

# Frameworks for studying grassroots innovations:

*The cases of Agricultural knowledge and Information  
system (**AKIS**) and Agricultural Innovation System  
perspectives (**AIS**)*

*By Amanuel Assefa, Ann waters Bayer, Robert  
Fincham and Maxwell Mudhara*

- Reviewing theories is not adequate to draw lessons-But also relevant practices
- Although not easy to find representative cases, this paper examine two studies, which can more or less show application of the theories in the real world situation
- Analytical and comparative studies of AKIS on Ten developing countries (conducted by FAO, in 2005) and
- A study on AIS of 12 selected enterprises in 6 countries, by the World bank-
- The links between the theories and the practical applications will lead us to make preliminary conclusions on the application of the two perspectives in the grassroots innovation study of sub Saharan Africa

# Introduction

- History of research and development was not static- but dynamically changing over time and it is important to draw lessons from Old and New perspectives
- The interest of this paper is to draw lessons that can explain the dynamics of grassroots innovation systems in Sub Saharan Africa
- Focuses on two widely known perspectives; AKIS and AIS
- Describes the epistemological and methodological issues as well as complementarities and differences of those perspectives

# Grassroots innovation systems

- In this paper, the term “Grassroots Agricultural Innovation System” refers to the interface of endogenous and exogenous innovation systems, that takes place in the places of smallholder farmers and/or pastoralists or agro-pastoralists. In these systems, the economic base is subsistence agriculture, great challenges of the natural resources, little access to and influence by market, high social capital.

- “Exogenous agricultural innovation system” refers to all innovation processes that are predominantly initiated and controlled by outsiders and the “Endogenous agricultural innovation system” refers to new initiatives and innovation process of the local people (groups or individuals) aiming at challenging poverty in general
- in the real-life situation, it is not common to find a purely endogenous innovation system or a purely exogenous innovation system. A mix of both characterises many of the grassroots innovation systems in developing countries.

## Brief description of AKIS and AIS

### AKIS

- Was developed to discern organizational forms that enable or constraint knowledge processes (generation, transformation and use)
- It is (Rolling 1992) "... the articulated set of actors, networks and organisations, expected or managing to work synergically to support knowledge processes which improve the correspondence between knowledge and environment and/or the control provided through technologies use in a given domain of human activity..."
- AKIS demands a radical policy changes.... from strengthening the formal research system only, to improving linkages and communications of the system actors which are involved or should be involved in the knowledge generation processes.
- Unlike to the NARS perspective, in AKIS, Farmers are not only receivers of technologies via extensions

- Learning about the stock of knowledge in the system actors and creating a platform for the interaction of the actors to facilitate the generation of new knowledge and utilisation of same are the main principles in AKIS
- The emerging and extensive use of participatory approaches to research and development (PTD, RAAKS, FFS, FPR etc) is therefore the logical follow up of the paradigm shift from the linear model (NARS) to Multiple source model (AKIS)
- Some critics on AKIS: Leeuwis (2004) believes that AKIS puts too much emphasis on the processes of knowledge and information generation and utilisation, independent of political and other forces. Andy (2006) also commented that the AKIS concept is still focused on research supply but gives much more attention to links between research, education and extension and to identifying farmers' demand for new technology

# AIS

- (Andy 2006) defined an innovation system as a network of organisations, enterprises, and individuals focused on bringing new products, new processes and new forms of organisation into economic use, together with the institutions and policies that affect their behaviour and performance.
- A broader characterisation of innovation and innovation processes, viewed by some innovation system thinkers, has been summarised by Hall (2006) as follows:
  - Innovations are new creations of social and economic significance. They may be brand new, but they are more often combinations of existing elements.
  - Innovation may include radical improvements but usually consist of many small improvements in a continuous process of upgrading.
  - These improvements may be of a technical, managerial, institutional

- - Innovations can be triggered in many ways. Bottlenecks in production within a firm, changes in available technology, competitive conditions, international trade rules, domestic regulations, environmental, health concerns may all trigger innovation processes (Rosenberg, 1976, Dois 1988, Chandler 1990 and Nelson 1996 in Hall 2006).

# Knowledge and innovation as viewed by NARS, AKIS and AIS

## NARS perspective:

- It doesn't make important distinction between knowledge, invention and innovation
- According to NARS scientific research is the only supplier of knowledge, and those types of knowledge invented through the rigorous scientific process are innovations while the process of generating the new knowledge in the controlled environment of scientists is scientific research.
- Therefore, innovations are the products of scientific research work, of which the world is expected to make use of it

## AKIS

- According to AKIS innovation is not the desired outcome of a researcher or a group of researchers working in a controlled environment, in isolation from the bigger system. But it is a desired outcome of the knowledge system (Engle 1998)
- Unlike the comments of Hall (2006) in considering AKIS "to focus on research supply", the AKIS perspective does not recognise research as a sole supplier of knowledge but as an important partner of the rest of the social actors who are engaged in the knowledge generation and utilisation process
- Røling (1996) explains innovation as a result of interaction among different actors with complementary contribution.

# AIS

- invention (web site) is understood as the first occurrence of an idea for a new product or process, whereas innovation is the first attempt to put the invention into practice. In other words, invention is a new product, whereas innovation is a new value.
- Drucker (1985) relates innovation with market, saying that innovation has to be market-oriented and that, if it is product-oriented, it will create a "technology miracle" without creating the required benefits
- AIS is more interested in a system made up of innovations, which may take place at different knowledge fronts
- AIS justifies this argument: Knowledge generation processes are changing from elite control to knowledge society, from using papers to store and share knowledge to digital media and the web and from using research as a key tool to generate knowledge to search and consultation (Hall 2006)

# Methodological reflections of AKIS and AIS

- AKIS can be studied using the conventional social science research methods but it has also well thought through methodologies such as RAAKS, PTD, PID, etc
- RAAKS facilitate Agricultural innovations by focusing on the linkages and communications of social organization of innovations
- PTD is refers to joint experimentation and investigation by farmers and development agents and, wherever possible, formal researchers to discover ways of improving farmers' livelihood.

- Participatory Innovation Development (PID) is a recently coined name to describe local innovation processes that may take place with the support of outsiders. It broadly shares the basic philosophy and principles of PTD but also overcomes the limitation of PTD, which is more gravitated to the development of technology in the inner circle of farmers, researchers and extension workers.
- The Agricultural Innovation Systems perspective is a recently developed concept with some new values added to the previous thoughts of research and development
- The methodological approaches are also new, most of them being on trial and some new methods and tools being required to come.

- It may use any social sciences research methodologies such as qualitative studies as well as descriptive methods
- The challenge is how to use the innovation systems perspective to facilitate innovation performances at sector level or in a given domain of human activity system.
- .....More often than not, studies are simply *ex post* descriptions of the dynamics and complexities of some technological or institutional innovations – and there the analysis ends (Spielman 2005)

# Lessons drawn from the case studies

## AIS case study

- The issue of innovation was addressed in this study from the viewpoint of the institutional linkages that support or do not support innovation processes in all sectors
- The functional linkages of the commercial sector and the public research institutions are well addressed
- The study also shows how the private sector is important in the innovation process by being a source of innovation performances, either from its own organised research system or through hiring high-level professionals

- However, the type of core innovation performances (new technical, institutional or other social innovations) that are particularly responsible to determine the level of complexity of the innovation systems is not spelled out well
- The role of smallholder farmers in the innovation process is not also addressed, except in the Bangladesh shrimp industry case, where the ability of the poor to innovate is reported to be undermined.
- This indicates that the framework – specifically the terms of reference for the study, which is certainly based on the AIS perspective – does not consider the innovation capacity of the smallholder farmers as an important pillar of the AIS that deserves closer examination and attention

- The studies has paid adequate attention to the private sector and the associated market issues. The study has indeed shown how market forces, can make or break innovation performances in all case studies
- From the report it is not difficult to understand that the issue of market has received adequate attention in the conceptual and methodological frameworks of the AIS perspective as well as in the terms of reference for the country case studies. In the AIS case study, the issues of community empowerment and sustainability are not, however, right in the centre of the studies, although these are important issues in the grassroots innovation systems of Sub Saharan Africa
- Again, this may raise a question: how much is the issue of community empowerment and sustainability reflected in the conceptual framework of AIS.

## **AKIS case study**

- A number of system thinkers have been involved in this study, but the overall work and reporting of the study was done by William Rivera, Kallm Omer and Heery Mwandemere
- Unfortunately, this study was done at national level (not at sector level, as was true for AIS) and it was found difficult to discuss how the important aspects like innovation, environment, market, empowerment and sustainability are considered by the approach
- The core issue is that this study has paid significant attention to how the public institutions – namely the research, extension and education sectors – are aligned to target and develop public goods.
- Although the conceptual and methodological frameworks discussed for AKIS (PTD/PID) in the previous section do recognise and appreciate the potential of smallholder farmers to innovate, the case study did not address those issues at all