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Approaches for Setting-up Multi-Stakeholder Platforms for Agricultural Research and Development

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Abstract: In order to facilitate improved returns to research and development in African agriculture, the innovation systems approach which engenders the involvement of multiple stakeholders in its innovation pathway, has been proposed. Despite the potential of this approach, the understanding of its implementation and particularly of the process of setting up its multi-stakeholder platform is still largely lacking. Yet, this platform is critical to the success and sustainability of the operations of the platform. This article introduces the concept of Integrated Agricultural Research for Development (IAR4D) and the constituent Innovation Platform (IP) as a workable multistakeholders approach for sustainable agricultural research and development. The IAR4D approach entails a multi-sectoral orientation to agricultural problem diagnosis and draws on integrated approaches using 'hard' and 'soft' sciences to provide solutions, while maximizing available resources. IAR4D is premised on the innovation systems approach and requires systemic interaction among all stakeholders around specific commodities or production systems. The procedure for the establishment of an IP requires a value chain analysis of the commodity of interest, followed by a systematic engagement of the identified stakeholders to the platform. The stakeholders in a balanced IP will cut across the private and the public sectors with distinct engagement of the non-traditional stakeholders as input dealers, financial institutions, policy makers, etc. The activity of a typical IP could be kick-started by joint development of a business plan and its proactive implementation in a partnership mood. A functional IP will normally experience series of iterative learning at the interphase of which innovation is generated. The set-up of multistakeholders platform in IAR4D mode has potentials to function effectively as a model for regional and national ARD planning.

Key words: Innovation system approach · Innovation platform · IAR4D · Multistakeholders platforms · Agricultural systems · Agricultural development

INTRODUCTION

Creating a Multistakeholder platform has lately been promoted as a way to engender agricultural development in Sub Saharan Africa (SSA). This stems from the realization that the development of agriculture in SSA has been affected by a low return from investment in research. Various agricultural research institutions have generated technologies and other outputs that are either not adopted if adoptable or not transferred appropriately to the end users. This had a significant effect on the development of the sector which employs over 82% of the working population in SSA countries [1] Agriculture is also a major source of growth in these countries, accounting for over 32% of the GDP on the average. The resultant effect of this scenario is stagnation in the state of rural poverty despite series of investment by the development partners and government of different countries. The poor performance of the agricultural sector has been viewed by ARD actors as a problem of the process rather than that of the availability of technologies.

An all inclusion stakeholders' approach was proposed for use in agricultural research and development (ARD) as it was successfully used in a few other sectors in some countries [2] reported a surge in productive Multistakeholder dialogue in different international fora for enhanced productivity in sectors that require resource management. Under this arrangement each stakeholders group carries out the task they do best based on their competencies, resource domain and mode of operation. The philosophy has yielded promising outputs in areas such as, land care [3], fisheries [4], wetland management and forestry [5].

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The ARD system in SSA has gone through series of transition in the efforts to achieve increased productivity and sustainability. Traditional efforts to increase the effectiveness of the system centered on three main stakeholders, viz., the researchers, the extension system and the farmers. These were thought to be the main players in a system where research developed outputs and expected the extension system to pick the outputs up and deliver to farmers in what is generally regarded as the linear approach. The deficiency of this system only became magnified as the extension systems collapsed and became unable to deliver the needed services in-between research and the farmers. Even in a few locations where the extension system has maintained relative stability, new and emerging problems have made it mandatory to consider other more effective approaches. The emergence of the World Bank supported Research Extension Farmers Input System (REFILS) which simply engaged the input delivery system into the linear approach did not result into much change in the general outlook [6]. The REFILS was based on the proposition that availability of inputs would enhance the adoption of some of the technologies hanging on the shelves. However, the introduction of REFILS suggests the possibilities of further weaknesses within the system. Such weaknesses are related to the non existence of linkages, interaction and learning mechanisms among the actors that make the system [7, 8]. There are several actors in ARD, but a complete overview of relevant actors in any given system in a given location, could be derived from the value chain analysis. This will most often reveal the presence and contribution of the constituent stakeholders. Creating the right environment for interaction of such stakeholders in agricultural development issues seems to be the right way to go if African agriculture will attain the desired sustainable development.

Stakeholders in ARD could be regarded as either traditional and non-traditional partners of research. The traditional partners of research include farmers and their groups and the extension system; while the nontraditional partners include the policy makers, the private sector practitioners (impute dealers, financial institutions and produce end users) and the civil society organizations (NGOs, etc). It has been reported that the participation of the private sector in agricultural research and development has been discouragingly weak in SSA. This however does not imply the non-participation of the sector in the value chain, rather, it indicates the non-contribution to the discussion and generation of innovation within the system. The participation of the NGOs has increased particularly in development projects and few research endeavors, but their linkages and intervention scope are still weak [9]. The interventions of the policy makers are also dysfunctional due to lack of the needed interaction with other stakeholders within the system. Policy makers often act in an isolated fashion with summarized information from their advisers; this has often led to inappropriate policy interventions. Generally, improved investment in research, knowledge generation and delivery of inputs such as fertilizers etc. is projected for agricultural development in most strategies orchestrated by the policy makers. But as good as this technological input may sound; they will only thrive and yield development where the institutional barriers are controlled with appropriate policies. Agwu [9] argued that increased investment in science and technology may increase knowledge, but will not spur innovation culture in the whole system.

The current trend and changes in agricultural research and development process tends towards multi-stakeholder engagement denoted by participatory research approach, policy engagement, demand driven research, engagement of nontraditional stakeholders etc. This represents a paradigm shift from the linear ARD system and is based on the innovation system approach. The scenario requires a new set of approaches for engaging the different partners and facilitating their effectiveness. This paper is aimed to.

- Give a clear description of the innovation system approach with particular reference to the Integrated Agricultural Research for Development (IAR4D).
- Describe the process for the setting up of the multi-stakeholder platform.
- Analyze the principles governing the effective function of the multi-stakeholder platform in ARD.

Innovation System Approach and the Evolution of Integrated Agricultural Research for Development (IAR4D): The innovation system approach emerged through policy discussion on the nature and analytical framework for industrial growth in 1980s [9]. Lately, it has found prominence among the policy makers and it is being explored as an approach for achieving sustainable development in agriculture and rural development.

Innovation system refers to dynamic network of agents interacting in a specific economic/industrial area under a particular institutional infrastructure and involved in the generation, diffusion and utilization of technology'. In the sphere of agricultural research and development, innovation system depicts a dynamic network of stakeholders interacting and learning together towards

the generation, dissemination and continuous adoption of a technological output. This is a change from the conventional linear approach to agricultural research and development in which the players have limited interaction and joint learning. The approach provides a framework that explores the relationship among the diverse stakeholders of the system. It also explores the possibility of interaction among heterogeneous institution as applied research, extension, socioeconomic, policy, financial, industrial and other business institutions. The interaction among these institutions and stakeholders leads to knowledge generation, application and sharing such that innovation is generated. Francis, [10] as cited by Agwu [9] likened innovation system approach in agriculture to an invisible orchestra characterized by coherence, harmony and synergy. It is an interactive learning process in which enterprises/agents in interactions with each other, supported by organizations and institutions play key roles in bringing new products, new processes and new forms of organizations into social and economic use.

The Integrated Agricultural Research for Development (IAR4D) aims at using the innovation systems approach for ARD instead of the linear approach. The IAR4D concept engages all relevant actors along the value chain of a specific commodity or system of production within a defined location. This will be created with the understanding that innovation does not follow a linear path that begins with research, moves through technology transfer, diffusion, adoption, production and ends with new product or processes. Rather, innovation tends to involve continuous interaction and feedback between different actors at different stages of the interaction that draws on the knowledge of relevant actors at each stage [11] The network thus facilitates timely interaction and learning and aims to generate innovations rather than research outputs or commodities. In this context, innovation refers to the activities and processes associated with the generation, dissemination, adaptation and use of new technical, institutional and organizational knowledge to the benefit of all stakeholders in the partnership. Thus, innovation is the process through which the outputs of research can be facilitated by other stakeholders to catalyse the achievement of development impact [12].

The IAR4D concept employs an action research approach for investigating and facilitating the organization of groups of stakeholders (including researchers) to innovate more effectively in response to changing complex agricultural and natural resources management contexts, in order to achieve developmental outcomes.

The IAR4D concept is guided by operational and process principles, the five operational principles include;

- IAR4D proposes to carry out research in a demand driven mode and the impact of such endeavor will be measured in terms of meeting the demand.
- IAR4D is a multi-stakeholders approach; as such, it will accommodate and give adequate recognition to the complexities of the situations that affect sustainable production, marketing and utilization of each commodity in designing a solution.
- IAR4D will engage stakeholders beyond the rural communities to ensure their intellectual contribution to innovation and also secure their sense of ownership of the research products.
- IAR4D will involve policy makers at different levels of governance in research to diagnose problems, facilitate implementation and innovate solutions.
- IAR4D will adopt the innovation systems approach and create innovation platforms on which stakeholders will interact to jointly identify problems, device solutions, implement research and development agenda and evaluate the cycle.

The process of implementing IAR4D is underlined by some basic features. These include the following:

- *Existence of an Innovation platform (IP)*, which serves as the platform for diagnosing problems, exploring opportunities and investigating solutions. An Innovation Platform is the framework which brings stakeholders along the value chain together for continuous interaction lessons learning through action research to ensure that technology generation, dissemination and adoption takes place on targeted commodities or systems for the economic benefit of stakeholders. This kind of platform can be enhanced by the use of information and communication technology including internet.

The interaction of the actors linked through the Innovation Platform within IAR4D takes place either physically or virtually. The IP is a physical, virtual or physico-virtual network of stakeholders which has been set up around a commodity or system of m,utual interest to foster collaboration, partnership and mutual focus to generate innovation on the commodity or system. A typical IP should have a mix of stakeholders drawn from both the public and private sector stakeholders such as scientists, extension workers, representatives of farmers, farmers' associations, private firms, non-governmental organizations and government policy makers who

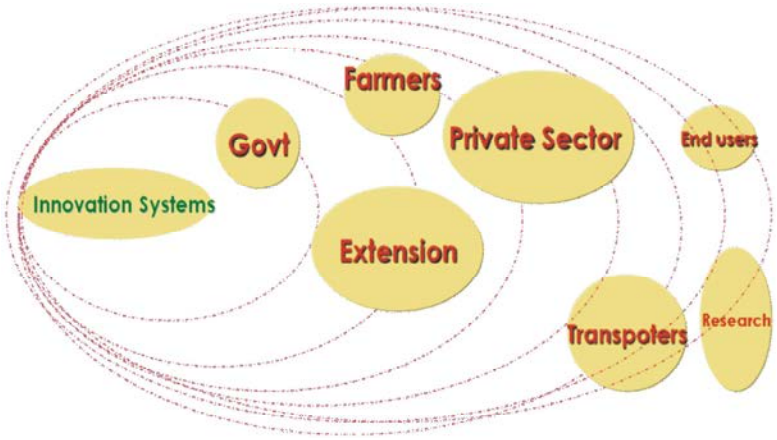

Fig. 1: Gainful interaction on an innovation platform

communicate, cooperate and interact (often across sectorial and ministerial lines) (Figure. 1). Eicher [13] suggested that interaction through IAR4D should be motivated by the common belief that increasing agricultural productivity can help improve the welfare of all members of society. However, recent experiences have shown that productivity must be linked with market, policy, natural resource management (NRM), product development and gendre for sustained agricultural growth. The mix of stakeholders promotes complementarity and synergy. The actors in an IP are; (a) organized in partnerships/teams to bring about mutually desirable changes; (b) competent and have incentives to jointly innovate and (c). are constituted to include sources of the key competences and knowledge both technological and non-technological that is required to address the problems, opportunities and/or entry points that prompt its establishment.

The pathway for a productive outcome from interactions an IP should regard the following issues;

- The IP should operate a non-linear (network) collective and collaborative interaction among IP actors rather than linear researcher–extension–farmer transfer of technology model. This enhances:
- Direct and continuous interaction, communication and knowledge-sharing among the IP actors;
- Quick and continuous feedback from end users (including farmers) at all stages of the research for development;
- Timely integration of new knowledge into the innovation process using experiential learning, monitoring and evaluation and the continuous feedback.
- Research issues that are agreed on by the IP actors should addresses key constraints and opportunities in the context of the entire value chains (from input supply through production to consumption) for target commodity and systems. For the general improvement of sustainable livelihood systems.
- The research process should be multidisciplinary and participatory.
- The IP should facilitate institutional and human capacity building for IAR4D actors to effectively participate in the innovation process. The capacity gap needs to be identified by the actors and the training (formal and non-formal) is provided by the appropriate partners

How to set up a functional Innovation Platform

IPs for Strategic and Operational Issues: The model for the setting up of a successful IP depends on the level and scale of activities envisioned. Conceptually, IPs could be seen at two distinct levels depending on mode of operation. Operational IPs could be set up at the grass roots level to facilitate all envisioned operations which could, depending on scope of operations, cover from a fraction of a village to the whole region, District or Local Government or even the whole country. The scope is determined by the size of the output market as moderated by the spread of participating producing stakeholders. Where all the farmers that could satisfy the demand of the output market could be engaged within a village, the IP could reasonably be pitched at the village level. The coverage could be extended to spread over a larger space where the stakeholders have to be engaged outside the village to meet the demand from the output market. Thus, the specific level of the IP will determine the composition of stakeholders,

Similarly, an IP could be established to provide strategic focus for the IPs at the operational level. Strategic IPs are recommended for administrative levels that exist above the IP for operations. Where the operational IP is pitched at the village level, the strategic IPs should be located at the Local Government, State Government and Federal Government levels going by the structure in Nigeria. The equivalent has to be used for other countries.

The IP at lower governance levels should respond and align operations to deliver outputs that yield the objectives of the IPs at the higher levels.

In this paper, the procedure to set up an IP at the farmers' production level will be highlighted and discussed.

Setting up Operational Level IP: The first step in setting up a functional IP is to determine both the location and the commodity or system of focus. Sometimes, either of them or both are predetermined by higher levels of governance or even the donors. Where the crop has been determined, the location may be chosen by looking at areas where the commodity is prevalent. GIS could be used to determined areas of crop prevalence within the geographical mandate. Presence of other factors like infrastructures and closeness to output markets may help narrow down choices to areas of great potential impact.

However, when the commodity has not been chosen but the location has been provided, GIS could also be helpful in the choice of advantageous sites. Once these have been determined, the ARD practitioners should carry out a community analysis to show the opportunities and challenges within the given community. Where both have been provided, it is still advantageous to carry out a community analysis which would clearly indicate the areas of strength of the community in question and subsequent IPs could be built with a view of capitalizing on the strength of the community or reinforcement of the given commodity.

After conducting the community analysis, ARD practitioners need to conduct value chain analysis for the commodity of interest; such analysis should consider all the steps involved in the commodity cycle; from production to consumption. The analysis needs to be detailed enough to identify; (a). The intricate steps under each major stage the commodity goes through, (b). The required inputs for each stage including the technical skills, personnel and material inputs, (c). The financial requirement at different stages along the commodities value chain, (d). The general and specific demand of the commodity and the gaps in its supply to inform the market demand, (e) The technological constraints (productivity, NRM, Policy, Market, Product development and gendre) that require research inputs, (f). Identification of other non-technological issues that are constraints along the chain- institutional constraints, infrastructure, policy, markets,

Analysis of the value chain provides an overview and the kind of partners to be invited to the IP. Having established the value chain analysis of the commodity, the second step will be the mobilization of appropriate members. This could be achieved by considering the following points;

- The potential partners that will contribute effectively to the IP activities should be determined from the value chain analysis. While determining the partners for an IP, the contribution and potential benefits of such partner should be a major consideration. IPs with clearly defined potential benefits have greater potential for sustainability because the interests of participating partners are sustained.
- Partners' engagement on the IP should start from the output market for the commodity of interest. Definite market demands are better than using general markets. The person or the representative of the company that require the commodity of interest should be sought and engaged as a member of the platform. The engagement of the output market should indicate detailed information on the required quantity, the specific quality, the time and the mode of delivery etc.
- The farmers as the primary producers of the commodity should be engaged on the platform. The required number of farmers should be determined by the number of farmers that are required to produce quantity of output demanded by the end user. This analysis takes into account the average land ownership or the quantity of land that each farmer is willing to commit to the production of the commodity of interest and the discounted average yield of the commodity at the current level of technology. Although all the farmers are technically members of the IP, participation in planning and business meetings could be limited to representatives of the farmers chosen from the groupings. Limiting participation of farmers at these meetings to the representatives will reduce the number of individuals participating in any IP session thereby making the sessions effective. Where farmers associations are representative enough, such could be used.

- The agricultural advisory delivery system should be engaged as a stakeholder on the IP as the institution that is saddled with the responsibility of facilitating farmers' training on developed technologies. The number of extension officers to be engaged would depend on the figure of farmers engaged on the platform and like farmers, they are grouped to benefit directly through their representatives who participate directly in the planning and other business meetings of the IP. Extension agents could be sourced from both the public and private sector. The engagement of the input dealers is also very vital to the function of the IP. This is motivated by their required contribution to the development and adaptation and adoption of developed technologies. Input dealers would include seed/seedling, breed or fingerlings dealers, fertilizer dealers, feed dealers for livestock, agrochemical dealers; reference is frequently made to the value chain analysis to determine potential dealers that could meet the specific demand of the platform. Questions like what quantity of seeds is required by the farmers? What quantity of fertilizer and other agrochemicals is required? Would help in determining which dealers could be approached for engagement on the IP. More than one supplier is often required, depending on the supply chain and the quantity of specific inputs required. This creates completion and serves as a safety valve for the maintenance of standard.
- Financial institutions should be engaged on the platform to fill the gaps in the amount needed by different stakeholders in ensurjng that the platform produces to meet the quality and the quantities demanded by the output market An appropriate financial institution such as bank or a micro finance institution should be engaged to provide the loan and supervise its use. Often the provision of finance should be directed towards pre-financing farmers' inputs rather than dispensing actual cash to individual farmers on the platform.
- The engagement of other private sector stakeholders such as practitioners involved in postharvest processing such as shelling, milling, bulking and transportation.
- The policy makers should also be engaged on the platform. Their presence often gives legitimacy to the operations of the platform and they could easily facilitate the necessary governmental support. Participation of policy makers in the activities of the platform ensures that they discover first-hand the usefulness of infrastructures and policies. Policy makers' engagement on an IP should give a clearer insight to issues that require policy formulation.
- The engagement of meteorologist has been considered to be vital for IPs that are working on agricultural commodities that are rainfed in nature. The meteorologists will provide weather prediction services which should guide the decision of the IPs. For example, they make contributions on expected rainfall quantity and duration and advise the platform accordingly on plans for supplementary irrigation or change of variety.
- The engagement of the researcher is vital on any IP, to facilitate continuous generation of technologies along the commodity value chain. Researchers are expected to be engaged in areas including productivity, market, policy, NRM, product development and gendre. Be this as it may, the interpretation of the value chain analysis and the prioritization of the problem areas could determine the areas of urgent intervention. As the work on the platform progresses and the priority of problems changes, the relevance of a specific field of research could wane on the platform.. Whenever this occurs, the researcher whose contributions are not of paramount priority should be comfortable to step low and allow other researchers with the required expertise drive the contribution from researchers.

Facilitating Interaction on the Platform: Following the identification and engagement of appropriate stakeholders on an IP, the interaction of the stakeholders should be facilitated through contact meetings and other regular communication channels. The IP needs to adequately deliberate on all issues related to the business of the partnership including the process and instruments of partnerships, report of the value chain analysis prioritization of challenges and opportunities and development of a business plan. Thereafter the business plan is implemented and reviewed at regular intervals to give opportunity for learning. A striking characteristic of an innovation platform is the enhanced interaction among the different stakeholders leading to iterative learning at the interphase of which innovation is generated and perfected. (Figure 2a and b).

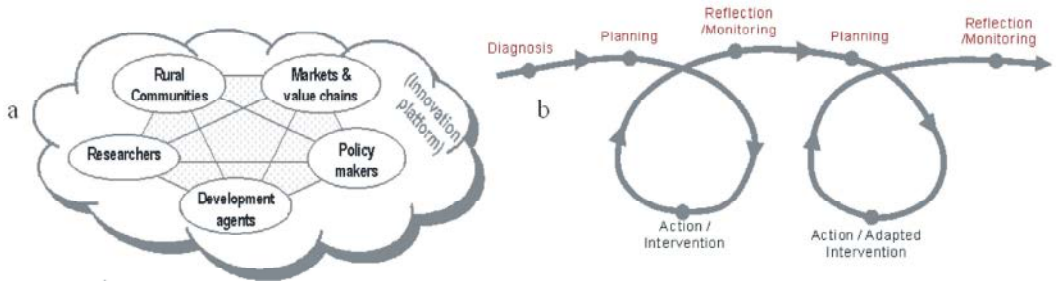

Fig. 2: Schematic illustration of (a) stakeholder interaction on an IP and (b) phases of iterative learning

The functioning of the IP is depended on effective facilitation and coordination of the activities. This function requires significant soft, management, facilitation and people skills for the success of the platform. To a large extent, the engagement of partners is just a small part of the process. The larger part is getting these partners who are different in their philosophies of work and life; partners who never talked to each other and who had mutual distrust for each other and different reward pathways, to work together on a common agenda that would be of potential mutual benefit.

The IAR4D concept gives adequate room for joint partnership between the public and the private sector practitioners on the IP to achieve the much desired effectiveness and synergy from the two sectors of the economy (Table 1). Spielman [14] discussed private and public sector practitioners and gave a distinct characterization of the public-private partnership in international agricultural research and the potential benefits such could yield. The private sector is often reluctant to partner with the public sector practitioners and vice-versa because of their mutually exclusive rewards pathway. While the private sector is motivated by profit, the public sector is rewarded by the generation of international public goods.

The private sector practitioners concentrate on generating profit among stakeholders along the value chain, while the public sector stakeholders generates its different outputs required for promotion within the civil service system. For instance, the outputs required for a researcher are technologies that are generated, disseminated, adopted and published in public domains. The output of the extension agent is measured by the technologies he has successfully transferred which are being utilized by farmers. For the policy makers, outputs are measured by the number of informed policies that has been passed.

Table 1: Delineation of Typical Innovation Platform Stakeholders into Public and Private Sector Practitioners

	Private Sector	Public Sector
1	Financial institution	Researchers
2	Input dealers	Extension agents
3	Transporters	Policy makers
4	Post harvest handlers	Meteorologist
5	Farmers	
6	End users (Industry)	
7	Insurance	

This dichotomous reward pattern tends to debar the two from working together and deriving synergies from such partnership arrangement. However the set up and operation of the IAR4D within the IP mode tends to overcome this lethargy through effective facilitation using a different set of soft skills.

These skills are currently lacking in the curricula of study for most partners along the value chain. In the short term, the gap could be filled through constant training and retraining of partners thereby making capacity strengthening an important aspect of the work of the platform for enhanced effectiveness.

In the long run, it would be profitable to mainstream these new skills into the curricula of training for agricultural scientists and ARD practitioners at applicable levels.

CONCLUSION

The IAR4D concept has shown that it is possible to carry out agricultural research and development activities in a mode that yield better returns to investment in terms of improved farm productivity, improved income, better livelihood and quality of life for the farmers. Through this arrangement, other stakeholders on the IP will also benefit. This is made possible by ensuring the engagement and effective participation of the various stakeholders along the value chain of the commodity of interest. The interest of the stakeholders is sustained on the platform partly by the IP arrangement which

ensures that all partners have a contribution to make and an obvious benefit to derive from the activities of the IP.. The model proposed in this paper provides the route to achieve this synergy leading to sustainable agricultural development. Building on this approach, it is possible to create innovation platforms for several commodities in a community. In this paper, we have proposed two types of Innovation Platforms. These are platforms for strategy and for operations. Innovation Platforms for operations are created to transform the strategic approach of the institution, department, district, or even the nation into operations that provide mutual benefits to a wide range of participating partners. This way, research and development activities will continue to generate outputs that would transform into outcomes and impact thereby leading to high returns on the investment in the ARD sector.

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