Capacity Development for Agricultural Innovation Systems in Burkina Faso: What's New with CDAIS Project?

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Abstract. It is believed that potentially the National Innovation System (NIS) model is a more comprehensive framework for the diffusion of innovation when compared to the integrated approach around cash crops, Training and Visits, and even to the more recently used approaches such as Farming Systems and Multi-Actor Platform. Qualitative approach is used to evaluate the diffusion of Capacity Development for Agriculture Innovation Systems (CDAIS) approach, implemented in Burkina Faso since 2015. The paper argues that, like the NIS approach, CDAIS approach will fail because of the competing interest of those involved in its implementation, independently from the technical quality of the model.

Keywords: CDAIS · NIS · Burkina Faso · Innovation diffusion models

1 Introduction

This paper argues that the implementation of the NIS policy model for innovation diffusion for socio-economic development in Burkina Faso in the agricultural innovation systems by CDAIS project was shaped by leading project managers' limited competences. The new tool also had to compete with older more familiar tools. In the end, it is believed that such a project compare to other projects implemented in Burkina Faso, will fail to bring about the expected improvements in policy design and practice in the agricultural innovation systems.

Qualitative methods, including in-depth interviews combined with documentary review were used to gain new insights into the difficulties encountered by the CDAIS project when the project partners were trying to implement the NIS framework in the agricultural sector in 8 developing countries. Participation in meetings and interviews were analyzed against a backdrop of detailed historical studies, based on examining a large amount of grey literature from the project.

Findings show that the Capacity Development for Agricultural Innovation Systems (CDAIS) project is important in fulfilling the UN's Sustainable Development Goals;

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especially 1 – ending poverty, and 2 – ending hunger, achieving food security and improved nutrition and the promotion of sustainable agriculture. Innovation in tropical rural areas is therefore a key to driving sustainable growth and poverty reduction through socially inclusive agricultural systems. CDAIS project specificity is that it uses continuous learning cycles, simple participatory tools to improve the functional capacities for innovation of innovation actors in Africa, Asia and Central America. In total, eight pilot countries are taking part to the study. CDAIS project brings together key partners and actors to address commonly identified challenges and opportunities in specific regions or value chains. Together, international, national and local partners come together to develop and implement capacity development plans for agricultural innovation. CDAIS supports the Tropical Agriculture Platform (TAP), which reviews and consolidates knowledge on agricultural innovation into a global 'TAP framework'.

This paper is going to give the background of the NIS framework, then its translation in Burkina Faso, followed by its evaluation compared with the CDAIS strategies.

2 Overview of the Origins of the National Innovation System (NIS) Framework

In many African countries, such as in Burkina Faso, Strengthening the Agricultural Innovation Systems has become a must. The paper prefaces the discussion in relation to such a topic by reflecting on an apparent paradox that the project claims for. While agricultural innovation systems has never been better studied, and understood, many of the projects in relation to capacity development for agricultural innovation systems have failed to fundamentally change the institutional and policy setting which constitute the environment within which innovation systems actors are organized.

Since the Organization for Economic Co-operation and Development (OECD)'s landmark publication [1], the framework known as National Innovation System (NIS) has become increasingly popular. It was first developed as a theory, concept, and analytical perspective used to study the flow of technology and information among people, enterprises and institutions.

The National Innovation System theory and concept was first developed in the 1980s by Freeman in 1982 and Lundvall in 1985 to explain technological innovation as the result of the complex interaction between institutions [2]. This conceptual framework began to be adopted in Science, Technology and Innovation Studies in the 1990s to study innovation systems [2–5]. Godin [6] has shown that the 'system approach' developed thanks partly to the contribution of the Organization for Economic Co-operation and Development (OECD) in this area and its very early work from the 1960s. In overall, the National Innovation System theory stresses that the flows of technology and information among people, enterprises and institutions are key to the innovative process. Thus, innovation and technology development are the result of a complex set of relationships among actors in the system, which includes enterprises, universities and government research institutes [6]. The inclusion of the country's research system in this complex set of relationships is another distinctive element of this approach. Godin [6: 476–477] notes that

> The National Innovation System framework [theory] suggests that the research system's ultimate goal is innovation, and that the system is part of a larger system composed of sectors such as government, university, and industry and their environment. The framework also emphasized the relationships between the components or sectors, as the 'cause' explaining the performance of innovation systems.

3 The Emergence of the NIS Framework in Burkina Faso

Burkina Faso, like a number of post-colonialist African states, sought to develop its economic base, especially in relation to agriculture. It recognized the importance of science and innovation at an early stage, and sought to boost development using institutional methods as well as market-based approaches.

It is only from the early 2000s that the concept of NIS appears clearly in policy circles and with it a less linear approach to research and innovation. This new development strategy in policy discourse became explicit and was detailed through the five years of the FRSIT/CRDI [7: 1, 8: 1] collaborative research project on "the analysis of the innovation systems and strengthening of linkages between actors for socio-economic development in Burkina Faso". The project was introduced into Burkina Faso as a specific project of innovation diffusion in 2006 and by IDRC/CRDI Canada, who themselves were inspired by the wider literature on 'national innovation systems'. The aim[1] of the project was to understand[2] innovation development and facilitate access to finance and loans. The project [7: 3] included a training workshop on "the analysis of innovation systems and the strengthening of linkages between actors for the socio-economic development of Burkina Faso"[3]. Since 2010, the FRSIT which led the NIS project[4] has been integrated into the policy department of the newly created Ministry of Scientific Research and Innovation (MRSI), with the effect of providing a policy narrative for the country's developing science, technology and innovation policy[5]. The process of stabilisation of the NIS diffusion tool at niche level, through the learning processes,

[1] (1) Identify and understand the needs of the users of the research results (2) organise users and producers of innovation with respect to their competence (3) access more easily loans from banks (4) establish partnerships and negotiate contracts and (5) support policymaking decisions.

[2] The project had two phases. First the researchers at the FRSIT were expected to familiarize themselves with the NIS framework, as a theory, by studying cases of sectoral innovation. The second phase was to support the translation of the NIS framework, as a policy frame-work, for socio-economic knowledge-based development.

[3] In French: analyse des systèmes d'innovations et renforcement des liens entre les acteurs au service du développement socio-économique au Burkina Faso.

[4] This represents the outcome of the second phase of the project.

[5] Plan d'Action Prioritaires de la Politique Nationale de Recherche Scientifique et Technologique (PAP-PNRST); Politique Nationale de la Recherche Scientifique et Technologique (PNRST) Plan d'Action Opérationnel de la Stratégie National de Valorisation des Technologies, des Inventions et des Innovations (PAO-SNVTII); Stratégie National de Valorisation des Technologies, des Inventions et des Innovations (SNVTII). All these plans and strategieswereadoptedin 2012 and incorporate FRSIT/CRDIactivities and plans.

experimentation and network building involved in this has failed. Such learning processes consisted in undertaking training sessions, meetings, symposiums, workshops and conferences to experiment with and build up the network of relevant actors who were interested in this. The introduction of the NIS as an innovation diffusion tool did not manage to create a new and sufficiently favorable socio-technical system capable of improving the living conditions of the population in Burkina Faso. These findings emerged from a detailed study of the country-specific process of the appropriation of the NIS at both the strategic policy design level and the operational level through the case of Biotechnology cotton innovation system. The success of the NIS would be a matter of completely uprooting the old successive approaches in order to settle on a totally new one. Such a reality has contributed to making the diffusion of the NIS tool for innovation diffusion unsuccessful, because of the lack of attention to the type of implementation actions needed to embed and develop this approach.

4 CDAIS Project in Burkina Faso

In 2015, a project has emerged to strengthen the capacity development for agricultural innovation systems. It aims at strengthening the capacity for agricultural innovation systems by improving the capacities to *navigate in complexity, to collaborate, toreflect and learn, and to engage in strategic and political processes*. Thus, in its implementation in Burkina Faso, the content of these key words was not explicit so that one knows how an ideal AIS operates. Indeed, so far, one cannot see the extent to which the AIS (Agricultural Innovation Systems) framework is being implemented, even though challenges are identified and solutions are being built together with farmers, agri-business and consumers, but without referring to the AIS framework. What is difficult for the management of such a project is to know what to consider concretely as a functioning AIS. The project leaders need to know clearly what the specific variables are. They need to be able to clearly identify the standards indicators of the AIS theory. In my point of view this is capital. Thus, by knowing the AIS theory and the concrete standard indicators, one can see to what extent is a case study, a specific AIS works in practice and how it should have worked in light with the AIS theory. This is still a big challenge in Burkina Faso to make such shift because it is hard for innovation actors who have been in the old approaches to see and really understand the new way of doing things that CDAIS project is trying to promote. Up to now, the project has not shown a clear strategy that is inspired from the AIS framework. Instead, due to limited knowledge of project management team at national level on the AIS framework, CDAIS is struggling to develop the capacity for a successful AIS. As can be seen CDAIS project up to now resemble more to the multi-actor platform that has proven already its limits in Burkina Faso. Based on Compaoré's [9] study of the NIS in Burkina Faso, one of the possible questions would be whether technically the NIS tool for innovation diffusion is capable of being more effective improving capacities than the previous ones such as farming systems, the multi-actor platform etc. As with Compaoré's [9: 326] findings, we are inclined to support an affirmative view for several reasons: "Indeed, I believe that potentially, the NIS tool is more comprehensive for the diffusion of innovation when

compared to the integrated approach around cash crops, Training and Visits, and even to the more recently used approaches such as Farming Systems and Multi-Actor Platform".

5 Discussion and Conclusion

So far, CDAIS project in Burkina Faso has not proved to have deeper understanding about AIS framework and a NIS framework. Instead, it relies on old approaches where it is hard for one to understand the extent to which the project is promoting AIS as a best tool for successful innovation diffusion.

More specifically, the NIS is an innovation diffusion tool in which the role of the government is prominently stated and tested. Many of the innovation system scholars made the role of government in innovation dynamics explicit [4]. For instance, the acquisition of technology, its use and diffusion involve the government whose role in the system is essential. It is clearly set out there that through policymakers and government play a key role by making choices which inform strategies at national level [10]. The government is considered as a lead actor which influences through policy and institutional design. In addition, governance influences Foreign Direct Investment (FDI) [11: 2] because, "despite their limited size, FDI inflows have had a positive impact, in as much as they generated employment in the formal sector and generated local value-addition". On the other hand, such a flow is supported within the framework of government Intellectual Property Right (IPR) regulation; by designing the IPR system for the sake of business and government direct scientific research such as financing universities, supporting business R&D [12: 23], "the Government has a responsibility to contribute to the formation of the human and social capital needed to evaluate, choose, implement and modify foreign technologies".

The commitment of the government to provide actors with such a context is thus required in order to produce a favourable social and political context for the networking of firms and knowledge producers. None of the previous approaches has made this explicit as is done in the NIS policy tool. The wording in the Farming Systems and Multi-Actor Platform approaches should not mislead one as to their consideration of this macro level aspect. In neither case is there a comparable documentation of the working of the State within the system as there is in the NIS framework. An application of the NIS tool for innovation diffusion would have at least resulted in the creation of institutions and other resources for which the government is the best actor. While the Multi-Actor Platform approach is mentioned in Burkina Faso innovation policy, the reality is that this approach unlike the NIS tool has not tested and approved the standards and mechanisms of the best ways for government intervention in the innovation system. The CDAIS project has not demonstrated otherwise.

An application of the NIS would have at least sensitized the government and other relevant actors to the need for building research infrastructures; because the NIS policy tool for innovation diffusion has demonstrated that domestic resources are key to sustainable successful innovation diffusion.

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