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IT MAY TAKE A LITTLE WHILE…: INSIGHTS ON AGRICULTURAL RESEARCH FOR INNOVATION AND DEVELOPMENT IN NIGERIA

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Abstract

Conventional research and extension approaches in Sub-Saharan Africa have proven ineffective in translating research into innovation and impact. This paper describes the main operational elements of a new approach to innovation support being tested in Nigeria for using research for agricultural innovation and development. The approach described in the paper is part of the DFID-funded Research Into Use (RIU) Programme. The lessons from this experiment are discussed in the context of agricultural research and development activities and the wider policy, institutional and political economy setting it is taking place in. The main conclusion of the paper is that while the experience of RIU in Nigeria in facilitating the development of networks and other multi-actor processes can clearly promote agricultural innovation and impact, the process of institutionalising these approaches at the national level is going to require sustained and consistent support from both the national policy domain and international development partners over many years to come. In other words, a medium to long-term agenda of strengthening agricultural innovation capacity needs to be addressed in the policy and institutional domain rather than just in terms of the skills and actions of farmers and market actors.

Key words: Agricultural Research, Innovation, Development, Policy, Poverty Alleviation, Value Chain Development, Agribusiness, Nigeria, Networking

JEL Codes: N5, N57, O13, O19, O22, O31, O38, Q13, Q16

RIU DISCUSSION PAPER SERIES

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LIST OF ACRONYMS

ADP	-	Agricultural Development Programmes
AR4D	-	Agricultural Research For Development
ARCN	-	Agricultural Research Council of Nigeria
ARMTI	-	Agricultural and Rural Management and Training Institute
C:AVA	-	Cassava: Adding Value for Africa programme
CAADP	-	Comprehensive African Agricultural Development Programme
CGIAR	-	Consultative Group on International Agricultural Research
CIDA	-	Canadian International Development Agency
CORAF/ WECARD	-	Conseil Ouest et centre Africain pour la Recherche et les Developpement Agricoles/ West and Central African Council for Agricultural Research and Development
CRT	-	Central Research Team
DFID	-	Department for International Development
ECOWAS	-	Economic Community of West African States
FAO	-	Food and Agriculture Organization of the United Nations
FARA	-	Forum for Agricultural Research in Africa
FIM	-	Facility for Innovative Markets
IFAD	-	International Fund for Agricultural Development
IFPRI	-	International Food Policy Research Institute
IITA	-	International Institute of Tropical Agriculture
MDGs	-	Millennium Development Goals
MOU	-	Memorandum of Understanding
NACRDB	-	National Agricultural, Cooperative and Rural Development Bank

NAFDAC	-	National Agency for Food and Drug Administration and Control
NAIC	-	National Agricultural Insurance Company
NALDA	-	National Agricultural Land Development Authority
NARI	-	National Agricultural Research Institute
NARS	-	National Agricultural Research System
NEPAD	-	New Partnership for African Development
NIFFR	-	Nigerian Institute for Freshwater Fisheries Research
NIOMA	-	National Institute for Oceanography and Marine Research
NRCRI	-	National Root Crops Research Institute
PICS	-	Purdue Improved Cowpea Storage Project
PrOpCom	-	Promoting Pro-Poor Opportunities Through Commodity and Service Markets
PROSAB	-	Promoting Sustainable Agriculture in Borno State
R&D	-	Research and Development
RBDA	-	River Basin Development Authorities
RIU	-	Research Into Use
RNRRS	-	Renewable Natural Resources Research Strategy
UK	-	United Kingdom
UN	-	United Nations
UNDP	-	United Nations Development Program
USA	-	United States of America
USAID	-	United States Agency for International Development
WARDA	-	West African Rice Development Association
WAAPP	-	West African Agricultural Productivity Programme

1. INTRODUCTION

Questions about how the impact of agricultural research can be improved in Sub-Saharan Africa have vexed policy-makers and development planners for the last 40 years. Historically, the response has been to couple public investments in research with operationally-separate, state-run extension services. Paradoxically, despite previous national and international commitments, the effectiveness of these strategic tools and the effectiveness of research and extension systems have declined. With little visible impact — and consequent lack of political support — investments, particularly at a national level, have also declined. Coming full circle the international community has once again revived funding for agriculture as its contribution to poverty reduction has been rediscovered. But, if conventional research and extension arrangements have proven ineffective in translating research into innovation and impact, what alternative approaches might be tried? What would these alternatives look like operationally and what are the implications for wider policy?

This paper describes the main operational elements of a new approach being tested in Nigeria for using research for agricultural innovation and development, and presents some preliminary lessons from its application. The approach described in the paper is part of the DFID-funded Research Into Use (RIU) Programme. The RIU programme was established by DFID to both achieve impact from past investments in agricultural research as well as promote rural livelihoods and address poverty, but its design explicitly approaches these tasks in an experimental way and with a view to learning lessons in order to inform wider practice and policy.

The rest of the paper is organised into four main sections. Section 2 covers a brief introduction to the broad Sub-Saharan Africa context, and describes the historical and current status of agricultural research and support infrastructure in Nigeria. Section 3 describes the strategy of the DFID-funded RIU-Nigeria Programme in relation to the country context described in Section 2, and briefly describes three main operational elements of the RIU-Nigeria experiments, namely: value chain-based multi-stakeholder networking or

innovation platforms, engagement with relevant national agricultural policies, processes and priorities, and targeted collaboration with other development agencies to leverage impact and advocacy. The fourth section presents and discusses a number of results from the RIU-Nigeria experiment. Section 4 identifies and discusses the lessons learned so far and offers some key recommendations for improving the effectiveness of agricultural policy and practice in Nigeria.

The main conclusion of the paper is that while the experience of RIU in Nigeria in facilitating the development of networks and other multi-actor processes can clearly promote agricultural innovation and impact, the process of institutionalising these approaches at the national level is going to require sustained and consistent support from both the national policy domain and international development partners over many years to come. This is a conclusion that is not unique to Nigeria and reflects the challenges of shifting from improving the supply of knowledge to improving the capacity of multi-actor networks to demand, have access to, and use this knowledge in a complex and dynamic sector such as agriculture. The paper begins by explaining the wider context of agricultural research and sector development in Sub-Saharan Africa and Nigeria, in particular.

2. SUB-SAHARAN AFRICA: THE BROAD CONTEXT

Smallholder farming, minimal technological inputs, cottage utilisation of produce, and culturally-bound on-farm and post-harvest practices are all features of Sub-Saharan African agriculture. These are community-based and slow-changing. Agriculture is still the principal employer of labour and source of livelihoods and foreign exchange earnings in the region. While Sub-Saharan African countries have had the world's highest population growth rate in the first decade of the 21st Century (World Bank, 2009), the growth rate in agricultural productivity in the region has not quite managed to keep pace

Despite significant public and non-state investments in Sub-Saharan African agriculture, the pace of innovation and development in the sector has been slow and much remains to be achieved. A 2008 report by the International Food Policy Research Institute (IFPRI) estimated that the region needed an *annual* investment of US$5.75 billion to achieve significant progress toward addressing the first Millennium Development Goal (MDG1) on poverty and food security by 2015 (Shenggen and Rosegrant, 2008). In the face of the global economic recession and financial meltdown after the report, it is doubtful that any Sub-Saharan African country has so far achieved even 25% of that investment target.

Sub-Saharan countries, with decades-long support from international donor organisations, have invested in setting up agricultural research institutes, state-run extension systems, university faculties of agriculture, human capacity development, the production and adoption of labour-saving and productivity-enhancing technologies and improved agricultural management practices. In other words, there has been significant public investment related to Sub-Saharan African agricultural research, even if food security needs are still far from being met and the agriculture sector is not yet globally competitive. Despite this considerable public investment in agriculture, which has undoubtedly contributed to a stock of agro-related human capacity development and national public goods in knowledge and technological resources, it is believed that less than 20% of available national agricultural research outputs in the last 30 years have been put into use by farmers and other intended end users. This situation can point to a number of factors, among which are:

the effectiveness of the extension system, the role or absence of the private sector, and the degree to which diverse value chain stakeholders network together and are involved in the innovation and development processes.

One example of an investment in Sub-Saharan African agriculture and rural livelihoods in recent decades was the 10-year (1995-2005) DFID-funded Renewable Natural Resources Research Strategy (RNRRS). The strategy aimed to contribute to the generation of international public goods through funding directed to the Consultative Group on International Agricultural Research (CGIAR) as well as to respective national agricultural research institutes (NARIs) in targeted Sub-Saharan African countries. The goals of the RNRRS strategy were to alleviate poverty, promote economic growth, mitigate environmental problems, and enhance productive capacity in developing countries in economically and environmentally-sustainable ways. The strategy benefited a number of countries in the region in terms of strengthening national agricultural research infrastructure, human capacity development, and new knowledge and technologies intended to address innovation challenges in key agricultural sub-sectors.

In other words, the RNRRS contributed to the stock of national and international agricultural knowledge and technologies, potentially relevant to agriculture and rural livelihoods in Sub-Saharan Africa. But how many of these research outputs, even after due technical testing and validation, have been put into use in countries in the region and generated the much-needed innovation and developmental impact?

Investments in Nigeria's Agricultural Research and Extension Systems

There was some overlap between the DFID's RNRRS decade (1995-2005) and the period when Nigeria was under sanctions by the United Kingdom and some other major donor nations and multilateral organisations on account of the political conditions in the country at the time. Therefore, it is possible that despite Nigeria's strategic importance in Sub-Saharan Africa, the country did not realise the full benefits that it could have accrued through RNRRS investment in agricultural research.

Nonetheless, the size of public investment in Nigerian agriculture is reflected in the number of federally-funded national research institutes, federal colleges of agriculture, specialised universities of agriculture and expansive faculties of agriculture in all federal universities (see Table 1 on the next page). Furthermore, various specialised agriculture-related state-owned organisations have been established over the years. Among these are the National Agricultural Land Development Authority (NALDA), the National Agricultural, Cooperative and Rural Development Bank (NACRDB), the National Agricultural Insurance Company (NAIC), the Agricultural and Rural Management and Training Institute (ARMTI), various River Basin Development Authorities (RBDAs) and Agricultural Development Programmes (ADPs) across the country. But the effectiveness and impact of this plethora of public investments in Nigerian agriculture can be questioned, given low per-hectare output, lack or slow pace of innovation, poor management practices, minimal post-harvest value addition and other inefficiencies, which are still dominant features of this sector, despite its importance as the main employer of the country's labour.

TABLE 1: LIST OF NATIONAL AGRICULTURAL RESEARCH INSTITUTES IN NIGERIA

S/N	NAME OF RESEARCH INSTITUTE	YEAR ESTABLISHED	FORMAL MANDATE
1	Lake Chad Research Institute, P.M.B 1293, Gamboru Road Maiduguri, Borno State	1960	Genetic improvement and development of production technologies for wheat, millet, and barley; the improvement of the productivity of the entire farming system in the North Eastern Zone
2	Institute for Agricultural Research P.M.B 1044 Ahmadu Bello University. Samaru Zaria	1924	Genetic improvement and development of production and utilisation technologies for sorghum, maize, cowpea, groundnut, cotton, sunflower, and the improvement of the productivity of the entire crop-based farming system in the North West Zone of Nigeria
3	Institute of Agricultural Research and Training P.M.B 5029, Ibadan, Nigeria	1956	Soil and water management research, genetic improvement of kenaf and jute, and improvement of the productivity of the entire farming system of the South West Zone
4	National Cereal Research Institute P.M.B 8 Badeggi, Bida Niger State	1975	Genetic improvement and production of rice, soybean, benniseed, sugarcane and improvement of productivity of entire farming system of the Central Zone
5	National Root Crop Research Institute P.M.B 7006, Umudike, Umuahia, Abia State	1976	Genetic improvement of cassava, yam, cocoyam, Irish potato, sweet potato, and ginger and overall research in improvement of farming system of the South East Zone
6	National Horticultural Research Institute P.M.B 5432 Idi-Ishin, Ibadan	1975	Research into genetic improvement, production, processing and utilisation of fruits and vegetables, as well as ornamental plants
7	Nigerian Store Product Research Institute P.M.B 1489km 3 Asa Dam Road, Ilorin Kwara State	1977	Research into improvement of major food and industrial crops and studies on stored product pest and diseases, pesticides formulation and residue analysis
8	Rubber Research Institute of Nigeria P.M.B 1049 Iyanomo Benin City	1961	Research into genetic improvement, production and processing of rubber and other lather producing plants
9	Cocoa Research Institute of Nigeria P.M.B 5244 Idi-Ayunre Ibadan	1964	Genetic improvement, production and local utilisation research on cocoa, cashew, kola, coffee and tea
10	Nigerian Institute for Oil Palm Research P.M.B 1030 Benin City	1939	Research into genetic improvement , production and processing of oil, coconut, date, raphia and ornamental palms
11	National Animal Production Research Institute P.M.B 1096 Shika, Zaria	1977	Research on food animal species and forages
12	National Veterinary Research Institute P.M.B 01 Vom	1924	Research into all aspects of animal diseases, their treatment and control, as well as development and production of animal vaccines and sera
13	National Institute for Freshwater Fisheries Research, P.M.B 6006 New Bussa	1968	Research into all freshwater fisheries, and long term effects of man-made lakes on ecology and environment throughout the country
14	Nigerian Institute for Oceanography and Marine Research P.M.B 12729 Victoria Island Lagos	1975	Research into the resources and physical characteristics of Nigerian territorial waters and the high seas beyond; genetic improvement, production and processing of brackish water and marine fisheries
15	National Agricultural Extension, Research and Liaison Services, Ahmadu Bello University, Zaria	1975	Research into technology transfer and adoption studies; overall planning and development of extension liaison activities nationally; collation and evaluation of agricultural information

In 2007, the Federal Government of Nigeria established the Agricultural Research Council of Nigeria (ARCN), which had earlier been created by military decree in 1999. The statutory functions of ARCN include advising the federal government on national policies and priorities on agricultural research, training and extension. Part of this broad role involves coordinating the functions of national agricultural research institutes (NARIs) and federal colleges of agriculture. The ARCN's statutory role include preparing periodic, national master plans for agricultural research, training and extension, and collaborating with relevant national and international resource organisations for the promotion of agricultural research or getting existing research outputs into use (Federal Republic of Nigeria Official Gazette # 33, 1999).

Serendipitously, the establishment of the ARCN in 2007 coincided with the initiation of the DFID-funded Research Into Use (RIU) Programme in Nigeria, and the two entities found a strong thematic affinity and evinced mutual interest in working together. Consequently, the ARCN and the RIU-Nigeria Programme agreed to and signed a formal Memorandum of Understanding (MOU), which stipulated areas of cooperation and collaboration. In line with the terms of the MOU, the ARCN provided an office space within its office complex for the use of the RIU-Nigeria Programme in Abuja. The ARCN also facilitates access to, and the cooperation of, national agricultural research institutes whose mandates are directly related to the sectors of intervention of the RIU-Nigeria Programme.

Prior to the establishment of the ARCN, the national agricultural research institutes were coordinated by a unit within the Federal Ministry of Agriculture. Now, the ARCN, which has statutory autonomy and a governing board, also has a mandate to collaborate directly with international development resource organisations in the pursuit of its mission. Staffed by scientists and technocrats, the ARCN has already helped to revive confidence and optimism in the Nigerian agricultural research sector within a short time.

Evidence suggests that budgetary allocations by the Nigerian government for the funding of agricultural research priorities in the country have relatively increased since the inception of the ARCN. Also, ARCN has its own directorate for donor relations, enabling it to seek out and enter into contractual or targeted partnerships with international development agencies to

address general or specific needs in the Nigerian agricultural research system. Consequently, ARCN currently participates actively in, or has active partnerships with: the Consultative Group on International Agricultural Research (CGIAR), the United Nation's Food and Agriculture Organization (FAO), the International Institute of Tropical Agriculture (IITA), the International Fund for Agricultural Development (IFAD), the Forum for Agricultural Research in Africa (FARA), the New Partnership for African Development (NEPAD), the Comprehensive African Agricultural Development Programme (CAADP), the DFID-funded RIU Programme, the Africa Rice Center (formerly West African Rice Development Association – WARDA), the World Bank on the West African Agricultural Productivity Programme (WAAPP), the West and Central African Council for Agricultural Research and Development (WECARD/CORAF), and the ECOWAS Directorate on Agriculture.

The United Nations Development Programme (UNDP) in Nigeria recently proposed supporting a tripartite collaboration involving ARCN, RIU-Nigeria and UNDP on a private sector development intervention to be known as the Facility for Innovative Markets (FIM). UNDP envisions utilising the RIU-ARCN relationship template to forge a similar collaboration with the Nigerian Federal Ministry of Commerce and Industry to promote private sector development. ARCN and RIU-Nigeria are interested in utilising the FIM intervention in support of agro-related microenterprise development in order to further boost the impact of the ARCN-World Bank WAAPP partnership.

These developments were made possible because ARCN has the focus, expertise and flexibility to respond quickly to opportunities for partnerships with international resource agencies.

3. RIU: STRATEGY FOR THE NIGERIA COUNTRY PROGRAMME

The DFID-funded RIU Programme is an agricultural research-for-development (AR4D) project, the primary goal of which is to generate, accumulate, evaluate and communicate evidence on effective ways through which agricultural research can contribute to innovation and development. The project's mandate includes gathering and disseminating evidence and lessons on how best to facilitate end-user or intended-user adoption of agricultural innovation for development. The project adopted a two-pronged strategy, involving:

i. ***The promotion of increased demand*** for, and use of, outputs from the 1995-2005 DFID-funded RNRRS investments and Nigeria's own National Agricultural Research System (NARS) outputs for the development of rural livelihoods and economic empowerment through targeted support to selected agricultural enterprises; and
ii. ***Learning and dissemination of lessons and evidences generated*** under the multi-stakeholder, value chain-based Innovation Platforms to inform policy, support related national processes and priorities, advise on strategies for scaling up the size and impact of successful efforts, and contribute to the debate on how DFID might best support Agricultural Research for Development (AR4D) in Sub-Saharan Africa.

By facilitating the above-mentioned activities, the RIU Programme, being a research project, seeks to understand the mix of actors, policies, institutions and circumstances that can allow agricultural research to optimally contribute to innovation and development (Hall, 2009).

The RIU-Nigeria programme has so far pursued a combination of strategies in attempting to facilitate agricultural innovation and development processes, albeit on a pilot scale and under specific conditions. Questions being explored by the programme include: investment in research, the management of research and its outputs, extension services, intended-user access to relevant information, and the organisational capacity of diverse local intermediaries and stakeholders related to selected value chains.

The totality of RIU programme activities in Nigeria can be grouped into three categories, namely (i) Facilitation of networking among diverse stakeholders; (ii) Engagement with relevant national policies, institutions, processes and priorities; and (iii) Collaboration with other development agencies working in targeted value chains.

EXPERIMENTAL ACTIVITIES

Facilitation of stakeholder networking: This involved a number of activities on the part of the RIU-Nigeria programme, including:

i. Identifying and bringing together the intermediaries and stakeholders — farmers' associations, women's groups, post-harvest processors and traders, technology fabricators, scientists from research institutes, local government officials responsible for agriculture, policy-makers from related public agencies from both state and federal levels, and major private sector companies whose raw materials related to the value chain
ii. Managing group discussions to sensitise these various entities, thereby enabling them to realise that they are part of one value chain, and therefore will each benefit directly or indirectly from a collective effort aimed at addressing bottlenecks, innovation challenges or policy issues in their sub-sector
iii. Facilitating discussions and negotiations to identify the bottlenecks, innovation challenges or policy issues, and prioritise them for the purpose of addressing them
iv. Connecting the innovation platform members to resource persons or agencies that can respond to the identified issues to be addressed
v. Soliciting feedback or evaluative comments from innovation platform members to know their views on the outcomes of the activities and processes facilitated. These activities involved applying selected national and international agricultural research outputs towards three outcomes — farm productivity, post-harvest value addition and market development, and policy enhancement — to address innovation challenges in three sub-sectors, namely aquaculture, cassava and cowpea/soybean/livestock linkage under the RIU-Nigeria programme (see Table 2 later on in this section).

Engaging with relevant national policies, institutions, processes and priorities: This involves working with national agricultural research institutes (NARIs) through the Agricultural Research Council of Nigeria (ARCN), which is the federal coordinating agency on agricultural research. The issues being addressed include:

i. Contributing to the compilation and collation of research outputs from the 15 agricultural research institutes in the country as part of a knowledge management function
ii. Facilitating the sensitisation and reorientation of NARIs on the experimental approaches under the RIU Programme in order to facilitate agricultural innovation and development by getting national and international research outputs into use
iii. Contributing to the formulation and implementation of innovation platforms in designated 'adopted villages' by the various research institutes
iv. Working with respective agricultural research institutes to address key innovation challenges relating to local capacity to produce high-quality, affordable local fish feed, fingerlings and brood stock (aquaculture), mosaic disease-resistant cassava varieties, rust-resistant soybean varieties and high-yielding, medium maturing, and high-silage cowpea varieties
v. Linking members of the various innovation platforms to a federally-funded, ₦200 billion public-private partnership initiative for agriculture and rural development in Nigeria
vi. Working with the Nigerian Federal Ministry of Agriculture and Water Resources and the Federal Department of Fisheries in formulating quality-control measures in the aquaculture sector aimed at certifying fish farmers in order to prevent the use of growth hormones, inferior-quality fingerlings, and other quality control issues in the aquaculture sector
vii. Collaborating with state-funded agricultural development programmes in promoting improved storage (i.e., solarisation and triple bagging) of cowpea to eliminate weevil infestation which causes post-harvest losses to cowpea farmers and marketers (see Table 2).

Collaboration with relevant development agencies working in targeted value chains: There are several international development assistance agencies working in various crop systems

and value chains. These include the International Institute of Tropical Agriculture (IITA), the Cassava: Adding Value for Africa (C:AVA) Programme funded by the Bill & Melinda Gates Foundation, the Forum for Agricultural Research in Africa (FARA), the USAID-MARKETS Programme; the Promoting Pro-Poor Opportunities Through Commodity and Service Markets (PrOpCom), the IITA-administered and Gates Foundation-funded Purdue Improved Cowpea Storage (PICS) Project; The Sasakawa Project, the PROSAB Project funded by the Canadian International Development Agency (CIDA), the New Partnership for African Development (NEPAD), the Comprehensive Africa Agriculture Development Programme (CAADP), and the Economic Community of West African States (ECOWAS) Agriculture Commission.

The RIU-Nigeria Programme involved C:AVA in the 2009 Cassava Policy Stakeholders Forum, where a draft report on an appraisal of policies affecting the cassava sector (especially cassava flour) was presented for public comments/feedback. The comments were incorporated into the final report and presented to the Nigerian Federal Ministry of Agriculture, and later to the National Assembly (House Committee on Agriculture). RIU also collaborated with the IITA Kano Station to facilitate the promotion and adoption of triple bagging as an improved storage method for cowpea, to address post-harvest losses in storage due to weevil infestation. Other entities involved in the multi-agency collaboration on improved cowpea storage promotion included Purdue University, USA, the Bill & Melinda Gates Foundation, the Lela Agro Products Ltd. (a private sector producer of bags), six state agricultural development programmes, selected local government councils, freelance agro-suppliers and agricultural extension agents.

TABLE 2: THREE LEVELS OF INTERVENTION IN THREE SUB-SECTORS

	ACTIVITIES FACILITATED		
	Aquaculture	**Cassava**	**Cowpea/Soybean & Livestock Feed**
Farm Productivity	Farmer access to certified fish fingerlings from authentic breeders; fish brood stock and acquired by fish through fish farmers associations, women groups; training and capacity building on integrated aquaculture-horticulture, fish stock management, business management; linkage to financial services; linkage to financial services	Outgrowers access to and availability of mosaic disease resistant, high-yielding, early-maturing varieties of cassava in southeast Nigeria; linkage to financial services; linkage to financial services	Adoption of improved inputs and management practices: rust-resistant soybean variety seeds; high-yielding, medium-maturing and high-forage cowpea variety seeds; high-yielding, medium-maturing and high-forage cowpea varieties; integrated aquaculture-horticulture practices; linkage to financial services
Post-Harvest Value Addition and Market Development	Facilitation of capacity and skills development in fish processing (smoking, filleting, packaging, export); business management, entrepreneurship; linkage to financial services; linkage to financial services; market development services	Introduction of, and linkage to resource persons to facilitate access to, hand-held cassava peeling devices; capacity development training on production of odourless *fufu* and selected confectionary products for agricultural block extension agents and the cassava IP members; replication of the skills development in selected communities by the trained extension agents; linking cassava farmers to cassava starch producing factories; training on diversified products from cassava tubers	Adoption of improved storage of harvested cowpea (i.e., solarisation and triple bagging) without using chemical preservatives; improved management practices — baling, storage and marketing of cowpea residue for livestock feeding
Policy-Related Activities	Working with 2 mandated research institutes to build sustainable local capacity for production of fish meal for acquisition and use by private sector based fish feed producers, thereby aiming to reduce overreliance on imported fish feed	Appraisal of policies related to cassava flour in Nigeria; convention of stakeholder to incorporate their comments into the final appraisal report; presentation of final report to National Assembly (House Committee on Agriculture	Appraisal of the effects of national policies related to soybean and cowpea value chains in Nigeria; convention of stakeholder to incorporate their comments into the final appraisal report

4. EMERGING FINDINGS OF THE RIU-NIGERIA EXPERIMENT

The emerging findings from experimental activities under the RIU Programme in Nigeria can be sorted into three sets. The first set is related to the management of the country programme itself; the second is related to the organisation of national agricultural policies, priorities and processes; the third is relevant and of interest to assessing the impact of experimental research projects such as the RIU Programme.

A. Results Related to Country Programme Management

i. **Innovation Platforms Formed:** As planned, three innovation platforms (i.e., one each for aquaculture, cassava and cowpea/soybean value chains) were formed as part of the initial phase of programme implementation. ARCN informed related national agricultural research institutes (NARIs) about the take-off of the RIU programme in Nigeria, and directed them to cooperate with the programme by participating in platform activities. High-ranking officials from related NARIs were invited to the inaugural meeting of each innovation platform, and the opening ceremony was marked by keynote policy speeches focusing on the role of agricultural research in supporting rural livelihoods and achieving local economic development in the country. Therefore, purely in terms of managerial expediency and effectiveness, nesting the RIU-Nigeria secretariat within the apex agency for agricultural research in the country was the appropriate strategy.

ii. **Free Entry and Exit:** Membership of the innovation platforms has remained open to any group or business entity whose line of work is related to the value chain. About 20 new farmers and/or women cooperative societies joined the cassava platform about three months after it was inaugurated in February 2009. The cassava innovation platform has met at least once a month since its inauguration, even though the RIU-Nigeria programme has been represented in only one-third of the meetings. By simply facilitating the initial formation of the innovation platforms and then allowing these to be self-organised, the sustainability of these platforms is put to the test right from the onset. In Abia State, some members of the Cassava

platform teamed up and formed a new cooperative society, which they hoped would enable them to access bulk quantities of fertiliser each farming season. By doing so the cooperative hopes to become an intermediary in the distribution of fertilisers and other inputs, taking advantage of its access to policy-makers in the state ministry of agriculture through the RIU-assisted Cassava platform. This was done without the involvement of RIU-Nigeria programme personnel.

B. Results Related to National Policies, Priorities and Processes

i. **Linked to National Processes:** Related national agricultural research institutes have remained actively involved in RIU programme-assisted innovation platform activities, ranging from sourcing improved inputs (e.g., cowpea and soybean seeds, cassava cuttings) to farmers during the planting season to training on-farm management and post-harvest practices. Six types of Mosaic Disease-Resistant cassava varieties have been adopted by more than 40,000 small-scale cassava farmers and designated volunteer out-growers in Abia State (southeast Nigeria). The adoption and acquisition of cassava cuttings involved collaboration between the Cassava innovation platform members, independent resource persons, the RIU programme, the IITA Abia Station, the National Root Crops Research Institute (NRCRI) and the Abia State Agricultural Development Programme. About 6,000 cowpea farmers volunteered as out-growers and acquired and used improved (high-yielding, medium-maturing and high-silage) cowpea varieties for trial in Kano State, while about 4,000 out-growers adopted rust-resistant soybean varieties in Kaduna State. These out-growers represent various farmers and women's associations totalling more than 400,000 in the three states, and it is expected that through technology diffusion, the adopted varieties and improved farm management practices will reach more farmers in more localities in subsequent planting seasons.

ii. **Replication and Scaling-Up of Successful Trials:** The Agricultural Research Council of Nigeria (ARCN) has directed each agricultural research institute to adopt proximate villages where the institute can partner with diverse stakeholders to replicate the formation of innovation platforms in value chains related to the institutes' respective

mandates. ARCN will partner with independent competent service providers to ensure technical assistance to, and monitoring of interventions in, the adopted village innovation platforms. The process currently involves collaboration between the ARCN and the World Bank's West African Agricultural Productivity Project (WAAPP) intervention. When completed, there will be several research-into-use Adopted Villages across the country, working in diverse sectors related to the research mandates of NARIs.

iii. The establishment of ARCN has allowed for the devolution of technical and administrative authority from the Nigerian Federal Ministry of Agriculture and Water Resources to ARCN as a specialised agency, thereby enabling the council to have quicker bureaucratic processes and promoting merited research priorities with the respective agricultural research institutes in the country. While these changes in the organisation of research requires many years before being able to produce measurable results, the language within the leadership of the ARCN has already demonstrated a clear shift from the traditional linear approach to that of multi-stakeholder networking based on various targeted value chains within the agricultural sector. This is consistent with the approach being promoted in the RIU-Nigeria country programme experiments. This paradigm shift is also beginning to be understood and institutionalised by the agricultural research institutes. For example, the National Institute for Oceanography and Marine Research (NIOMA) and the Nigerian Institute for Freshwater Fisheries Research (NIFFR), which were established more than 30 years ago, are collaborating for the first time on the production of high-value fish meal in order to address the scarcity of quality fish meal needed for the production of fish feed in the country. The collaboration was facilitated by the RIU-Nigeria programme, and market guarantees were provided by two leading animal feed producing companies in the country. According to preliminary reports from NIOMA, the partnership on fish meal production has already generated a market boom for tilapia and clupeids which do not require high start-up capital, maintenance or operating costs, thereby enabling many farmers to supply high volumes of these as raw material to the two research institutes.

iv. These positive results notwithstanding, there is still no unified management of agricultural research and extension systems in Nigeria. While the ARCN is mandated to coordinate the 15 agricultural research institutes in the country, there are 37 state-run agricultural extension agencies, known as Agricultural Development Programmes, which are not coordinated by ARCN. These programmes are still operating on the old paradigm of linear extension, and are not keeping pace with the dynamic thinking being championed by the ARCN. This is evidently a problem and the RIU-Nigeria programme has proposed that there be unified coordination of the whole of the agricultural research and extension system in Nigeria.

v. **Diverse Innovation Platform Partner Groups:** Various umbrella groups are represented in the membership of the innovation platforms. However, some of the representatives are more effective than others in reporting back to and keeping their constituencies abreast of issues discussed and resolved at the platform meetings. Some of the represented umbrella groups seem to have a stronger degree of internal cohesion, transparency in management and leadership. These differences seem to reflect in the effectiveness of the umbrella groups in tapping into opportunities, such as acquisition of improved planting materials and access to information on government support related to fertilisers and compensation for crop losses linked to rain-induced soil erosion. For example, when the federal government announced a ₦200 billion Public-Private Partnership project funding opportunities for rural farmers and cooperative societies across the country, the information was received by members of some farmers' associations whose leaders are more effective, while the leaders of some other associations were alleged to have appropriated the information for themselves and their cronies.

vi. **Is there too much government in agriculture?** Enormous public investment in Nigerian agriculture and the resultant plethora of organisations comprising the research and extension systems appears to have choked out the participation of the organised private sector, leaving no opportunities for market-led intermediary functions between the agencies and the peasant farmers and post-harvest micro-enterprise operators. Despite the public over-investment, the pace of innovation and

development in the sector has remained very slow. Some private companies who attended innovation platform meetings have repeatedly raised this point. Some private sector representative have complained that the government is over-involved in everything, from seed multiplication to seed distribution, from extension services to post-harvest stock management and produce marketing. By facilitating the continuation of this debate, RIU is contributing to a change in perception about, and understanding of, the potential role of public-private partnerships, agricultural innovation and development.

vii. **Can the private sector add value?:** As a pilot alternative to a totally state-led approach described above, the RIU-Nigeria programme facilitated the formation of multi-stakeholder agricultural Innovation Platforms in three crop sectors to try and promote innovation through facilitating the adoption of specific research outputs into use in targeted value chains. The platforms essentially consist of mostly self-interested persons, groups and corporate entities coming together to explore and transact economic and sometimes social and policy-advocacy activities aimed at supporting innovation and development in their sector of interest. Thus, through collective effort, some specific research-into-use questions related to crop production (i.e., adoption of inputs, improved crop varieties and farm management) and post-harvest management (i.e., improved storage methods, value addition, marketing, etc.) were tackled. For example, under the Cowpea/Soybean innovation platform, some vegetable oil producing companies in Nigeria came together to try and address what they perceived as negative effects of the federal government's decision in 2008 to relax import restrictions on foreign cooking oil. They observed that the unchecked import of low-quality cooking oil, including animal fats, at very low prices was undermining the local market and profitability of local vegetable oil producers.

viii. **Policy issues can cut across sectors:** In collectively trying to address the problem through the Nigerian Federal Ministry of Agriculture, innovation platform members learned that import policies were the responsibility of the Federal Ministry of Trade and Industry, while the issue of public health hazard linked to the imported low-

quality cooking oils and animal fats was the responsibility of the National Agency for Food and Drug Administration and Control (NAFDAC). Since the glut in the domestic vegetable oil market affected domestic oil producers, soybean farmers and local marketers alike, the cowpea/soybean innovation platform members resolved to institute a broad policy appraisal to enable them to have a full understanding of all related policies, related private sector issues, the effects of the policies, and the possible remedies to advocate for. The platform members also resolved to, and solicit, NAFDAC's support in ridding the market of adulterated cooking oils as part of a strategy for reducing the glut in locally-produced vegetable oil.

C. Results Related to Multi-Agency Collaboration

i. **Involving other Development Agencies:** The private sector was also part of the collaborative effort that RIU-Nigeria organised to promote triple bagging (i.e., improved storage of cowpea by farmers and marketers). The collaboration involved roles by the RIU Programme, the International Institute of Tropical Agriculture (IITA), Purdue University (USA), the Bill & Melinda Gates Foundation, selected state Agricultural Development Programmes, local government councils, a licensed private bag-producing company, independent supply chain investors, and traditional leaders in various rural communities. Consequently, an additional 120 additional agricultural extension agents were trained to carry out sensitisation and demonstrations in 1200 rural communities across six cowpea-producing states in northern Nigeria. The effort led to the successful adoption of triple bagging by about 600,000 farmers and marketers in the targeted cowpea-producing communities across 6 states.

ii. **Private investment in innovation:** Although the private company which produced the airtight storage bags was initially risk-averse, the first batch of the products sold out quickly and there has been a surge in demand for the bags across the country. In response to mass media campaigns (radio/television stations and newspapers, community drama shows and illustrated posters), rural awareness about the useful, affordable technology has continued to increase, leading to sustained increases in demand for the bags. Two other bag-making companies have expressed interest in

producing the airtight bags. This raises the need for reviewing the strategy for involving the private sector in the production and supply chain for bags.

5. LESSONS LEARNED SO FAR

A number of results have been identified and discussed above, from which some key lessons have been drawn and analysed below. As with the results, some of the lessons are relevant to the management of the programme itself, while other lessons relate to agricultural policy and practice. As much as possible, examples are cited within the discussion of each lesson.

Lesson 1: Yes, value chain platforms matter!

Evidence from the experiments of forming innovation platforms so far support the theoretical proposition that effective networking by self-interested agricultural value chain stakeholders (i.e., a value chain platform) is essential to the identification of stakeholder-perceived, sector-wide innovation challenges, as well as contributing to a pooling of ideas on how to address the challenges and in what order of priority. The collective search for solutions to innovation challenges inevitably prompts demand for new knowledge or technologies which research and extension systems can supply. Value chain innovation platforms demonstrate the effectiveness of public private participation as a mechanism through which agricultural innovation and development can be stimulated, as exemplified by the formation of a cooperative society by some members of the cassava innovation platform to enable them to access fertiliser.

However, evidence suggests that innovation platforms need to be facilitated by an independent, credible party to ensure that diverse self-interests within the innovation platform membership can be managed constructively. For example, the cassava innovation platform went through a leadership dispute and two factions emerged, with each faction seeking to be recognised by RIU-Nigeria, the state Agricultural Developmental Programme and the state ministry of agriculture. This was peacefully resolved through a compromise proposal, which created two equal cassava innovation platforms, one based in Umuahia and the other in Aba, both in Abia State. The two platforms are peacefully collaborating on issues such as the acquisition of cuttings for cassava mosaic disease-resistant varieties and cassava flour production. Without independent facilitation, the processes in an innovation

platform can be quickly hijacked by more dominant stakeholders. There were hijack allegations under the cassava platform and at least one set of leaders had been voted out and replaced by another set. It almost happened in the cowpea/soybean innovation platform, but the move was effectively resisted, leading to the emergence of two equally matched factions, one for cowpea and the other for soybean. These sorts of facilitation roles fit in with the emerging idea of innovation brokering (Klerkx and Leeuwis, 2009; Klerkx et al, 2010). This evidence from Nigeria highlights the point that innovation support services need to expand way beyond the old technology transfer remit of agricultural extension and focus on the wider set of network building and conflict resolution processes that underpin innovation.

Lesson 2: You cannot force a horse to drink . . . :

Experimental results from the RIU-facilitated capacity development interventions in Nigeria (understood here as skills development to allow actors to better participate in innovation processes) suggests that while capacity development and support to key intermediary actors is necessary, it does not guarantee eventual effectiveness of the actors in promoting agricultural innovation and development. Intervening variables such as leadership, accountability or the lack of it, corruption in the larger society and in the management of public agriculture-related services such as fertiliser production and distribution, credit, improved seed services and extension services, can frustrate the translation of local capacity development gains into agricultural innovation and development. Skill development does not equate to capacity development as wider system issues determine the extent to which these skills can be used for their intended purposes.

Furthermore, the extent to which partner-groups — especially associations and umbrella groups — are internally cohesive, democratic and have accountable and transparent leadership — can help or hinder innovation among its members. For example, there were no complaints and problems reported when farmers' associations that had transparent and accountable leadership acquired improved planting materials through the innovation platform-facilitated purchase and distribution arrangements. But similar arrangements did not work well where the umbrella groups had poor internal governance and accountability. Some farmers were not informed about seed acquisition by their association's

representatives; some were made to pay more than they should have paid, while some farmers felt that the prices were inflated or the planting materials were adulterated by some representatives.

These results can indicate that there is a limit to the effectiveness of skill-based modes of capacity building assistance as a strategy for contributing to agricultural innovation. Even if capacity building assistance helps to articulate the formal culture of partner organisations in line with desired aims and objectives, the informal culture, which normally mirrors the dominant culture in the larger society, can make or mar the envisaged innovations. While this does not discount the importance of skill-based capacity building as a strategy, it should enable practitioners to recognise the potential importance of various intervening variables and to find creative ways of dealing with them.

The more general conclusion here is that capacity development has to be conceived in a systems sense (for discussions of notions of innovation capacity see Hall, 2006). Ultimately it relates to the behaviour and nature of the wider systems of innovation and the way in which this impinges on individual actors and organisations. The clear lesson for policy is that skill development alone is not enough and that emphasis needs to be given to a broader process of stimulating policy and institutional change. This is widely recognised as a long-term process. While RIU will certainly build skills and pilot the platform approach (and all the innovation support services that go with this), it is unlikely that this will have significant impact on the wider contours of agricultural innovation in the countries targeted and on the critical institutional and policy dimensions of this capacity.

Lesson 3: Public investment alone is not enough

It takes more than public investment to transform a country's agricultural sector. Perhaps due to the high priority of ensuring food security for Nigeria's huge population, the nation state may already have over-indulged the sector. While this has resulted in a plethora of public organisations comprising the research, extension and related infrastructure systems, it may have choked out opportunities and incentives for private participation. Persistence of the slow pace of agricultural innovation and development in Nigeria is not puzzling because the limitations of state-owned enterprises, both in Sub-Saharan Africa and around the

world, have long been well-documented (for example, see the World Bank Policy Research Report, 1995).

The traditional, state-run, so-called linear approach to agricultural research and extension has not produced the desired results in Nigeria in terms of demonstrating effectiveness in promoting innovation and achieving sustainable impact at scale. According to World Bank (2006) agricultural innovation is driven more by entrepreneurial and market opportunities than by research. Therefore, establishing many agricultural research institutes in Nigeria might be necessary, but it is not sufficient.

There needs to be a conscious effort to embed private sector participation, with opportunities for both micro and corporate enterprise involvement. Successful instances of private sector participation in promoting improved storage of cowpea and in the dissemination of improved cowpea seeds, as well as the potential sustainable synergies established by the initial interactions, make a strong case for embedding private sector interests within the agricultural research and extension systems in Nigeria.

However, in advocating for private sector involvement, Hall, Dijkman and Sulaiman (2009) point out the need to see innovation as a way to deliver diverse services — social, economic, environmental and political. The authors, citing cases where social, economic and environmental objectives have been successfully blended, conclude that socioeconomic development and environmental sustainability are not necessarily antagonistic to each other, and are, indeed, becoming required as the standard elements of a good economy.

The spread of public investments in Nigeria's agriculture appears to reflect a national effort to strengthen both research and supporting services, including financial services. Consequently, public agencies have been involved in services such as microfinance, input supply, post-harvest storage and even agricultural insurance. International development assistance to the nation's agriculture had, in the past, been boxed into increasing the scale of public sector involvement in agriculture, rather than private sector participation. Hall and Dijkman (2009) point out that concentrating public investment into agricultural research has tended to attract only development partners who are chiefly concerned with agricultural

research. In the same vein, by usurping the roles that should have been better left to the private sector in Nigeria's agriculture, the country became more attractive to development programmes that, in effect, further increased the role of the government while emasculating private sector participation. Hall and Dijkman (2009) conclude that this can stand in contrast to the demands of supporting innovation capacity.

Lesson 4: Don't throw away the baby with the bathwater; respect existing national agencies, policies, priorities and processes; engage with them

National agricultural agencies, policies, priorities and processes are a vital part of a country's historical and cultural context, even if it sometimes seems tempting and easier to blame the slow pace of agricultural innovation on these. However, the role of local capacity development as part of a broad strategy for enabling agricultural innovation and development cannot be overemphasised. Hall, Dijkman and Sulaiman (2009) point out that effective innovation capacity development should involve rethinking how old policy tools such as research investment can be used, sequenced, clustered and embedded in new ways, rather than throwing away the old policy tools. There is a need for sensitivity and respect for previous and ongoing national agencies, policies, priorities and processes — even if these do not appear to be effective. There is a need to engage with these processes, understand them and work with the responsible agencies in developing new and more effective processes. Innovation in these processes is an important part of ensuring sustainable large-scale innovation in the agricultural sector. Policy innovation is upstream innovation, which, in time, should result in downstream innovation.

Lesson 5: But in Nigeria, it may take a little while....

Evidence from the RIU Programme suggests the need for sustained, long-term capacity development assistance. However, that may not be feasible under the RIU Programme itself because, unless extended, the programme will end in June 2011. While the ARCN has demonstrated a commitment to mainstream some of the research into use processes, there is no guarantee that the commitment will be sustained if there is a change in the leadership of ARCN or in ministerial appointments for agriculture. Frequent changes in ministerial (political) appointments have partly contributed to policy inconsistency in Nigeria, and the agriculture sector is not immune to this problem.

Therefore, engaging with relevant national policy-making agencies with a view to contributing to capacity development is a sensible strategy. At best, we can hope for gradual progress towards institutionalisation of the research into use culture, using positive lessons demonstrated through the RIU Programme-assisted experimental work in the cassava, cowpea/soybean-livestock and aquaculture sectors. Leveraging large-scale impact in that way has a stronger promise of sustainability, but it cannot be a quick-fix.

For example, the RIU-Nigeria programme, in collaboration with the ARCN, commissioned an appraisal of policies that are affecting the development of the cassava and cowpea/soybean-livestock value chains. The appraisal reports were discussed and ratified by representatives of various stakeholder groups. The cassava policy report was presented to the National Assembly's House Committee on Agriculture, as part of the RIU Programme's contribution to a privately-sponsored Cassava Bill, which will become known as the Cassava Law if/when passed into law. The law will formalise the key reforms that some of the interested private sector parties had been advocating. While this type of effort can generate large-scale positive results several years after the law may have come into effect, there is no guarantee that sudden, intervening variables will not impact on the scale of the potential impact. The actual scale of impact cannot be determined until many years into the future after the cassava law shall have been passed and enforced. That is beyond the timeframe of the RIU Programme, and impact evaluators will need to ask the appropriate questions to capture these types of efforts.

Lesson 6: Unified coordination of NARS is essential

The large number of state-owned organisations involved in the Nigerian agricultural research and extension systems calls for a unified coordination effort in order to streamline inter-agency collaboration and reduce duplication of effort and turf wars. A unified coordination effort through the ARCN can help to streamline a role for the various agencies and make it more feasible for private sector processes to be embedded within the research and extension systems and supporting services. Unified coordination might also be more effective in harnessing resources from development agencies into the NARS for promoting innovation and development. For example, access to, and the cooperation of national

agricultural research institutes through the auspices of the ARCN has been a key enabler of the RIU-Nigeria programme; it facilitated the processes of forming effective value chain innovation platforms in the cassava, cowpea/soybean-livestock, and aquaculture sub-sectors. Unfortunately, all the state Agricultural Development Programmes with responsibility for extension — an integral part of the Nigerian NARS — are currently coordinated, not by the ARCN, but by a rival national agency which has no statutory obligation to be accountable to the ARCN. Placing research and extension into two separate rival agencies can hinder the diffusion of a unified vision on issues related to getting research outputs into use.

Second, a unified coordination of the Nigerian NARS could enable a unified management of the national stock of both national and international public goods in terms of agricultural knowledge and technologies used in the country. This would enable a streamlined national effort in promoting agricultural innovation and development through getting research outputs into use.

Third, given ARCN's stated intention and commitment to carefully study the Innovation platform approach being facilitated by the RIU-Nigeria programme, and to draw lessons from the processes for replication use in other crop sub-sectors and geographical locations, there is a good opportunity to scale up the successful trials and achieve large-scale positive impact. While this is doable, there are no guarantees that it will actually be done. Furthermore, it will require long-term support to ARCN to sustain its commitment and practical efforts beyond the current timeframe of the RIU programme.

Fourth, in view of the current timeframe, budget and pilot size of the RIU-Nigeria programme, it is very important that the right questions be asked when evaluating the effectiveness of RIU programme in terms of the measures taken to achieve large-scale impact of the programme. Instead of simply asking for numbers of farmers or households already impacted by the programme, the evaluation should also consider to what extent the programme contributed to the development of the capacity of key national stakeholders, agencies, policies and processes that could be sustained to being about large-scale impact in the long-term.

Last but not least, it might be erroneous and an oversimplification to assume that the RIU Programme was supposed to achieve impact at scale in the programme countries. Instead, the RIU programme should be evaluated in terms of its performance when it comes to strengthening the public agencies and other local partners in creating the space for vital private sector involvement, instituting multi-stakeholder networking within targeted value chains, and contributing to positive, even if limited, steps related to national policies, institutions, priorities and processes for engendering agricultural innovation and development, taking into account the context of the country.

Lesson 7: No need for turf wars: collaborate with other development agencies:
Nigeria's huge population and land mass make it difficult for any single development programme to achieve nationwide impact without inter-agency collaboration. But subtle turf wars sometimes occur among development agencies in the field, and this might not be unrelated to inter-agency competition for limited donor funds or to the professional ambition of development practitioners. Evidence from Nigeria showed a remarkable boost in the scale of impact due to a multi-agency collaborative effort on facilitating the adoption of an improved storage method for cowpea.

The collaboration involved the RIU-Nigeria programme, the IITA Kano Station, state Agricultural Development Programmes and local government councils in six cowpea-producing states, private sector partners, the National Agency for Food and Drug Administration and Control (NAFDAC) and freelance trainers/monitors. Each actor had a clearly defined role: the IITA-PICS office in Kano served as the project anchor, while the Lela Agro Products Ltd., a private bag-producer in Kano, was licensed by Purdue University to mass-produce the bags. The Agricultural Development Programme in each of the participating states nominated and seconded a desk officer and an agreed number of agricultural extension agents to be trained, kitted out and deployed to the rural communities to conduct triple bagging demonstrations among cowpea farmers and marketers.

The RIU-Nigeria programme covered the cost of training an additional 120 extension agents across 6 states, thereby enabling the programme to be extended to an additional 1200 rural communities and impacting about one million cowpea farmers and marketers in the first year of the collaboration. The highly successful widespread adoption of triple bagging gave every collaborating partner a success story to tell. For the RIU-Nigeria programme, given its relatively small budget, the multi-agency collaboration helped in enabling indirect access to the resources provided by the Bill & Melinda Gates Foundation through the IITA for the promotion of improved cowpea storage.

Another multi-agency effort involved RIU-Nigeria selected seed propagation companies in facilitating the availability, supply chain and adoption of medium-maturing and high-yield and high forage cowpea and soybean seed varieties, and ready-to-plant cuttings of mosaic disease resistant cassava varieties to address farmers' need for increased farm productivity. The collaboration also addressed postharvest value addition and market linkages for processed products, working with independent marketers, marketers' associations, and agricultural development programmes. Positive results from these two trials confirm the effectiveness of multi-agency collaboration in tackling specific issues in the field. Such approaches are becoming more prevalent as international donor funding dwindles, but great care is required in selecting and managing the synergies and partnerships should be based on shared thematic interests and approaches.

6. CONCLUSION

This paper has discussed an experimental mode of innovation support being tested by DFID's RIU programme in Nigeria. The lessons from this experiment are discussed in the wider context of agricultural research and development activities and the wider policy, institutional and political economy setting that these experiments are taking place in. The paper is optimistic about the effectiveness of piloting a broad suit of innovation support activities that are collectively termed as innovation platforms. Here a range of intermediation activities is delivering tangible outcomes to farmers. These activities include: facilitating partnerships, managing technology demand articulation, conflict resolution and brokering access to donor funds.

The paper is, however, relatively pessimistic about the wider-scale impacts of RIU. The paper argues that a medium to long-term agenda of strengthening agricultural innovation capacity needs to be addressed in the policy and institutional domain rather than just in terms of the skills and actions of farmers and market actors. The implication here is that programmes such as RIU that wish to pilot or promote innovation support services and assistance need to expand their view of what this involves. This is not simply a rural-based activity replacing agricultural extension services. Rather, it concerns supporting intermediary organisations who can help manage the innovation process in all the domains involved — farmers, the market, research and policy. How to organise support at all these levels remains an unanswered question.

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