencies, farmers groups, Millennium Village, marketers, and universities in Nigeria and Ghana together on a platform with clear objectives, shared responsibilities, cost and benefits, output as inputs, differentiated learning mechanisms, long term and trust-based relationships. The process is increasingly leading to increased learning and effectiveness in rural entrepreneurial development and improved livelihoods. The paper gives a description of the scenarios based on experience in the sawah rice technology development and concludes with its application in other parts of West African region.
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1. Introduction

Cereal production per capita has been stagnant for more than thirty years in Sub-Saharan Africa, while in Asia it has grown about 1.5 times (FAO, 2006). This contrast is explained by the fact that "Green Revolution" has not taken place in Sub-Saharan Africa. In fact although cereal yields in Sub-Saharan Africa have been increasing during this period, their growth rates are much lower than those achieved in Asia (FAO, 2006). Naturally this raises a concern about future food security in Sub-Saharan Africa. Not only this stagnation in general, if we look at the performance of each crop, we find that gap between regional supply and demand for rice has been widening because of a shift in diet away from traditional coarse grains caused by urbanization (WARDA, 2008). As a result rice imports in West Africa reached 2.8 million tons in 1998, and are projected to be between 6.5 and 10.1 million tons in 2020 (Lançon and Erenstein, 2002). It is well known that while the Green Revolution of rice in Asia was led by the release of modern varieties, irrigation and chemical fertilizer are necessary condition to achieve their potential high yield. In West Africa also varietal improvement of rice has a significant impact on the regional economy(Dalton and Guei 2003)

The dominant paradigms of research have been associated with the frameworks that are concerned with the supply and demand of agricultural innovation in developing countries. According to Oladele, (1999) these are Transfer of Technology (TOT) which was the main approach of agricultural research in the 1950s, in which the generation and diffusion of innovation is a linear process from rich-country research institutes to poor-country research stations and from them to extension officers and to farmers. The Adaptive technology transfer model recognised the location-specific requirement of technology and farmer behaviour is no longer seriously regarded as a barrier to adoption. The focus is to adapt new technology to local conditions and to remove the socio-economic constraints to adoption by farmers, such as the availability of complementary inputs of credit. This model was prevalent in 1970s and early 1980s. In this model, the generation and diffusion of innovation remains a predominantly linear process with limited feedback from the farmers. Farming Systems Research (FSR): emerged in the mid-1970s and became prevalent in the 1980s to ensure the reach of innovations to resource-poor farmers. FSR greatly changed the status of the farm household and the farm system in the generation and diffusion of new technology. This it did by placing emphasis on discovering from farmers their goals and constraints. Farmer-First Research (FFR): came out of the argument against the FSR solution to the matching of research priorities with farmer needs did not go far enough in drawing on the knowledge and

experimental skills of farmers. The expert staff of the research station - scientist, social scientist and their assistants remain firmly in control of the data elicited from farmers, the design of on-farm trials and the nature of the technology eventually recommended for wide spread adoption. The multiple sources of innovation model (Biggs, 1985; Biggs and Clay, 1981) proposes that ideas and genetic resources for new technology spring from multiple sources, not just from a narrow sequence of basic and applied research carried out by scientists within the formal research system. The model is complementary to the farmer-first model. It emphasizes the non-linearity of the process by which new farm technology is generated and the many different sources in space and time of genetic materials and farming methods. Chambers and Ghildyal (1985) proposed the Farmer-First-and-Last which states that that for technologies to better satisfy the needs and conditions of resource-poor farmers there should be a systematic process of scientist learning from and understanding of their resources, needs and problems. Scoones and Thompson (1994) introduced Beyond Farmer-First which points to where the farmer-first approach lacks certain analytical depth and presents a more radical programme that incorporate socio-politically differentiated views of development. The model highlights gender, ethnicity, class, age and religion having important implications for research and extension practice. It emphasizes that different types of local and non-local people hold many divergent, sometimes conflicting, interests and goals, as well as differential access to vital resources. Knowledge, which is diffuse and fragmentary, emerges as a product of the discontinuous and inequitable interactions between the actors i.e. researchers, extensionists and farmers (IIED, 1994). The need for translating research findings into effective development outcomes that improve the livelihoods of the rural poor on a broad scale are often expressed regarding international agricultural research, and research institutes in particular, given their mandates of food security, improved livelihoods, and sustainable resource management.

Learning Alliances are a series of connected stakeholder platforms, created at key institutional levels (typically national, intermediate and local/community) and designed to break down barriers to both horizontal and vertical information sharing and thus to speed up the process of identification, development and uptake of innovation. Each platform is intended to group together a range of partners with complementary capabilities in such areas as implementation, regulation, policy and legislation, research and learning and documentation and dissemination.

The central premise of the Learning Alliance approach is that, by giving as much attention to the *processes* of innovating and scaling up innovation as is normally given to the subject of the innovation itself, barriers to uptake and replication can be overcome. The Learning Alliance approach has arisen from a sense of frustration over the evident failure of much relevant and effective innovation – technological or institutional – to move beyond the pilot stage (International Water and Sanitation Centre 2005).

At its simplest a Learning Alliances is a series of linked platforms, existing at different institutional levels (national, district, community) and created with the aim of bringing together a range of stakeholders interested in innovation and the creation of new knowledge in an area of common interest. The stakeholders involved should have complementary capabilities which, when combined, will allow the new knowledge created in the innovation process to be brought to scale. Some of the key capabilities required are in: implementation, regulation, policy and legislation, research and learning, and documentation and dissemination. Learning alliances require facilitation to overcome barriers to interaction and communication within and between the stakeholder platforms. They aim to enable a shared learning process in which barriers to horizontal and vertical information sharing are broken down. Learning alliances, by involving key stakeholders at all levels in the process of knowledge creation, aim to ensure that innovation takes place within a framework of local and national conditions and norms that ensure that what is produced is relevant and appropriate (James, 2001).

The concept of Learning Alliances is built around the central proposition that only an integrated approach to the process of innovation, bringing together all stakeholders (practitioners, researchers, policy makers, activists), can address the range of failings described above. At the same time the processes of interaction within the Learning Alliance should foster a sense of ownership of the founding concepts and approaches, ensuring that the innovation developed is appropriate to the local situation and capable of replication with existing (or realistically achievable) resources, institutions, and policies.

2 Learning Alliances and other relevant concepts

This section examines the relationship with some key concepts which preceded Learning Alliances and on which the latter are built. According to

Ruaysoongnern and Penning de Vries (2005) these include, action research, communities of practice, stakeholder platforms and participatory research and learning in the agricultural sector.

Action research- uses approaches designed to solve practical problems in support of and with the active collaboration of stakeholders. It is a flexible process which allows action and multidisciplinary research to be achieved at the same time (Dick, 2002). It is a win-win format: the action is more efficient and the research more relevant. A critical concept of action research is cycles of active experimentation followed by reflection. This cyclical approach is fundamental to any system that wants to create adaptive, flexible and context-specific knowledge. It is therefore of key importance in Learning Alliances.

Capacity building - Traditional approaches to capacity building often confuse it with training. While training and education are of course enablers of increased capacity it is vital that people are, at the same time, given the opportunity to put their new knowledge into practice. Learning Alliances provide a structured framework for doing so by integrating the capacity building process into the ongoing planning and implementation activities of sector organisations and communities. In this way capacity building is also reinforced by the action/reflection cycles of the action research approach.

Multi Stakeholder platforms - There are several definitions and types of Multi Stakeholder Platform (MSP) but in essence an MSP is a "negotiation and/or decision-making body (voluntary or statutory) comprising different stakeholders who perceive the same resource management problem and realize their interdependence (Warner, and Verhallen 2004)

4. Stakeholder identification, and roles and responsibilities with LAs

Learning alliances begins with a core or founding group of actors whose interest in innovation is to be served by the creation of a learning alliance. It is crucial that this core group has a clear idea of what they want to achieve and how they intend to do it. Only in this way will they be able to attract the interest of other key stakeholders. The core group will get bigger as the work of the alliance increases and more stakeholders buy into the idea.

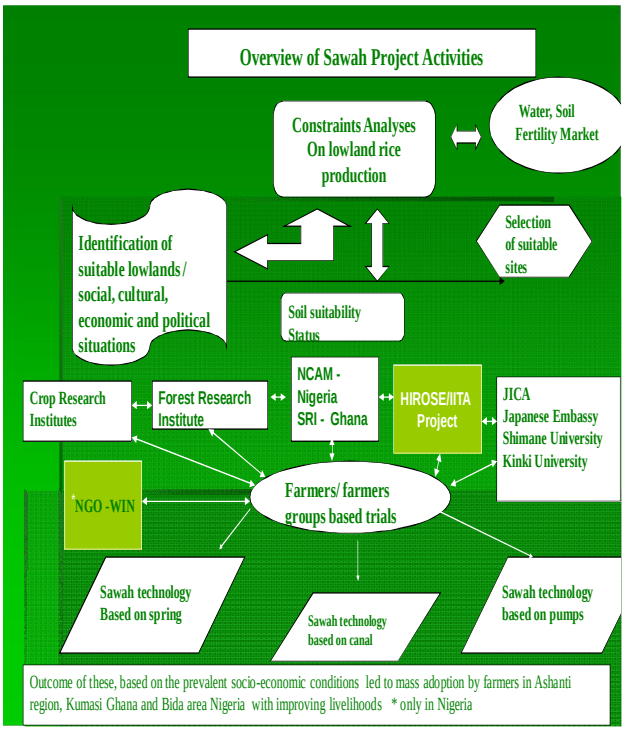
Stakeholders involvement depend on such factors as the specific work topic, the organisations available and interested, the resources available. What is important is that stakeholders have a shared vision of the objectives of the alliance and background skills that can contribute to achieving them. Which stakeholders should be involved at the different levels (and different stages) is something to be worked out organically by the founding members as they seek to develop a coalition around their area of interest and innovation. Ideally, each participating organisation should have some existing level of interest in innovation related to a specific area. An important exception is actors without such a direct interest who, because of their position, could impede or block progress at a later stage. They should be drawn in to the Alliance to avoid or reduce that possibility. Figure1 shows the structure of learning alliances at different levels of operations.

3. Introduction of sawah rice production technology in Nigeria and Ghana

Sawah rice production technology refers to improved man-made rice-growing environment through eco-technology with leveled rice field surrounded by bund with inlet and outlet connecting irrigation and drainage. Sawah fields are the system adaptable to a lowland ecosystem but require eco-technological skills, including those for minimum changing of topographical and ecological features, such as both land leveling, bunding and irrigation/drainage systems. Wakatsuki and Masunaga (2005) reported that the potential of Sawah based rice farming is enormous in West Africa in order to stimulate the long awaited green revolution. This is predicated on the fact that the agro-ecological conditions of the core region of West Africa are quite similar to those of northeastern Thailand, which is one of the rice center in that country.

In Nigeria, Sawah based rice production started after preliminary basic research work on the suitability of inland valleys by Japanese researchers. A 1.5 ha field at Ejeti village was cultivated in 2001. In 2002 three farmers participated in Sawah Package program and farmers increased to 14 and 18 in 2003 and 2004 respectively. In 2010, farmers have increased to 1500. Similarly, there has been tremendous increase in the yield of farmers adopting sawah package on their rice farms. The 3 phases of the sawah development process in Ghana from 1997 till date are: Integrated Watershed Management of Inland Valleys by JICA - CRI (1997-2001); Sawah project by SRI - Shimane Univ. Kinki University Japan (2002 -2004) and Inland Valley Rice Development Project by MOFA – ADB (2004 -2009) with the goal of sustainable rice production (Nakashima et al 2007). The average rice yield obtained from sawah plots of between 4.5 to 5.2 t/ha is enhancing the transformation of the potential for rice production being transformed into actual production in Nigeria and Ghana. Figure 1 present the overview of the alliances in the sawah technology

development process. From the figure the international network that exist are shown in form of relationships between Japanese and research institutes in West Africa. It also highlights the platform levels in the vertical and horizontal levels for alliances to be effective.



6. Empowerment through Learning Alliances

The involvement of farmers' organizations in the technology development process enhances the empowerment process for the technology in terms of human capital (such as skills); social capital (including farmer organizations and laws); economic capital (loans, revolving funds, remittances); physical capital (farm and village infrastructure, internet) and natural capital (land, water, genetic resources). The livelihood approach to rural development recognizes that five capitals are required for development.

The learning alliance at the individual level (promoting human capital) enhances self analysis for self actualization, happiness oriented, cash as a only supporting factor, self reliance system and autonomy, skill building and knowledge and life security through improved production and family system. At the household level (promoting human and natural capital) farmers were able to gain skills and knowledge, autonomy, food quality and security, economic sufficiency, land and water resource security, biodiversity, local wisdom utilization, and family livelihood and self sufficiency. At the community level (promoting human and social capital), the sawah technology learning alliances enhances skill building and knowledge sharing, caring and sharing society, community business, social security, cultural protection and environmental quality. It has also contributed At the group and network level (promoting human, social, financial and natural capital) for skill building, experimentation and knowledge sharing, learning organization, education for life at all levels, creation of a revolving fund, caring and sharing, local wisdom and cultural conservation, sustainable development, and policy integration (Polak, et al 2004)

5. Learning Alliances as a Vehicle for Scaling Out

LA is a process undertaken jointly by R&D agencies through which research outputs are shared, adapted, used, and innovated upon. This is done to strengthen local capacities, improve the research outputs, generate and document development outcomes, and identify future research needs and potential areas of collaboration. The LA process begins with the identification of research outputs or development outcomes susceptible to scaling out by partners. It is followed by one or many adaptation and learning cycles, and is completed with the detection of new research demands, which feed back into the research process, and contribute to the generation of improved livelihood or policy outcomes. According to Douthwaite, et al (2002), several key issues need to be managed for an LA to be successful, include *Clear objectives*- Clear objectives based on the needs, capacities, and interests of the participating organizations and individuals must be defined. In the case of sawah technology the need to increase rice yield, sustain the increased yield, production of quality rice and demand-driven research were the objectives. *Shared responsibilities and costs* - In the learning alliance for sawah technology development and dissemination LA seeks to benefit all parties; therefore responsibilities and costs should be shared. Responsibility and costs are shared although it was skewed in the beginning towards the Japanese institutions as donor of the project. As time progress and to ensure the sustainability efforts are in place to spread more the costs and responsibilities. *Outputs as inputs*- In order to enhance the overall process of development and livelihoods of the farmers through sawah technology several outcomes of trials and experimentations and discussion are used as inputs into refining the process and the scaling out of the technology. *Differentiated learning mechanisms* -

Learning Alliances have diverse groups of participants ranging from farmers, women, scientists, extension agents, and ministry staff to NGO to international scientists. Identification of each group's questions and its willingness to participate in diverse aspects of learning processes was the key issues of alliance. *Long-term relationships-* The sawah technology development process has stretched over many years as far back as 1986 when preliminary survey and soil analysis started with relationships with farmers, research institutes and international scientists. These relationships should orient researchers' agendas towards key issues that contribute to positive change and, on the other hand, inform development practitioners of new or improved methods or tools that improve their practice. The transaction costs involved in establishing and maintaining LAs and their long-term nature indicate that quality should take precedence over quantity (Solomon, and Chowdhury, 2002).

This paper shows how Sawah rice production technology has evolved through learning alliances that involves social learning and innovation systems and brings Japanese institutions, research institutes, Ministry of Agriculture, extension agencies, farmers groups, Millennium Village, marketers, and universities in Nigeria and Ghana together on a platform with clear objectives, shared responsibilities, cost and benefits, output as inputs, differentiated learning mechanisms, long term and trust-based relationships. The process is increasingly leading to increased learning and effectiveness in rural entrepreneurial development and improved livelihoods. The paper gives a description of the scenarios based on experience in the sawah rice technology development and concludes with its application in other parts of West African region

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