

## **Agricultural Innovation Platform As a Tool for Development Oriented Research: Lessons and Challenges in the Formation and Operationalization**

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### **Abstract**

The emergence of Integrated Agricultural Research for Development (IAR4D) presents an opportunity to address any development problem. It involves innovative principles and an integrated research agenda while recognizing the need for greater organizational capacities among stakeholders in agriculture. Operationalization of IAR4D revolves around successful establishment and operation of an Agricultural Innovation Platform (AIP). Agricultural Innovation Platforms are being implemented in Lake Kivu Pilot Learning Site (LKPLS) of the Sub-Saharan Africa Challenge Programme, covering three countries (Uganda, Rwanda and Democratic Republic of Congo) with widely differing social political environments to address agricultural development challenges. This paper presents the processes, general guidelines lessons and experiences pertaining to “good practices” for organising and forming AIPs in the LKPLS. The life of AIPs covers three phases, namely; pre-formation, formation and post formation. The lessons and experiences are shared across 6 stages of AIP formation, namely; Identification of a research and developmental challenge(s), Site selection, Consultative and scoping study, Visioning and Stakeholder analysis, Development of action plans and Implementation of the action plans. Emerging lessons highlight AIPs as grounds and pillars for multi-level, multi-stakeholder interactions to identify, understand and address a complex challenge, concomitant emerging issues and learning towards achieving the agreed vision. Agricultural Innovation Platform formation is a dynamic, highly context specific process that incorporates all essential ingredients for successful innovation at once and provides an opportunity for local innovations to bear while at the same time nourishing on introduced innovations. In AIP formation, the recognition and value of indigenous knowledge and capitalization on prevailing policy, institutional setting and involvement of local leadership is vital. The form, nature and time taken by AIP formation process depends on both the conceptual and local context, quality of facilitation, socio-economic, culture, biophysical, political environment in which a common challenge and/or opportunity is

identified and on the capacity of stakeholders to comprehend the Innovation Systems Approach (ISA). The process of AIP formation was faster in creating win-wins when market led. Strong leadership, strategic partnership, information flow, interactions and dealing with recurrent challenges during the AIP formation process are critical in fostering innovations. The major challenges included capacitating the stakeholders in requisite skills and dealing with persistent “handout-syndrome”.

**Keywords:** IAR4D, Indigenous knowledge, Local innovations, stakeholder, sub-Saharan Africa

## Introduction

African agriculture remains weak and uncompetitive mainly due to non-adoption of improved technologies that are essential to increase productivity and profitability of agricultural systems (IAC, 2004). The low uptake of improved technologies is a result of a number of factors that characterize African agriculture. These include high cost of the technologies, low inherent and declining fertility, improved technologies that are not built on biophysical and socio-economic conditions within which smallholder farmer operates, weak linkages and interaction between stakeholders such as extension agents, input and output markets, unfavourable and poorly implemented policies, poor infrastructure, and unfair competition from open market operation (Kirsten, 2009). The net result of these constraints is continued practice of subsistence agriculture with low inputs and low productivity and the inability of the farmers to convert the agricultural potential of the region into wealth creation. This has led to the vast majority of end-users encapsulated in poverty, food insecurity, increased vulnerability to environmental shocks, and malnourishment often culminating in ill health and low life expectancy (OECD-FAO, 2006; Thorpe et al., 2004). The Agricultural Research and Development (ARD) efforts failed to respond to these challenges with interventions that are tailored to address the complex local

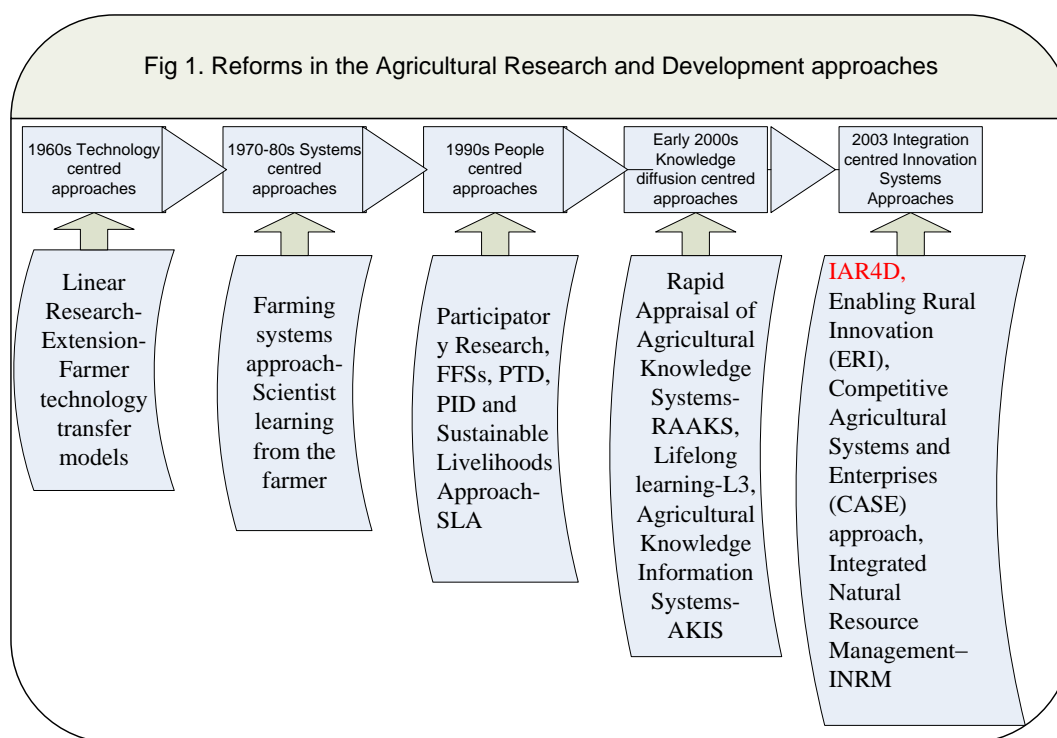
farming system problems with due consideration to local knowledge and requirements as well as biophysical and socio-economic constraints and opportunities. Current approach to agricultural research is often described as sectoral and fragmented with little or no involvement of relevant stakeholders (Lynam and Blackie, 1994).

Strengthening the linkages and interaction between ARD actors has been considered as key to improved efficiency and effectiveness of ARD efforts aimed at raising the level of economic performance of rural economy through increased productivity (Hall, 2006). The technology generation should take into consideration among other things opportunities and constraints associated with input and output markets and the enabling policy environment. This calls for a paradigm shift in the ARD approaches that are supply driven to more demand driven Innovation Systems Approach ISA (Figure. 1). The ISA is a framework that guides multi-institutional learning to better understand what to change and influence in order to improve the performance of ARD organizations. It entails systemic analyses to support the process of organizational learning and change at strategic and operational levels. There is need to work out how the demand for integration as an organizing principle for multi-stakeholder institutions and multi-disciplines translates itself into context for multi-stakeholder learning practice. It

focuses on institutional behaviour change and systemic innovation processes and how they contribute to economic growth and sustainable development (Foray, 2000; Edquist, 1997; 2001; Lundvall, 1996). The ISA has emerged as an alternative promising framework to guide ARD work in Africa as evidenced by the growing body of literature (OECD, 2005; Akullo et al., 2009; Hawkins et al., 2009). The IAR4D concept adopted by the Sub-Saharan Africa Challenge Program (SSACP) is a functional perspective of ISA. It defines operating principles and guidelines for stakeholders with diverse interests to come together to analyse the problem and develop solutions. This approach when adopted in technology generation is expected to lead to generation of technologies that are relevant to local conditions and are acceptable to local communities. It is defined as an action research approach for investigating and facilitating the organization of multi-institutional, multi-disciplinary actors (including researchers) to innovate more effectively in response to changing complex agricultural and natural resources management contexts, in order to achieve a shared vision of rural development (Jones, 2004; Hall and Yogan and, 2004). It comprises of a set of individuals and organizations working together around a developmental challenge with due consideration to end user concerns, requirements and capacities. It brings together stakeholders from research, extension, policy, and markets to work with end users in developing solutions which when applied solve the problem for mutual benefit. It further strengthens the linkages and promotes interaction between

ARD actors and helps develop solutions that benefit all the players.

Past approaches to agricultural research and development “technology generation-transfer-adoption model” and subsequent models had a design flaw in focussing on the supply of new knowledge from research to farmers rather than providing a mechanism for nurturing the innovative capacity of multistakeholders to make markets work and address recurrent production and market risks in complex farming systems (Fig 1). The emergence of IAR4D presented an opportunity to address complex issues that require participation and contributions from a range of stakeholders with direct or indirect interest. However, implementing IAR4D is not straightforward and to date no clear guidelines or protocols on how to identify and involve different kinds of stakeholders in constructive problem-solving exercises are available. Realising the potential that the IAR4D approach holds for Africa in increasing the adoption of agricultural technologies, the SSACP has initiated proof of concept research in three widely differing agro-ecologies in Western, Eastern and Southern Africa regions to assess the usefulness of IAR4D concept in generating deliverable public goods for the end users, its superiority over conventional approaches and its applicability as a research approach to generate more end user acceptable technologies (FARA, 2008).



**Source: Authors (2010).**

Spielman (2006) noted the need for transforming the ISA recognized as a strong analytical concept for agricultural innovation capacity in developing countries into an operational concept to foster everyday innovation capacity systemically. The operationalization of IAR4D revolves around the successful establishment and operation of a multi-stakeholder problem-solving forum referred to as an Agricultural Innovation Platform (AIP). An AIP is a tool for bringing together multiple stakeholders for visioning, planning and implementing or application of new ideas, practices, services which arise through interaction, creativity, insight, and empowerment. The aim of the AIP is to improve the existing situation/conditions around a common interest/challenge and thereby bring about desired change. In other words, it is a forum for sharing and creation of new knowledge and identifying of knowledge gaps relevant for planning explicit systemic innovation agricultural development strategies. It is a useful tool for social learning and building social-

capital, making the actors knowledgeable and strengthening their capacity to mitigate the diverse risks associated with the complex farming systems in SSA to bring about improved service delivery and livelihoods for more beneficiaries quickly. AIPs are envisaged to circumvent the obstacles to attaining improved livelihoods by triggering and stimulating multi-stakeholder systemic innovation processes rather than rely on chance nurturing.

Implementation of AIP to address critical problems faced by farmers is being carried out in the Lake Kivu Pilot Learning Site under widely differing socio-political environments in DR Congo, Rwanda and Uganda; the Democratic Republic of the Congo is just emerging out of conflict, Rwanda has been out of conflict for the last sixteen years and Uganda twenty four years. This paper presents the process, general guidelines and operational principles, lessons learned and challenges faced in establishing and operating AIPs around an identified problem in Lake Kivu

area. While it is beyond the scope of this paper to provide a detailed account of the work done in each of the twelve AIPs, we make extensive references to the AIPs as required.

## 1. Formation and operation of AIPs

Forming and operating AIPs is carried out through a multi-phased participatory action learning approach, involving a combination of iterative, participative, reflective and integrative desk, modelling and field activities. This process is elaborated in three phases, namely; i. Pre-formation, ii. Formation and iii. Post formation.

### 2.1. Pre-formation phase

This was carried out in five stages (figure 2) , namely; (a) open exploration of different concepts of IAR4D approach (Table 1), (b) in-depth investigation, analyzing the SSA-CP research and development methodology (FARA, 2008), (c) mediated confrontation, involving argumentative discussion of AIP formation process

(<http://agriculturalinnovationplatform.wikispaces.com>), (d) tentative exploration, working towards consensus in AIP formation and, (e) evaluation, cycling back through the AIP formation learning process and preparing for practical implementation in the field.

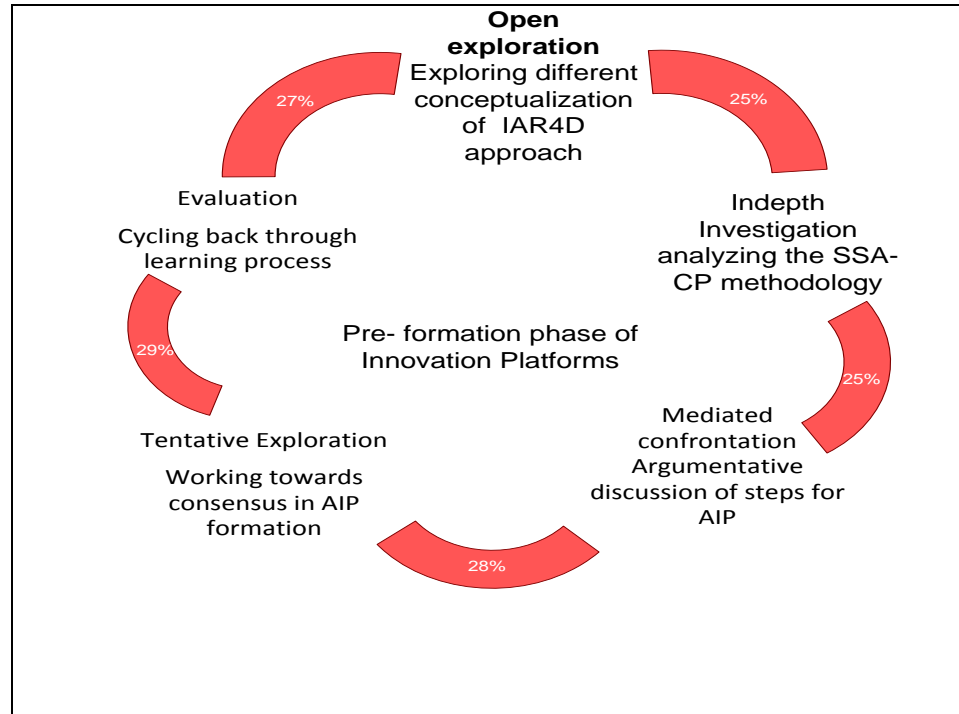


Figure. 2. Adaptation of the AFANet research learning cycle (Van den Bor et al., 1999; Bawden and Macadam, 1991).

Table 1. Different conceptualizations of IAR4D approach. Source: Authors (2010)

Phase	SSA-CP methodology	Adherent approach	International Centre for development oriented Research in Agriculture (ICRA)	Commonweal of Learning-lifelong learning (COL-L3)
1	Preparing to organise for innovation	Relationships (friendship) building	Planning	Stakeholder/learner need analysis, identification of partners
2	Innovation action	Teaching and Mentorship	Acting	Social mobilization for action
3	Testing the comparative advantage of IAR4D	Self-examination	Reflection	Participatory M&E

Source: Authors (2010)

**Formation phase:** This phase was divided into 6 iterative steps, namely; (I). Identification of a research and developmental challenge(s), (II). Site selection, (III) Consultative and scoping study, (IV). Visioning and Stakeholder analysis (V). Development of action plans, and (VI). Implementation of the action plans (Figure. 3).

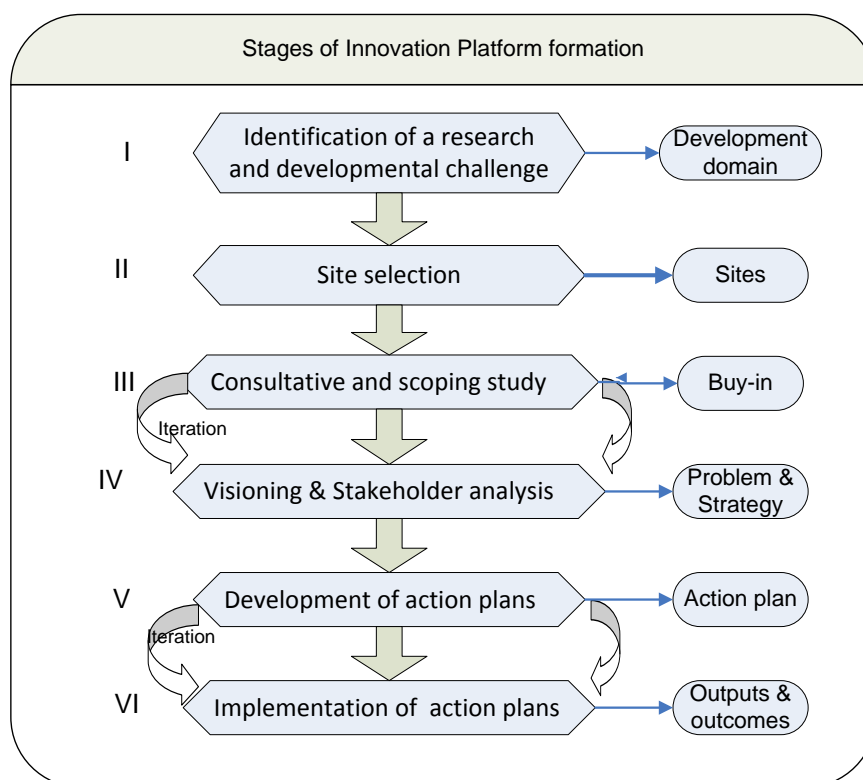


Figure 3. Steps of Agricultural Innovation Platform formation

**Identification of research and developmental challenge(s):** This involves a general understanding of the research and development challenge constraining the productivity and profitability of a region. Information may be obtained from literature review, secondary data collection, key informant interviews, Focus Group Discussions (FGD), case studies, market chain analysis, institutional capacity assessment, spatial analyses and expert information. In the LKPLS, information was acquired from a validation study (FARA, 2005) in which 5 challenges were identified, namely; producing more food at reduced cost, diversifying agro-enterprise for wealth creation among the poor, improving markets, sustaining agricultural and natural resources and, refocusing on policies and institutional capacity development and organizational change.

**Site Selection:** This stage is very important in ensuring that the identified research and developmental challenges are addressed successfully. Site selection can be driven by various criteria depending on the overall aim of the project. It can be straightforward where the aim of the project is to alleviate the impacts of a certain constraint in a given area. However, in case of utilising an existing and/or emerging market opportunities site selection involves an analysis of biophysical and socio-economic conditions as well as the interest and willingness of local communities. In LKPLS, different criteria were used in selecting sites with a range of biophysical characters, access to markets and main crop enterprises (Figure 4 ). The general steps followed were defined by different political units namely; groupement, secteur and sub-county (Farrow, et al., 2009) in DRC, Rwanda and Uganda, respectively. They included; establishment of census of the political

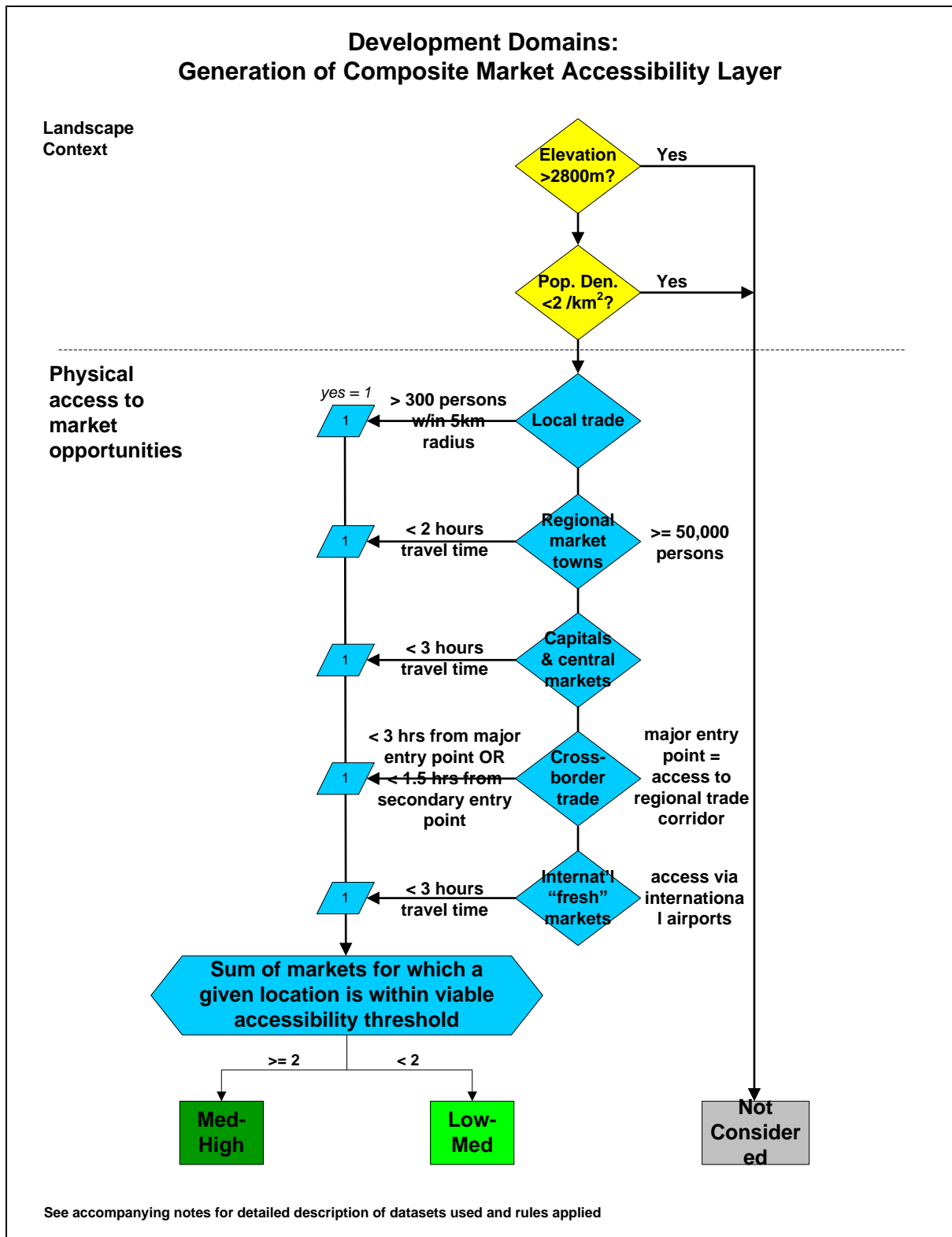
unit; definition of low and high market access; modelling of market access; identification of candidate sites; development of diagnostic tool for site selection; appraisal of candidate sites and their final selection.

For the proof of IAR4D concept, areas of contrasting network densities (action and non action sites) were targeted (Figures 5 and 6). Initially seven sites were selected; however, five more were added to meet the proof of concept statistical degree of freedom requirement (FARA, 2008). The selection of the five additional sites was based on the market opportunities that could make a significant contribution to the income and profitability of the smallholder farmers in the LKPLS (Figures 5 and 6).

To demonstrate the value of bringing together multistakeholders on an AIP to

address complex challenges, action sites (e.g. Bufundi-Kabale, Chahi-Kisoro) with low network density of development agencies were selected against the counterfactuals (Rubaya-Kabale and Nyakabande-Kisoro) (Figure 6). In the low density network areas more work is required to get aboard the relevant stakeholders to address the existing or emergent challenges. The choice of the 3 countries, namely Rwanda, DRC and Uganda also present an opportunity of practical experiences in addressing the agricultural development problems under diverse socio-economic, political and cultural environments. Figure 7 shows the social density network in the order of structuring as Uganda>Rwanda >DRC mirroring the number of years out of conflict-24, 16 and 2 in their respective order.





**Fig. 4.** Development of criteria based on initial conditions: relief and population for multi-scales (local, regional, cross-site, International) Source: Farrow (2009)

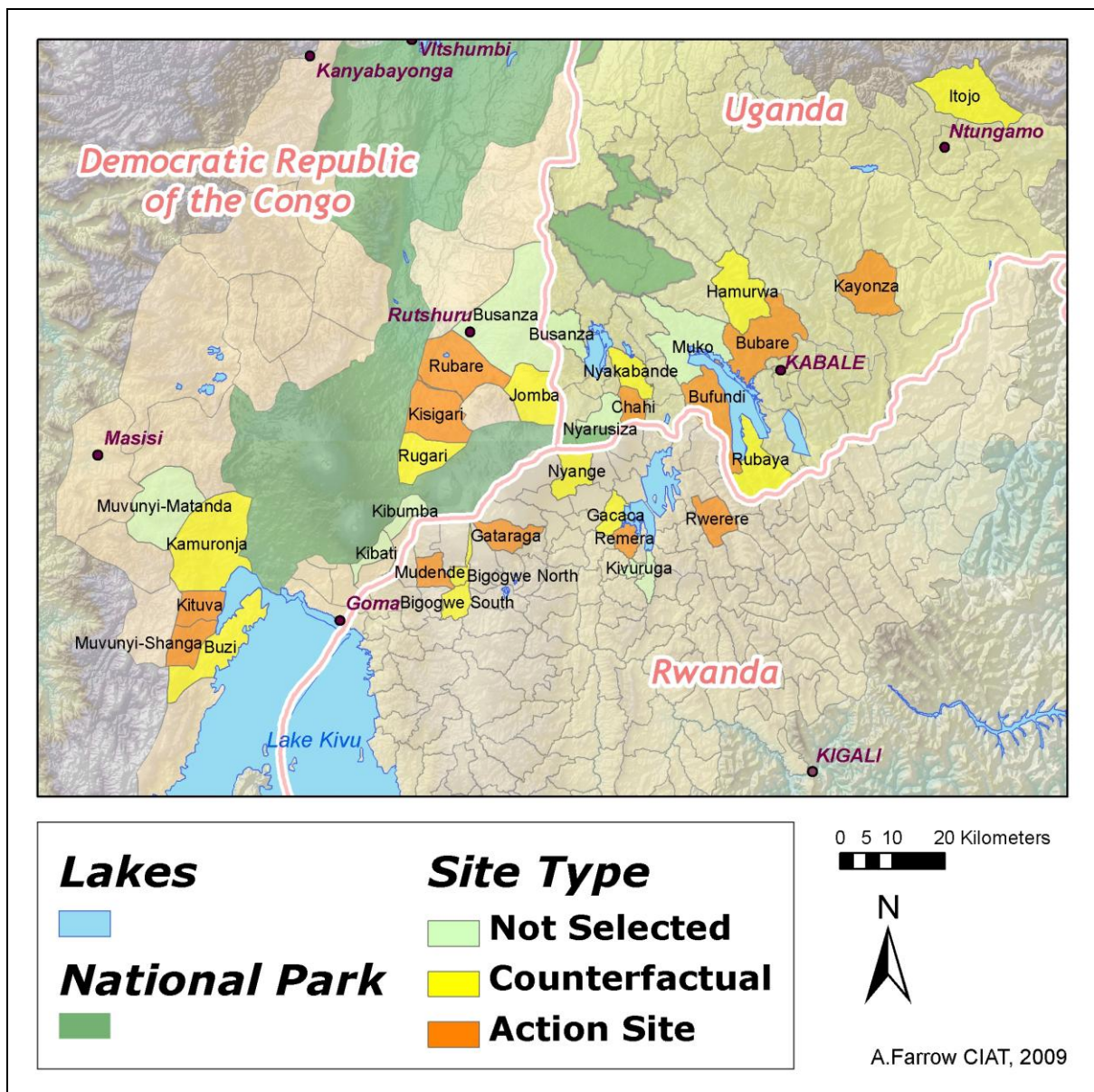


Figure 5. Map showing action and non-action sites in the Lake Kivu Pilot Learning Site.

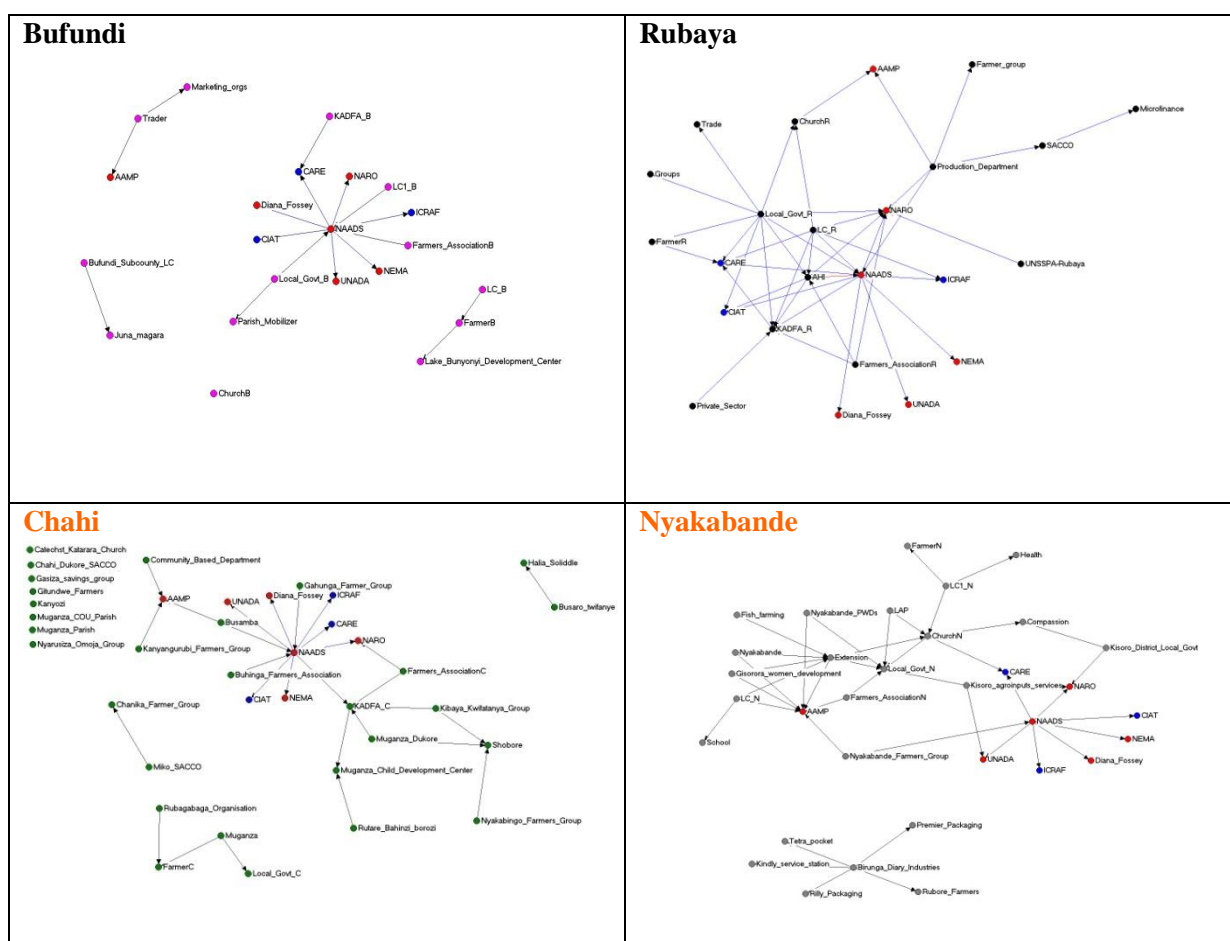
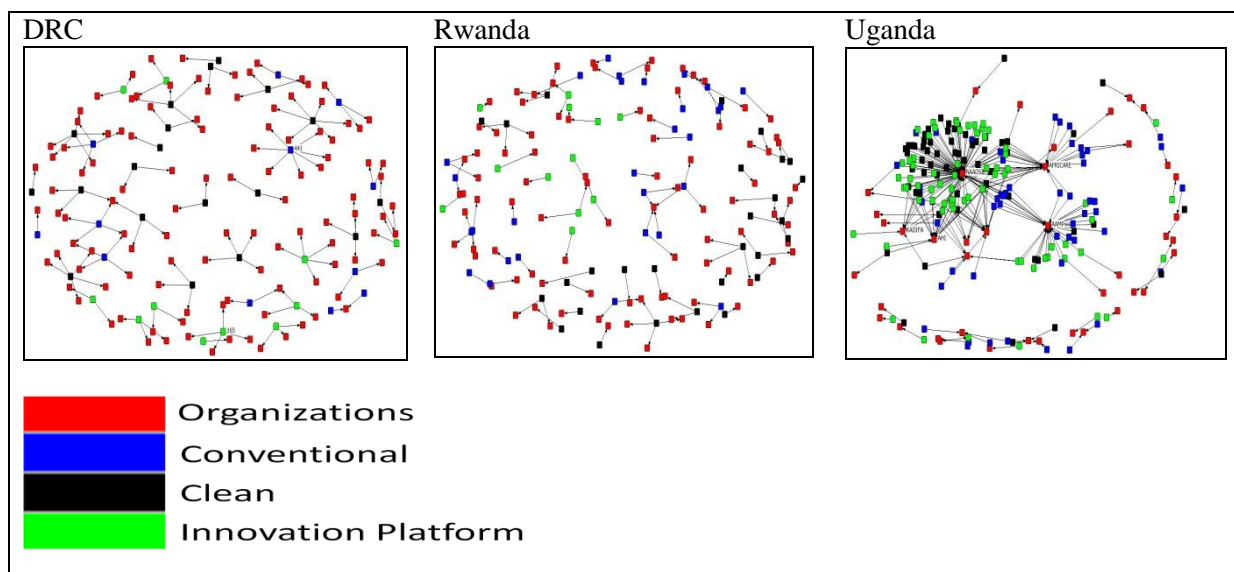


Fig. 6. Social network map of two action (Bufundi and Chahi) vs. non-action sites (Rubaya and Nyakabande) in Uganda. Source: LKPLS annual report (2008/09).



**Figure 7: Social network analysis maps in DRC, Rwanda and Uganda**

**Source: Baseline report (2009)**

**Consultative and Scoping Study:** This stage involves mobilization and building interest amongst stakeholders including policy-makers, farmers, opinion leaders and R&D partners at the district level. Key to this process is getting buy in by local leaders. One leader remarked that “Our involvement can make live or die the initiative”. Past approaches took the involvement of leaders as optional. Mobilization of all stakeholders facilitated collaboration, cooperation, networking and mobilization of social capital, talent for creation and sharing of knowledge. The stakeholders were engaged in consultative

meetings with researchers to understand the nature of R&D activities as well as the biophysical, socio-economic, technological, policy and institutional arrangements. This step involved a situation analysis to capture current knowledge, attitudes and practices of stakeholders as related to the IAR4D approach in explaining “Islands of success” as well as past failed approaches in the region. In general our work has indicated that the following groups of stakeholders are important in addressing the problems related to agriculture and rural livelihoods (Table 2, Fig. 8).

Table 2: Stakeholder groups and their potential contribution

Category of Stakeholders	Potential contribution
1. Farmers (men, women and youth)	<ul style="list-style-type: none"> <li>• Problem identification</li> <li>• Indigenous knowledge</li> <li>• Development of solution</li> <li>• Testing and evaluation of solutions</li> <li>• Adopt the solutions</li> </ul>
2. Input suppliers <ul style="list-style-type: none"> <li>• stockists (seeds, fertilizers, pesticides, herbicides, vet drugs)</li> <li>• Manufacturers and dealers (farm tractors and implements)</li> <li>• Crop/livestock boards</li> <li>• Cooperatives societies</li> <li>• Other agribusiness enterprises</li> </ul>	<ul style="list-style-type: none"> <li>• Timely delivery of quality and affordable inputs/information</li> <li>• Commercialize the supply of inputs/tools that are supportive to agricultural risk management</li> <li>• Package hardware and software (e.g. after sale service)</li> <li>• Participate in prospecting and promotion of appropriate inputs</li> </ul>
3. Output handling and market support agents <ul style="list-style-type: none"> <li>• Crop and livestock traders</li> <li>• Agro-processors Transporters</li> <li>• Other agribusiness players</li> </ul>	<ul style="list-style-type: none"> <li>• Provide strategic market/system linkages to support producers</li> <li>• Guarantee systems/contract farming systems</li> <li>• Develop strategies that improve shelf-life of agricultural products</li> <li>• Develop strategies that improve the quality of products</li> </ul>
4. Finance institutions (especially those providing savings, credit and insurance services)	<ul style="list-style-type: none"> <li>• Develop financial products/services that support interventions</li> </ul>
5. Extension agents (from local government, NGO's and other farmers' support organizations)	<ul style="list-style-type: none"> <li>• Provide information on identification, development and implementation of projects</li> <li>• Support communication and promotion of end products</li> </ul>
6. Research institutions	<ul style="list-style-type: none"> <li>• Critical problem analysis</li> <li>• Provide solution to the problem</li> <li>• Conduct new research where necessary</li> </ul>
7. Policy makers	<ul style="list-style-type: none"> <li>• Mobilisation of farmers</li> <li>• Support formulation of appropriate policies</li> </ul>

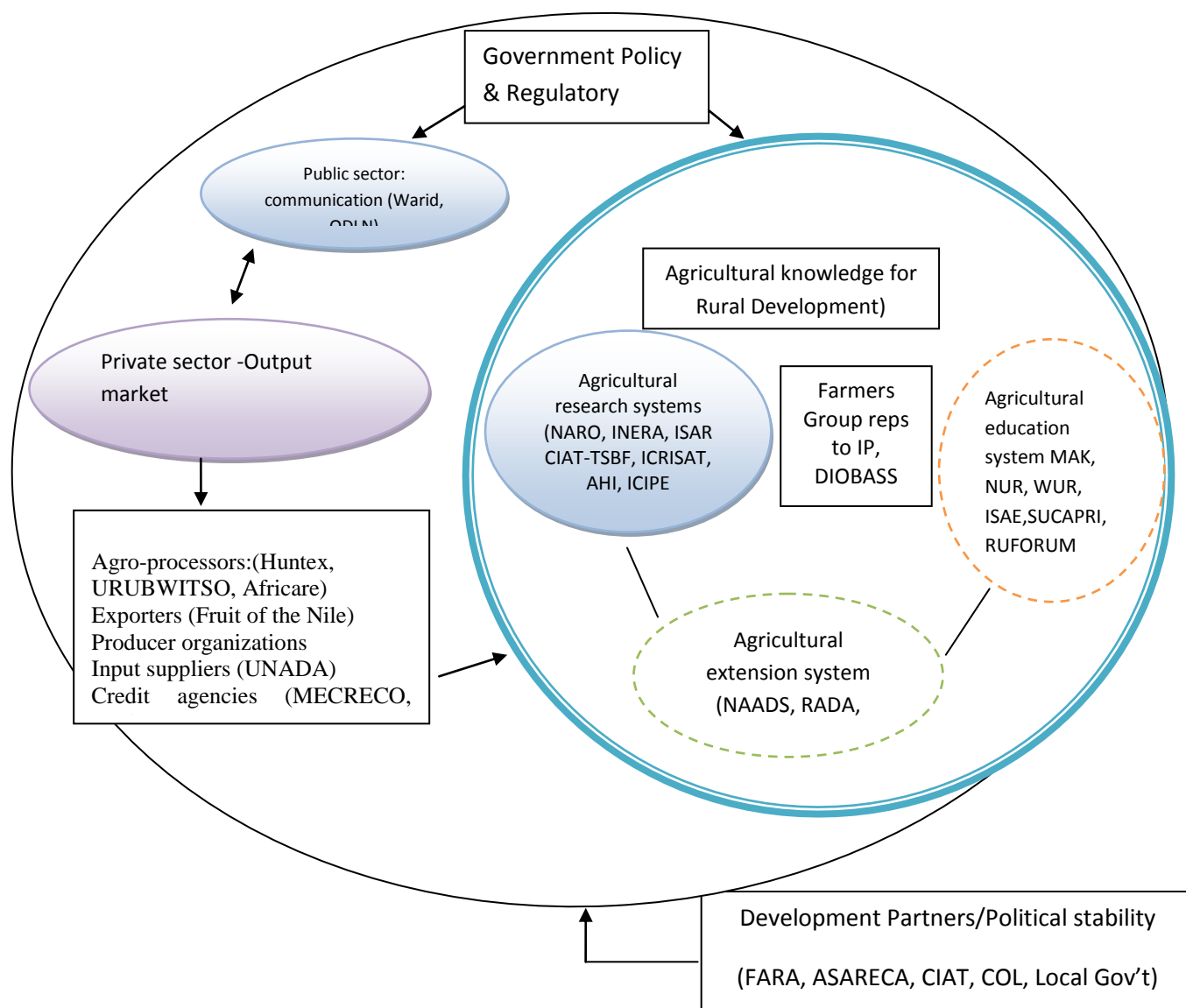


Figure 8: The structure of innovation platform with key stakeholder organizations

**Visioning and Stakeholder Analysis:** A key incentive for diverse actors is to see some point in being part of an effort to achieve a dream. It serves to unleash fresh energy when course gets coarse. The visioning process took two forms, namely the researcher led and market led. The researcher led process involved sensitisation of stakeholders about the agricultural problems and the potential role they can play in resolving them. Also their participation and contribution in the AIPs was considered. This was done for the 1<sup>st</sup> generation of 7 AIPs. The market-led

process was used in the new generation 5 AIPs. It involved introducing a market opportunity to the target communities and organizing the stakeholders to tap it. Common to both approaches, the visioning process included; defining the desired expectations, developing an inventory of NRM-Market-Technology-Policy interface constraints and their ranking and, Identification of IAR4D derived solutions to identified constraints (Tables 3, 4 and 5). During this phase, stakeholder analysis was also conducted to determine the skills, strengths and opportunities of different

stakeholders and their potential roles in addressing the identified constraints and harnessing available opportunities. In addition, the rationale for establishment of AIPs including their function, principles and guidelines, critical analysis of challenges, capacity building, facilitation, teamwork/collective action and framework, and PM&E were articulated in the context of the SSACP. Further, through an iterative process, stakeholders internalized the process of forming functioning AIPs. Our experience shows that the market led approach to formation of AIPs creates quick win-win scenarios that unleash the innovative capacity compared to AIPs where the AIP members are allowed to deliberate on their problems in relation to their vision.

**Development of action plans:** Initially, the stakeholders representing various organizations and knowledge groups, through a participatory approach, developed AIP based action plans defining their roles and responsibilities at action sites (e.g. governance, capacity building, M&E, facilitation, experimentation) (Table 6). All the action site based plans were harmonized with the LKPLS work plan at the national site level of coordination where monthly planning and review meetings are held. The different work plans were integrated at regional level to define common elements while forging synergies in addressing them (Figure 8). Emerging issues (e.g. lack of clean planting materials, access to credit) were addressed by task teams identified as relevant stakeholders to come up with solutions to problems identified by the AIPs.



**Table 3. Market development and productivity enhancement innovations for culturally deeply entrenched agricultural products; sorghum (Uganda), bananas (DRC) and Milk (Rwanda)**

Country and AIP	Interface challenge	Partners	Innovations	Outcomes
Uganda, Bubare, Sorghum AIP	Market-Technology- Policy interface of low productivity of a culturally deeply entrenched crop, untapped market caused by un branded, poor packaging of sorghum non-alcoholic porridge	AIP farmers, Private sector (Huntex, Millers, Grain traders, Porridge makers, Muchahi SACCO), Policy makers (Kabale LG, Subcounty LG), Researchers (Makerere University, KAZARDI, AHL, ICRISAT), Extension agents (NAADS)	Local government support for participatory evaluation of new market preferred, line planted and fertilised sorghum varieties ; Market development using packaged and branded product	Increased knowledge of production practices, yield and income; Diversified market, consumer acceptability, increased income by the processor (1200 litres of Sorghum porridge- Bushera sold generating Ug. Shs. 3 M per month equiv. U.S. 1,500) during incubation period
DRC, Musanganya, Banana AIP	Market-value addition Technology-Policy interface of disorganized market and low productivity of a culturally deeply entrenched banana caused by bacterial wilt resulting in quarantining from Rwanda but able to sell wine and juice but lacking clean planting materials	Farmers (AIP members), Private sector (GAP/Pharmakina), Researchers (INERA; TSBF, CIAT, OVG), Extension agents (SYDIP, DIOBASS, ACF) and microfinance institutions (such as MECREGO, PRONAPLUCAN)	Market development using packaged and branded product Kaskisi wine; Organizing bananas traders into an association in Bukavu; Standardization of packaging and pricing of banana varieties; linking of producers and traders; collective marketing of banana; facilitating access to clean planting materials through community “greenhouse” macro-propagator	Increased knowledge of production practices, Diversified market ; increased income
Rwanda, Mudende, Milk	Market Technology Policy interface of disorganized market, low price of milk, unreliable market	Farmers (Cooperative societies), private sector (Inyange Industry, BRD), policy makers (local authorities), researchers (ISAR, ISAE,NUR, CIAT) and extension workers (Imbaraga, SACR),	Cost sharing access to credit to procure milk cooling system to meet the standards of Inyange Industry	Quality and quantity of milk improved, milk price increased from 90 frw to 180 frw



**Table 4. Market development and productivity enhancement innovations for potato in DRC, Rwanda and Uganda**

Country and AIP	Interface challenge	Partners	Innovations	Outcomes
Rwanda, Gataraga, Potato	Market-Technology-policy interface of low price, poor harvest and postharvest handling procedures	Farmer groups, private sector (niche markets, input dealers, microfinance institutions - SACCO), policy makers (local authorities), researchers (ISAR, ISAE, NUR, CIAT), extension workers (Imbaraga)	Potato washing, grading and packaging in woven sacks and bags made out of banana fibres; facilitating access to good quality planting material of market preferred variety; Dehaulming before harvest	Improved quality and increased potato yield, improved shelf life of potato, increased access to niche market with good price
Uganda, Chahi ifatanya bubusha, Potato	Market-Technology-NRM interface of low productivity, lack of clean planting materials of market preferred variety - Kinigi, lack of capital and limited access to market information	Farmers, private sector (UNADA, UNSPA, Equity bank, Transporters, Jolo enterprise LTD, MECREGO), Policy makers (Subcounty LG, District LG, LC 1,2..), researchers (Makerere, KAZARDI, AHI, CIP, CIAT, ICRISAT, Kyambogo, Kabale University), extension workers (NAADS, KULIKA), Others : (ODL, SUCAPRI)	Knowledge sharing to better understand the problem; linkages with traders, credit institutions (MECREGO, Equity Bank), business plans, registration, constitution, proposal development; participatory experimentation with 3 varieties (Kachpot 1, Victoria, and Kinigi) fertilized; rotation with climbing beans; availing basic seed of participatory selected variety for training and demonstration on seed plot technique;	Attitude change and increased growing of Victoria (demand for 120 bags of Victoria variety); 120 farmers linked to market and write a proposal to access credit to purchase Victoria potato seed worth U\$ 6,000 (this was expected to raise 60MT of ware potato worth UgShs 36M (U\$18,000); Fast and timely information flow, facilitating price renegotiation
DRC Muungano, Potatoes	Market-Technology-NRM interfaces of low productivity, poor market, diseases, seed varieties used for a long time; Disorganized market	Farmers (AIP members), private sector, policy makers (Chef de Poste & chefs de localités), researchers (INERA; TSBF; CIAT; OVG), extension agents (SYDIP, DIOBASS). Others: Microfinance/MECREG O.	Demand for clean seed of new varieties. Demonstration on 3 varieties (Kinigi, Kahinga, local mixture)  Participatory varieties selection of Kahinga  Participatory selection of NPK fertilizer.	- clean planting materials accessed, - Producers and traders linked - marketing associations formed Farmers gain knowledge in postharvest technologies and disease management

			Crop management	
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**Table 5. Market linkage innovations for Organic pineapple in Uganda and beans in DRC**

Country and AIP	Interface challenge	Partners	Innovations	Outcomes
Uganda, Ntungamo, Organic Pineapple	Market-Technology-NRM-Policy interfaces of lack of planting material for an organic pineapple niche market (local, regional and international)	AIP Farmers, Private sector (Fruit of the Nile, NOGAMU), policy makers (LG), researchers (MBAZARDI, Makerere, AHI), extension workers (NAADS). Others (Africare)	Organic farming Planting in lines Mulching Solar drying Training in organic certification and Inspection	Demonstrations setup Market linkages with <b>FON</b> Certification Planting material of specifically Smooth Cayenne Solar drying technology LG (Policy makers) buy –in Collective action and decision making
DRC, Maendeleo, Beans	Market-Technology- NRM interfaces of beans grown had no good market.  Yellow beans varieties to response to market demand	Farmers (AIP members), Private sector: (Goma-Kinshasha traders association, Microfinance/MECREGO); researchers (INERA; TSBF; CIAT, OVG) and extension workers (SYDIP, DIOBASS)	Introduction of 4 improved varieties: nguaku-nguaku, MORE, VCB, Kiangara  The Goma-Kinshasha traders have formed association, and farmers have formed a marketing association  Record keeping by individual farmers (record book availed)  Post harvest technologies cleaning and sorting	The Goma-Kinshasha traders have formed association, and farmers have formed a marketing association  - access to credit from MECREGO -improved varieties availed, -Participatory varieties testing & selection - linkage with PABRA seed system

## KEY

MA-Maendeleo beans  
 MU-Musanganya- Bananas  
 MN-Muongano Potatoes  
 BU-Buuma Cassava  
 MD-Mudende Milk  
 GA-Gataraga Irish Potato, Maize, and Fodders  
 RW-Rwerere Chili, milk, fodders  
 RM-Rwemera Beans fodder, passion fruits  
 CH-Chahi Potato  
 BR-Bubare Sorghum  
 BF-Bufundi Potato  
 NT-Ntungamo Organic Pineapple

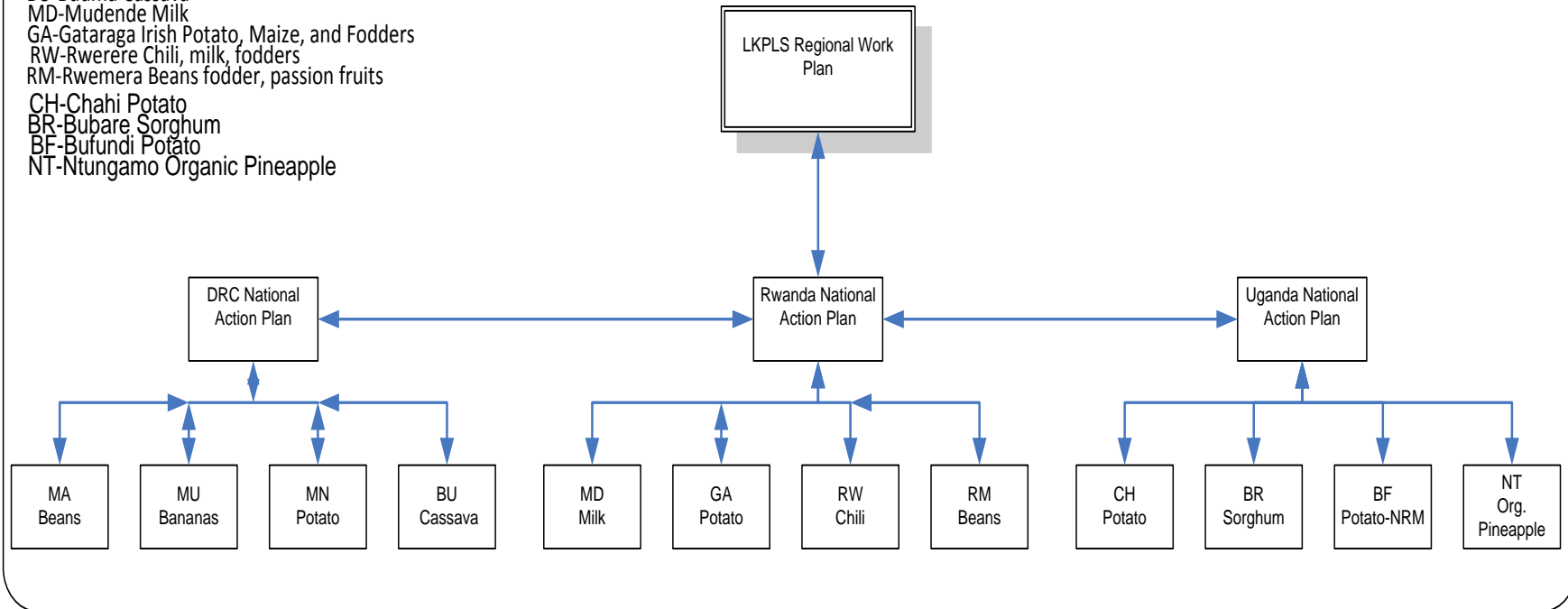


Fig. 8. Schematic diagram illustrating the different levels of harmonising the action plans

Table 6: An extract of Chahi (Uganda AIP) operational plan showing indentified actions and implementing institutions

AIP site and Issue	Log frame activity	Sub activity	Expected Output	Indicators	Institutions	Timeline	Status
Low bargaining power of Chahi AIP, Uganda	2.1.3 Smallholder producers assisted to form producer marketing groups to enhance collective bargaining, scale economies and coordination of production and marketing activities	Enhance the capacity in bargaining skills (participative market analysis to operationalize the linkage between farmer and trader associations; input & output markets)	AIP members empowered with bargaining skills	Number of AIP members trained	MAK-ICRISAT, LG, AHI, CIAT-W, ISAR , SACCO, MECREGO ,	March. 2010,	Preparatory meetings held and trainings planned end of July 2010
		Explore and facilitate linkages to credit (e.g. EQUITY Bank) to support daily cash needs	MoU available and implemented	No. of people/association accessed credit	MAK-Mkts, MAK-TM, HUNTEX, AHI, LG,	Jan. 2010	Ongoing
		Evaluate different potato varieties for consumer acceptability	Potato varieties with consumer acceptability qualities evaluated	At least two potato varieties identified and put on market	MAK -WK, HUNTEX, AHI, LG, MAK-Kts	Mid May 2010	completed
		Evaluate market demanded potato varieties for product development	Potato varieties with processing qualities evaluated	At least four varieties with processing qualities evaluated	MAK -WK, HUNTEX, LG, MAK-Mkts, IMBARAGA	1st week of April 2010	On going
		Facilitate the implementation of the AIP business plans	More economic return to AIP members	Number of AIP business plans implemented	MAK -WK, HUNTEX, AHI, LG, MAK-Mkts	End of November 2010	4 draft business plans are being reviewed and are to be fine tuned by a consultant.
		Facilitate completion of MoU signing between traders, the bank and AIPS and, monitor its implementation	Approved and signed MoU available	MoU's discussed, approved and signed by relevant parties process of discussion, approval of MoU documented	MAK-Mkts, MAK-TM, HUNTEX, AHI, LG	4th week of March 2010	Some MoUs have been signed between traders and farmers. These are being implemented
		Conduct Training of Trainers (ToT) in marketing management	Increased capacity on marketing management	15 potatoToT (including traders and men and women) on the marketing committee trained on marketing management; manual developed for marketing management	MAK-MKts, MAK-TM, HUNTEX, AHI, LG,	End of May 2010	Planned end of July 2010
		Conduct market surveys on market demanded varieties of key crops	Market requirements of key varieties of potatoes identified, process of fulfilling market requirements ongoing	Market demanded quantities and qualities of at least 4 potato varieties identified	MAK-Kasenge Valentine, MAK-TM, HUNTEX, AHI, LG,	3rd week of May 2010	Survey was conducted

**Implementation of the action plan :** The actions that were implemented can be broadly grouped into operational and strategic, implemented at action site level and outside the action site, respectively. Implementation of identified actions was done at different levels, namely action site-, national and regional with provisions for cross-site input using the Participatory Action Research approach involving planning, action and reflection at all stages (Susman, 1983). The implementation was often carried out in a cascading and in parallel manner and others jointly. At the action site level, a steering body, established in an electoral process and consisting of a Chairman, Vice chairman, secretary, treasurer and members representing various end user groups from different parishes was empowered to make operational decisions (e.g. scheduling meetings, drawing agenda, deploying staff) and liaise with national and regional partners. This body is variably supported by committees (e.g. Marketing, Production, NRM, M&E). The empowerment involved training on various aspects as requested by the AIP members including Participatory Market Research, business plan development, market management, Value addition, experimentation, training in IAR4D, soil fertility management, regular visits, mentoring, exposure visits and cross-site visits. The actions implemented at action site level included collective marketing, facilitation of agreed action site activities including M&E, establishing bulking centres, selection and evaluation of experimental and demonstration sites, meetings with partners, skill and competency enhancement, communication, accessing inputs, opening accounts, farmer's coalition, price negotiation and linkages with lower level farmers.

At the different levels (national, regional-LKPLS) meetings were organized and stakeholders facilitated to respond to

issues raised by the steering committee at the action site, made strategic decisions and raised issues for the higher level regional body. These variably involved the 3 Task force leaders responsible for the thematic areas, namely; production and value addition technology, natural resource management and markets. At the national level, the actions included coordination across country action sites, facilitation of common activities, enhancement of synergies, supervision of 2 Nationally Recruited Staff in each of the participating countries that were seconded to the programme from the NARS and supported by FARA directly. The country action site coordination also hosts Post Doctoral students adding value to AIP processes at national and regional levels. At regional level, task force teams were jointly in charge of both research and facilitation functions of vertical and horizontal integration of innovation platforms. The actions included developing and implementing overall plans, identifying common cross-country issues, enhancing synergy and complementarily, resolving conflicts, advising lead institution, making strategic decisions included Inter-country action documentation and reporting coordination across country action sites. The Lead Institution LI –CIAT that had oversight over the LKPLS played a pivotal role in championing the AIP processes in responding regularly and promptly to emerging issues, providing feedback, conflict resolution, keeping the team together and focussed. Also the LI was instrumental in linking both with ASARECA and FARA. A common question is at what level should the AIP be convened? Our experience was grounding both operational and strategic meetings at the sub-county level. Higher levels (pillars) at district, national and regional largely tackled strategic issues.

**Post AIP formation phase:** The post AIP formation phase is anchored and nurtured by the nature and quality of multi stakeholder linkages and interactions and may take various trajectories depending on the socio-economic, policy and cultural environment. Integrated Agricultural Research for Development (IAR4D) is a research oriented approach to development that incorporates perspectives, knowledge and actions of different stakeholders around a common interest issue. Through joint analysis, planning, action, joint research reflection, IAR4D improves interactions and learning of the value chain based multistakeholders. This implies that timely feedback to the AIPs on options to address emerging productivity-NRM-markets-policy interface issues identified

by a relevant task team can improve the performance of AIPs to meet the market demands and increase their opportunities to reach their vision. In the LKPLS the post AIP formation took the form of M&E, impact assessment, feedback and technical support. The indicators and tools used for the various phases of AIP formation are indicated in Table 7. An issue (e.g. lack of clean planting materials for a market assured potato variety-Victoria) may be raised from the operational level (sub county) to the district or national level. Relevant stakeholders are accordingly identified to come up with practical solutions (e.g. accessing credit, training in small plot seed production protocols) and feed back given.

Table 7. Showing the indicators and tools used for monitoring the various phases of AIP formation, functioning and outcomes

Phase		
IP formation	Inclusiveness / representativeness of the IP	IP register
	Baseline patterns of interactions of the members of the IP	Interaction survey
IP functioning	Consistency (frequency) of participation of IP actors	IP register
	Knowledge sharing channels	Inventory of knowledge sharing mechanisms, IP evaluation tool
	Planning, action reflection cycle between the IP actors	Activity report, After Action Review IP evaluation tool ,
	Skills gained by actors	Training evaluation form
	Linkages, quality of interactions and facilitation	Matrix to document IP characteristics and functioning
IP outcomes	Changes in individuals-household income, food security	Outcome monitoring tool, Before and after-household survey
	Changes in institutions	Inventory of farmers/farmers /potential farmers being reached with technologies, market-linked and information
	Inter-institutional/organizational changes	Inventory and description of innovations (e.g. byelaws, curricula change)
	Innovations, Products, RPG, IPG	Inventory and descriptions of innovations (e.g. MoU), Matrix scoring for evaluation of technologies and other innovations
	Changes at plot/village level (e.g. NRM)	Before and after plot and village level survey



The resources required for the various processes of AIP formation and functioning are summarized in Table 8.

Activity	Resources	Process
IP formation	IP initiation meetings	1. Conduct a stakeholder interaction survey
	Time resources for the different stakeholders to meet	2. Build <b>awareness</b> at the local administration level
	Financial resources	3. Identify the <b>different stakeholders</b> and their potential role in the IP
	Expertise of the different stakeholders categories	4. Ensure <b>adequate financial resources</b> to finance the meetings
	An issue to deliberate on or the basis for the operation of the IP	5. Arrange and <b>implement an IP meeting</b> for the buy in of the local community
	M&E to track the IP formation process	6. For researcher led IP process allow the IP to deliberate on its own <b>issues</b> and to make a decision to reject or accept OR for Market led process sell the market opportunity for which to organize the IP (e.g. U.S\$ 200,000 per month worth of organic pineapple market demand)
		7. If they reject it for researcher led process repeat the process of buy in
		8. <b>Preparation and planning meetings</b> between stakeholders prior to and after the meetings
IP functioning	IP functioning meetings	1. <b>Selection of committees</b> for the grass root type of IP (Executive, M&E, NRM, market, production committees)
	Planning meetings by different partner organizations	2. Deliberation of the <b>IP work plans</b> which should be shared with the groups
	PLS wide planning meetings to refocus	3. Determination of the <b>IP constitution</b> for the grass root level IP which should be shared and endorsed by the members of the IP's
	Financial resources	4. Discussions on the <b>operational procedures</b> of the IP (#, frequency, finance and type of meetings)
	Expertise to facilitate the capacity building and functioning of the IP.	5. <b>Revolving issues</b> around the common issue to discuss
	M&E to track the changes in the IP's	6. <b>Experimentation</b> to test new varieties under the local conditions
		7. <b>Capacity building on M&amp;E</b> , improved production and NRM practices, and markets including market visits to determine the market requirements by the farmers
		8. <b>Preparation and planning meetings</b> between stakeholders periodically after the meetings

## Lessons learned

- a) Market led AIP formation creates quicker win-win scenarios compared to researcher led approach that allow AIP members to deliberate on their problems in relation to their vision.
- b) AIP formation requires inspiring champions at different levels to facilitate team work and trust among the different stakeholders
- c) The iterative process is useful in enhancing capacity of stakeholders to achieve desired goals.
- d) The concept of AIP is applicable to the different sites in differing communities in different countries. This implies that it is replicable elsewhere. This is because formation of AIPs is a learning process and context specific, requiring changes to suit a given context rather than having a blueprint.
- e) The process of AIP formation is shorter where local leadership is in place and involved.
- f) Personal differences (epistemological vantage point, personal values, experiences and social network), nature and contextual (history of the region, policy scenario, socio-economic outlook and trends, capacity, links or lack of civil society organizations) differences among the actors affect the speed at which AIP is formed.
- g) Creating win-win scenarios can be advantageous in attracting non-traditional actors e.g. private sector and enhancing the speed of formation
- h) Site selection is driven by various criteria depending on the overall aim of the project. It can be straight forward where the aim is clear.

## Challenges

- a) Dealing with emerging challenges during implementation: During implementation, while addressing the initial constraint, the solution developed often resulted into new challenges that required timely reflection and redress. For example, at Chahi initial analysis showed that lack of access to market and inability to get remunerative price was the main constraint. Accordingly, negotiations were initiated with the private sector to purchase potato from the farmers directly. After long-negotiations with various players in potato market chain a system to purchase potato directly from the producer by a group of retailers was established with well laid guidelines and memorandum of understanding. The assumption was that farmers in the area have enough produce to meet the market demand. When the action was implemented, it was quickly realised that the available potato was insufficient to meet the market demand. The situation was reviewed and the need for increased productivity was identified as the solution. However, this required improved seed and other agro-input which too required financial support through banks.

A related situation was dealt with in Kisikisi banana juice (in DR Congo) and Mamera sorghum porridge (in Uganda). Following successful branding, packaging and presentation and introduction to the market, the issue of patent came up among AIP members. This too required dialogue and negotiation to resolve.

Similarly, in Mudende (in Rwanda), an AIP involving 2 cooperatives, was successfully linked to Inyange Milk

Cooling plant. Conflicts emerged thereafter amongst AIP members. This too required mediation to reach an understanding among the members.

- b) Managing the “hand-out” syndrome (high expectations) particularly in the emergency areas:

Agricultural Innovation Platform activities are being implemented in areas where the majority of the people are resource poor and expect full support from the project. As such AIP activities are being supported by the SSA-CP project. The challenge is how to sustain the AIPs activities when such support ceases.

- c) Low capacity of partner organisation: Agricultural Innovation Platform is composed of stakeholders with different background in various aspects of AIPs. The majority of retail traders have limited capital and have largely depended on middle men. The farmers in rural areas have low capacity to contend with the multitudes of risks and constraints they face. The NARS staff also have different backgrounds. Therefore, it takes a lot of effort and resources to improve their capacity to grasp and implement AIP concepts.

## References

- Akullo, D., Wals, A., Kashaija, I., and Ayo, G. (2009). Building competences for Innovation in Agricultural Research: A synthesis of experiences and lessons from Uganda. In: Sanginga, P., Waters-Bayer, A., Kaaria, S., Njuki, J. and Wettasinha, C. Eds. *Innovation Africa; enriching farmer's livelihoods*. pp.326-332. Published by Earthscan. ISBN 978-1-84407-671-0.
- ASARECA. (2005). Fighting poverty, reducing hunger and enhancing resources through regional collective action in agricultural research for development. ASARECA (Association for Strengthening Agricultural Research in Eastern and Central Africa) Strategic Plan 2005-2015, August 2005, Entebbe, Uganda. 94 pp.
- Edquist, C. (1997), *Systems of Innovation – Technologies, Institutions and Organizations*, London and Washington: Printer Publishers.
- FARA. (2005). LKPLS validation report. 2003. Forum for Agricultural Research in Africa Sub-Saharan Africa Challenge Program. Findings of the Lake Kivu Pilot Learning Site Validation Team A Mission Undertaken to Identify Key Entry Points for Agricultural Research and Rural Enterprise Development in East and Central Africa 5 to 30 October 2005. Mateete Bekunda, Elysee B. Mudwanga, Elize Lundall-Magnuson, Kehinde Makinde, Peter Okoth, Pascal Sanginga, Emily Twinamasiko and Paul L. Woomer.
- FARA. (2008). Forum for Agricultural Research in Africa. Sub Saharan Africa Challenge Program (SSA CP); Securing the future for Africa's Children. Medium-Term Plan 2009-2010.
- Farrow, A., Opondo, C., Tenywa, M., Rao, KPC., Nkonya, E., Njeru, R., Lubanga Lunze. (2009). Selecting sites to prove the concept of integrated research for agricultural development: LKPL Site selection annual report (2008/9).
- Foray, D. (2000). *L'Économie de la Connaissance*, Paris: La Découverte, Collection Repères.
- Hall, A.J. and Yoganand, B. (2004). New Institutional Arrangements in Agricultural Research and Development in Africa: Concepts and case studies. In: A.J. Hall, B. Yoganand, R.V. Sulaiman, R.S. Raina, C.S. Prasad, G.C. Naik and N.G. Clark (eds.). *Innovations in innovation: reflections on Partnership, Institutions and Learning*, Crop Postharvest Research Programme/ICRISAT/national centre for Agricultural Economics and Policy Research, new Delhi and Andhra Pradesh, India, pp. 105-131.
- Hall, A. (2006). 'Public-private partnerships in an agricultural system of innovation: concepts and challenges', *International Journal of Technology Management and Sustainable Development*, Vol. 5, No. 1, pp.3–20.
- Hawkins, R., Booth, R., Chitsike, C., Twinamasiko, E., Tenywa, M., Karanja, G., Ngoobo, T. and Jan Verschoor, A. (2009). Strengthening Inter-Institutional capacity for rural innovation: experience from Uganda, Kenya and South Africa. In: Sanginga, P., Waters-Bayer, A., Kaaria, S., Njuki, J. and Wettasinha, C. Eds. *Innovation Africa; enriching farmer's livelihoods*. Pp.313-325. Published by Earthscan. ISBN 978-1-84407-671-0

- IAC (InterAcademy Council). (2004). *inventing a better future: A strategy for building worldwide capacities in science and technology*. Amsterdam: Inter Academy Council. Accessible at [www.interacademycouncil.net](http://www.interacademycouncil.net)
- Jones, M. (2004) Forum for Agricultural Research in Africa (FARA). A regional agricultural research organization. Working Group 4.3
- Kirsten, J.F., Doward, A.R., Poulton, C and Vink, N. (Eds). (2009). *Institutional Economics Perspectives on African Agricultural Development*. Copyright ©IFPRI pp. 477.
- Lundvall, Bengt-Åke. (2006). "Knowledge Management in the Learning Economy," DRUID Working Papers 06-06, DRUID, Copenhagen Business School, Department of Industrial Economics and Strategy/Aalborg University, Department of Business Studies.
- Lynam, J.K. and Blackie, M.J. (1994). Building effective agricultural research capacity. The African challenge. In: Anderson, J.R. (Ed.) *Agricultural Technology: Policy issues for the International Community*. Wallingford, UK.: CAB International
- OECD. 2005. *OECD Science, Technology and Industry Score board (2005)*, OECD, Paris, France.
- OECD-FAO. (2006). *Organisation for Economic Co-operation and Development Food and Agriculture Organization of the United Nations OECD-FAO Agricultural Outlook 2006-2015*. OECD PUBLICATIONS, 2, rue André-Pascal, 75775 Paris CEDEX 16 Printed in France (00 2006 2Y 1) – No. 83833 2006
- Spielman, D.J. (2006). 'A critique on innovation systems perspectives on agricultural research in developing countries', *Innovation Strategy Today*, Vol. 2, No. 1, pp.41–54.
- Susman, G. I. (1983). "Action research: A socio-technical Systems Perspective". Ed. G. Morgan. London: Sage Publications, pp. 95-113.
- Thorpe, A., Reid, C., Van Anrooy, R and Brugere, C. (Ed.) (2004). *African Poverty Reduction Strategy Programmes and the Fisheries Sector: Current Situation and Opportunities*. African Development Review. Volume 16, Issue 2, pages 328–362.
- Van den Bor, Bawden, R. and R. Macadam (1991). *Action Researching Systems: Extension reconstructed*. Papers prepared for the workshop on Agricultural Knowledge Systems and the role of Extension held at the University of Hohenheim, Stuttgart, Germany 21-25 May, 1991. Education and Training for Integrated Rural Development.