

A Partnership Approach for Effective Engagement of the Private Sector in Agricultural Research and Development

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Abstract: The partnership arrangement in agricultural research and development has been driving by the public sector with concentration on the research and extension institutions. This has considerably hindered the development of the sector such that the technologies that are generated suffer low adoption and the impact is largely limited by institutional and infrastructural constraints. Recent agricultural research and development discourse have indicated a shortfall in the way agricultural research and development activities are conducted and suggested a model that engages all the required partners to foster the development of the sector. The private sector are of particular importance in this regards, but their engagement and partnership are not direct as their expectation and motives for profit are quite different from that of the public sector where public goods are generated. Managing this dichotomy in output require a different way of doing things. To offer a solution, this opinion article reviews the characteristics of the private sector stakeholders in agriculture, with regards to important issues that characterizes their effective engagement. It suggested an approach for engaging this sector and recommended the Integrated Agricultural Research for Development Concept (IAR4D) and its innovation platform on which the private sector can effectively be engaged to contribute to agricultural research and development.

Key words: IAR4D • Innovation system approach • Private sector • Smallholder farmers • Innovation platform

INTRODUCTION

The need to improve the lot of the smallholder farmers in Africa especially in the sub-Saharan Africa has been a subject of intellectual and political discussion in the recent past. This is because of the role that agriculture plays in the economic and social development of countries on the continent. More than 70% of the inhabitants of sub-Saharan Africa derive their livelihood from agriculture related activities [1] yet the productivity of the sector is low and its contribution to the national GDP is low, it ranged between 20-35% [2] reflecting the true state of productivity of the sector. This has direct bearing on the wealth level of the countries and in turn the poverty status of the population. The spate of poverty in Sub Saharan Africa is very high with an average of 65% of the inhabitants still living below the US \$1.5/day poverty level [2]. Yet agriculture is still

acknowledged as a sector with high potentials to engender economic development of the different countries, this is attributed to large untapped agricultural resources on the continent in-terms of arable land, diverse agro-ecologies, climatic modification and agro-biodiversity [3].

Recent opinion has viewed Africa as a location where abundant food could be produced to feed the growing population of the world, this offered good opportunities that could be explored to further develop the sector and redeem the smallholder out of poverty [3]. The strategies to orchestrate the development of the sector need to be all encompassing and holistic in nature. It should also utilize lessons from past initiatives.

Advances in agricultural research and development discourse have indicated a shortfall in the way agricultural research and development activities were conducted. Over the years research in agriculture has concentrated

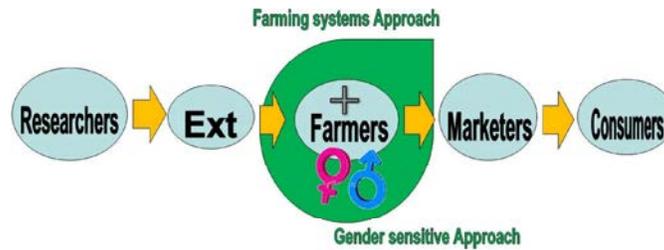
on generating knowledge and technologies to address identified technical constraints along the commodities production pathway [4]. This has led to the development of many knowledge, technologies and inventions, a few of this has yielded socio-economic benefits for the farmers, but largely the benefits from these research outputs fall far below their potentials. Many varieties developed in Africa suffer lack of adoption, not because the varieties are not superior, but sometimes they require external inputs and other management practices that the farmers cannot afford. For instance the use of fertilizer in sub-Saharan Africa smallholders system has been reported to be at 9kg N/ha, while farmers in the west and Asia used 140kg N/ha [5]. The difference in quantity used largely reflect in the output of their enterprise and in SSA it was due to high cost of fertilizer, lack of financial wherewithal to purchase it and many times the unavailability of the commodity as at when it is needed on the farm. Other important issues that prevent socio-economic benefits from technologies is the marketing issues, this borders around access to market, smallholders negotiation abilities and the competitiveness of commodity prices with the imported commodity of the same quality [6]. Without a good resolution to the marketing issues, a good technology in the hand of the farmers may still make him poorer, not because of low output at the farm level but because he cannot function optimally and attract good price for his commodity. A number of methods including capacity development for the smallholders could be used to address the different dimensions of the market issues, but an important part is the policy dimension that targets the creation of opportunity at the local and regional level. For instance policies that limit importation of rice could leverage good local market for the locally produced rice; another example is the gradual 40% inclusion of cassava flour in manufacture of bread in Nigeria. This is expected to create huge market for cassava locally. The success of these initiatives hinges on fostering effective partnership arrangement among the stakeholders in agriculture and for each partner to perform its role effectively such that good complementarities will be achieved for success.

Fostering partnerships will require the identification and mobilization of the effective partners to contribute to the development of the sector. Effectively, two broad categories of partners are known in agriculture, the public sector and the private sector practitioners, these two

operates on a different plane, but their combined effect is required if Africa agriculture will develop effectively. This opinion paper examines the importance of partnership to agricultural development and makes a synthesis of possible models for engaging the private sector to effectively contribute to the sector.

Roles and Trends in Africa Agricultural Partnerships:

The partnership arrangement in agricultural research and development has been driving by the public sector with concentration on the research and extension institution. These partners constituted the traditional Agricultural Research and Development (ARD) stakeholders in most Africa countries and they have the mandate to generate and disseminate technologies to farmers with the perception that the problem of the sector lays solely with the use of traditional tools and unrefined technologies [3]. The attempt to generate solution to this perceived problem initiated the first lap of modern era in Africa agricultural research that spans from an undefined date in the 1950s till the early 1980s. It witnessed a start in history with the formation and consolidation of the National Agricultural Research System supported by International Agricultural Research Centers. At this time, there was the conduct of disjointed disciplinary on-station research and series of efforts on cultivar development for various crops [7]. Bults of the efforts were made by expatriate scientists that were mainly based in CGIAR centers and few research centers on the continent. However, the National Agricultural Research System (NARS) that comprises of academics from the faculty of agriculture in the universities, the staff of the ministry of agriculture and the personnel's of the various research institutes in the countries. The NARS was considered to be weak in capacity and the need to strengthen their capacity was felt by the development partners. A World Bank supported program was initiated in a number of countries of the sub-Saharan Africa then with good concentration on the development of a viable extension system to transfer technologies to using the linear approach. There was also the development of a good management structure to enable the NARS to develop programs that are relevant to their clients [8]. The good progress experienced in the smallholders system during this era gradually diminished with the expiration of the World Bank funding support and the institutional inefficiencies of the government system that is expected to take over the program.



Organization of ARD actors in a linear configuration

A progression that relayed from the extension phase was the advent of the pluralistic participation in agricultural research and development with much grass-root emphasis and integration of the Information system for long term innovation. This led to the popularization of the farming systems research approach and its various variants viz., adaptive on-farm research, sustainable agriculture techniques, multidisciplinary research approach, multi-institutional cooperation, use of ICT etc. In the early part of the last decade around the year 2000, there was the awareness to refocus research to yield development; this led to the development of various theoretical approaches that borders on the techniques for technology transfer and the involvement of multi disciplinary and multi institutional teams of actors. There was also the awareness of the need to regard agriculture as a system with a number of sub-systems that must work together in a coherent manner to yield the desired developmental goals [9].

A number of models were developed and used to accentuate the growing knowledge of system configuration, some notable systems include;

- Traditional linear model for research and extension
- Farming systems perspective (OFR/FSP)
- Participation/participatory research methods
- Action research
- Rural livelihoods
- Agri-food systems/value chain
- Positive deviance
- Knowledge development, dissemination and use
- Doubly green revolution
- Rainbow revolution
- Integrated Agricultural Research for Development (IAR4D)

Who Is the Private Sector Partner and What Are the Important Issues in its Engagement for Agricultural Development?: The private sector is defined as part of the economy that is not controlled by the state and is run by individuals and companies for profit. The private sector

encompasses all for-profit businesses that are not owned or operated by the government. In the agricultural sector, all component of the system now have the participation of the private sector practitioners ranging from the production to utilization all along the value chain. The components of the system that is erstwhile anchored by the public sector viz., the research and extension now have considerable presence of the private sector practitioners. However, the private sector is a lot different from the public sector in the sense that the public sector stakeholders often use public funds for their activities and they are expected to generate international public goods. Meanwhile the private sector practitioners uses privately generated fund and they only generates goods and services that can be exchanged for financial gains, in order words, the private sector practitioners operates in business mode and are interested in profit [10]. This has conditioned the outputs of their different endeavors to have a narrow base that is specific to the need of the industries. This is more observed in the research segments where crop varieties with specific qualities that meet specific industrial needs are generated through privately owned research department. Oftentimes investments into such endeavor are huge, but the private sector will willingly engage in it based on careful calculation of the returns over time. Apparently, the outputs from the research activities of the private sector practitioners are not targeted at the needs of the smallholder farmers and in instances when such products as varieties of crops, agrochemicals, cultivation systems etc. could meet the need of the smallholders, the private sector will often make it available for a fee. This condition has largely circumscribed the large benefits that could be leveraged for the agricultural sector development through technologies that were generated by the private owned research endeavors. The situation is further compounded by the peasant nature of the smallholder farmers and lack of financial wherewithal to purchase the needed inputs and or unwillingness to invest into such endeavors. The traditional relationship of the private sector with the smallholder farmers has often been

regarded as exploitative by development practitioners [11]. The middle-men syndrome have had its long play ripping-off the farmers of good returns for their commodities; the middle men will often take the commodity at the farm gate price which is often ridiculously low such that what accrue to the smallholders will be the least along the commodity value chain. Different categories of the private sectors are the input dealers and the providers of the financial resources. These practitioners offer services to the smallholders, but are very reluctant to expand their activities considering the risk involved. The supply of input to the smallholders has been one of the important constraints to increased productivity of the smallholders system, yet the input enterprise has not significantly increased to address the problem because of other institutional related issues, such as, the availability of effective demand by the farmers' i.e. did the farmers truly needs the input commodities? And do they have the financial means to acquire them? Other issues include the high transaction cost of getting the commodities down to a proximal location for the smallholders to easily access it. These have greatly affected the activities of the input dealers who will only engage in enterprise that have effective demand and will yield considerable profit to justify their efforts. The financial institutions are also careful with the risk involved in the agricultural lending due to vagaries of weather, attack of pest and diseases, unstable market prices for the commodities, incidence of social disturbance and lack of collateral from the farmers to secure the loan.

A number of issues that characterize the private sector practitioners need to be addressed in order to foster effective engagement and leverage their contribution to the agricultural sector. Importantly is the issue of profit and profitability of the different agricultural endeavor that the private sector will participate in. The predominant peasant system that concentrates on household food security and sales of the extras for cash will require a change; such change should ensure increased productivity with intensification, access to market, access to input etc. This will necessarily require considerable research inputs and support of the policy environment to ensure market competitiveness of the commodities. It further implies that the smallholders system needs to be transformed into small-scale enterprise, which will operate in a business mode.

Another issue that requires attention is the risk associated with the conventional agricultural production system. The predominant system in Africa is the rain-fed

system which is susceptible to the erratic rainfall pattern, rainfall failure and its subsequent effect on incidence of pest, diseases and crop failure [12]. Reducing the risk of agricultural production will largely require policy support to develop pro-agriculture infrastructures, such as irrigation, grain storage facilities, cold storage facilities, electricity, rural feeder roads etc. These should also be complemented by a workable agricultural insurance scheme.

The private sectors are concerned more with the possibility of business expansion and availability of outlet for produce. Thus, the support of the policy system for local production, utilization and market competitiveness is vital. A number of commodities produced locally are not competitive price-wise when compared with the same commodity imported from the West and Asia, this difference is often attributed to the concessional affordable financing for agricultural production, availability of good infrastructure and supportive policies that engender production at scale (Adekunle and Fatunbi unpublished data). These conditions and facilities are not available in optimal level in most African countries and they negatively affect the competitiveness of the commodities. The policy instrument is a very important tool that could be used to cushion the negative effects while proper strategy will be established to ensure a permanent remedy. The current policy intervention on the cassava utilization in Nigeria is a good example of policy intervention at ensuring availability for locally produced commodity. Although Nigeria is the largest producer of cassava, it is also one of the countries where cassava is very important in the food chain. The government has stimulated increased production of the commodity but price competitiveness for the exportable products from cassava e.g High quality chips is low because the cost of production locally is higher than the international market price. To eradicate the effect of the loss on the stallholder and the private sector investment into cassava value chain, the government has used policy tool to insist that wheat flour used for bread and other confectionaries should be substituted by at least 40% high quality flour produced from local cassava. This is expected to generate good income for the farmers and the private sector practitioners.

Approaches for Effective Engagement of the Private Sector in Agricultural Research and Development:

The effective engagement of the private sector practitioners in agricultural research and development can be achieved by observing the needed synergy points and

creating an environment for mutual contribution and benefits in the agricultural sector. This implies that the agricultural sector will be structured to run in a business mode rather than the current subsistent outlook characterised by vulnerability. This proposition is further supported by the need to transform the resource poor smallholder farmers into small scale enterprise as a way to reduce rural poverty and improve the agrarian livelihood [13]. To achieve this, agricultural research and development activities will also be carried out in a different way; for instance the support for the smallholder farmers should be made in a different way for it to engender active developmental response rather than generate a dependency syndrome and an attitude of entitlement. Governmental support for commercialization of agriculture should concentrate on developing enabling policy for the sector to flourish; catalysing local and foreign investment and developing infrastructure that support the growth of the sector [14].

In order to effectively engage the private sector for investment in agriculture, the demand side of the different commodities should be developed sufficiently to attract profitable investment. This could be achieved by combination of strategic technical efforts for development of new products and supportive policies for the use of locally produced commodities. This should be substantiated with facilitation of firm agreement between the demand and supply of the different commodities. This could be facilitated through the use of scientific knowledge in modelling to create a balance in market scenario and ensure fair pricing and equitable reward for the different players.

The Forum for Agricultural Research in Africa (FARA) has developed the Integrated Agricultural Research for Development Concept (IAR4D) as a new way of conducting ARD activities in order for it to yield innovations rather than only technologies and inventions. This concept has been implemented in eight countries of the sub Saharan Africa as the Sub Saharan Africa Challenge Program (SSA CP) to proof the IAR4D concept. The IAR4D concept attempts to foster a paradigm change in the way ARD is conducted from the linear method to more cyclic and an upward spiral mode. The partner's engagement in traditional linear method is limited to a few traditional partners' viz., the researchers, extension agents and the farmers. The linear method have shortcoming that limits the realization of socio-economic benefits from research and development activities. While the linear method could generate knowledge, technologies and

inventions, it lacks the required framework to convert the technological outcomes to meaningful socioeconomic benefits and commensurate impact to justify its huge investment. Technologies generated on the linear system are not often demanded as such it suffer low adoption and require much technology transfer efforts to get it to the end users. Particularly, the linear method is deficient in its partnership arrangements; it only engages a few traditional partners and assumes that the problem of agricultural development is only technological in nature [9]. Meanwhile, the agricultural sector also largely suffers from institutional and infrastructural related constraints which require simultaneous solutions for innovations to be generated. Often under the linear method, a lot of technologies with good potentials are generated, but they remain on the shelves in the research institutions simply because institutional constraints will limit socioeconomic benefits from the best technology, if not addresses.

The IAR4D concept is designed to overcome the shortcomings of the traditional research and development system. It entails a multi-sectoral, multi-stakeholders orientation to agricultural problem diagnosis and draws on integrated approaches using 'hard' and 'soft' sciences to provide solutions, while it maximizes the available resources. It is premised on the innovation systems approach and requires systemic interaction among all stakeholders around specific commodity or production system. These stakeholders are engaged first along the commodity value chain and further within the commodity innovation sphere. The stakeholders' engagement often takes place on an Innovation Platform (IP) which could either be a virtual or physical forum established to facilitate interactions and learning among stakeholders selected from a commodity value chain and around its innovation sphere. Their interaction leads to participatory diagnosis of problems; joint exploration of opportunities and investigation of solutions leading to the generation of agricultural innovation along the targeted commodity. The focus of the IP is to generate innovations that yield benefits for all the stakeholders on the platform. The IP often consists of the farmers, the researchers, extension /advisory services, the commodity end user or output market, input dealer, financial institution, policy maker, other private service providers (transporters, equipment providers e.t.c), meteorologist e.t.c. The platform operates in a business mode with defined target and specific market to meet. The IAR4D concepts have unique characteristics that helps it to succeed; they include:

- IAR4D simultaneously addresses research and development as a fused continuum for generation of innovation.
- All stakeholders on an IP have a contribution and benefits which sustain their interest and continued participation.
- Innovation generated using IAR4D will benefit all stakeholders on the platform.
- IAR4D engages the policy makers at different levels all along the process of research and development till innovation is generated.
- IAR4D ensures a smooth public-private partnership in ARD.

The details on IAR4D innovation platform and how to set it IP and operationalized it has been reported elsewhere [9, 15].

The capacity of the IAR4D innovation platform to foster a smooth public-private sector partnership is one of its key advantages that contribute to the generation of impact, (Box 1). While the public sector contributes the introduction of appropriate technologies and extension services on the platform, the private sector handles the more businesslike components, such as supply of finance, input marketing, output marketing etc.

Box 1: The story of Mamera: a Typical Success of the Engagement of Private Sector on an IP in the ARD continuum.

The Mamera success story was generated on the Bubare Sorghum IP in Uganda; it is one of the 36 innovation platforms set up by the SSA CP. The IP works on Sorghum and addresses the problems of low productivity, poor and uncoordinated marketing and lack of storage facilities. These problems were prioritized by the IP that comprised of farmers, researchers (Makerere University, Uganda), Financial Institution, an input dealer. After the first iterations where improved technologies and production practice was introduced, farmers obtained huge increase in the yield of sorghum and marketing became a more prominent problem necessitating the need for effective market linkages and or the development of new product.

To address this problem, the researchers from Makerere University extended a pre-developed technology for production of a beverage drink from sorghum to the platform and this was taken up by a private sector practitioner on the platform, the Huntex Industries for further refinement, production and

marketing. The product became a success that opened new market for Sorghum, generates more income for farmers, provided new jobs and leveraged benefits for all the stakeholders on the platform.

Econometrics analysis revealed that the benefits/cost ratio of Mamera production and marketing is 6.64 suggesting that it is quite profitable and the margin is good enough for all stakeholders to be happy. Through Mamera drink, 5000 farmers increased their income by an average of 80% in Uganda.

The issue of branding was an intrinsic aspect of product marketing, this was resolved on the IP and a strategic collaboration framework was developed. The Huntex Industries continue to perform the MAMERA processing function together with the IP. The ultimate goal, of course, would be to facilitate the sorghum IP production to consumption value chain function in a profitable manner for all the stakeholders using their - owned brand.

In conclusion, Mamera is a product of indigenous knowledge that is strengthened with modern science and contributions from the University of Makerere. The product finds a willing entrepreneurs on the IP; farmers who are looking for market for their sorghum finds a buyer on the IP, the input dealers also find the market for its products. And with the cooperation of the Policy makers and extension services and finance from Stanbic Bank, a Win-Win Partnerships was established.

CONCLUSION

The engagement of the private sector practitioner in agricultural research and development is vital to the development of the sector in Africa countries. This represent the model that has worked in the West and some Asia countries, where the production to marketing value chain in agriculture has been taken over completely by the private sector and it now run in a business mode. In these developed nations, the role of the public sector is limited to a few research activities, some extension work, but mainly the generation of good policies, system moderation and infrastructural development.

Considering the state of Africa agriculture, where bulk of the production takes place under a subsistent system of the resource poor farmers. A different approach is needed to turn around the situation and translate the smallholder farmers to small scale enterprise. Such approach will necessarily need to effectively engage the private sector to contribute to agricultural research

and development activities. The proposed IAR4D concept has been tested in eight countries of sub-Saharan Africa on 36 innovation platform with considerable success. The successes include quick reduction in smallholders' poverty level through high productivity, increase in income and access to market. The private sector contribution to these successes revolves around the business component of the entire chain especially as it relates to input and output market, establishment of business unit to run value chain development and generation of new products. The public sector contribution has been mainly around the generation and supply of technologies from the research system, technology transfer from the extension system and provision of supportive policies environment.

The acceptance of the IAR4D concept is increasing among the ARD practitioners and policy maker in Africa, yet it will require a coordinated attempt to scale it out for quick and better output. The sub-regional organization that anchors ARD will have a major role to play in this regards as well as the national systems.

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