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**Understanding the Engagement of Policymakers  
in the Success or Failure of Agricultural  
Innovation Processes: Lessons from Africa  
Countries**

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## **Executive summary**

This report documents the relative effects of policymaker's engagement towards the success or failure of agricultural innovation processes at country levels in Africa. It provides evidence that validates the factors that influence the engagement of policymakers in the success or failure of Agricultural Innovation Processes (AIP). This study was conducted as part of the Programme of Accompanying Research for Agricultural Innovation (PARI); a sub-set of the "One World – No Hunger" initiative of the government of Germany. Fostering an effective engagement of policy makers at different governmental levels is vital to the delivery of the central objective of the initiative and other agricultural development action, hence the study. To understand the intricate steps to actively draw inputs from the policy making systems at country level, this study examined 32 case studies of agricultural innovation processes; 15 of which are successful and 17 non-successful. The cases were drawn from five Africa countries that are participating in the PARI project. Eight (8) cases were drawn from Benin republic, Eight in Ghana, four in Mali, Seven in Togo, and five in Tunisia between year 2017-2018. The different casees were analysed to profile the key steps in the innovation processes, with focus on the initiation period; reasons for initiation, key stakeholders involved, the roles played, results obtained, and various evidence to substantiate the deliverables. Key stakeholders who participated in the innovation processes were identified using the snowball sampling method and interviews. An interview guideline was developed and administered. In total, the cases studied comprised of 15 technologies (of which, 5 were successful), 10 varietal improvement programs (of which 9 were successful), and 6 institution/organisation interventions (of which 1 was successful). The engagement of the stakeholders with appropriate competencies came out strongly as a key factor that influences the success of the interventions. Appropriate identification of policymakers' needs and alignment of interventions to their needs also play a major role in the success of interventions. Five categories of policy interventions drivers were identified, they include: Research partnership (RTP), financial and technical partnership (FTLP), action Implementation Partnerships (ILP), Beneficiary and Advocacy partnerships (BALP) and High-Level Decision-Making Partnerships (HPDLP). Our study further reveals that researchers (100%, with N=32), financial and technical partners (94%), and implementers (94%) were the predominant policymaking groups in the agricultural innovation processes. Meanwhile, beneficiaries (78%, with N=32) and high-level policymakers (75%) were poorly engaged. This study concluded that the engagement of competent researchers, adequate financial supply, adequately capacitated technical partners, smart engagement with target beneficiaries are the key to a successful agricultural innovation process.

**Keywords:** Agricultural innovation process; Engagement of Policymakers; Determinants; Success; Failure; Africa

## **Introduction, Justification and Objectives of the study**

### **Introduction**

This study reports an analysis of various case studies on the engagement of policymakers in agricultural innovation processes in five African countries (Benin, Ghana, Mali, Togo, and Tunisia). The field works were carried out between 2017 and 2018 as part of the Program of Accompanying Research for Agricultural Innovation (PARI) funded by the Federal Government of Germany through the Ministry of Economic Development Cooperation (BMZ) and under the Germany's global initiative "One World No Hunger (SEWOH)".

PARI project aimed to contribute to food and nutrition security in African countries and India through research that generates knowledge on the direction of investment for agricultural innovation as well as supporting the various green innovation Centres with empirical analysis. Other objectives of PARI is the provision of knowledge to foster an effective engagement of policymakers for generation of innovation around food and nutrition security in the intervention countries. The case studies documented in this report will provide PARI and SEWOH partners with information on past experiences and lessons on which they can build new intervention in agricultural innovation and policy advocacy and development targets on. In total, case studies from 32 agricultural innovation processes are evaluated and documented in this report.

### **Justification to the study**

It is widely admitted that development actions targeting people in any area are hardly effectively implemented, when policymakers are not sufficiently and efficiently engaged for the design and implementation of decisions. This is because, policymakers are vested with the powers and legitimacies necessary for the identification, design, implementation of right policies to foster action. This applies to all sectors of the economy as well as the agricultural innovation processes (Anderson, 2003; Jones and Kimura, 2013). Indeed, for scalable agricultural innovation to be initiated and developed, the full support from agricultural policymakers is required, since it holds the authorizing environment, the provision of security, infrastructural development and more stable investment profiles for scaling interventions. There are several examples of agricultural innovation processes or other "large" scale agricultural transformation initiatives related to land reform, input supply, technology adoption, etc., which have failed or succeeded because of policy influence. Agricultural reforms initiated in countries like Brazil, China, Ecuador, India, Japan, Kenya, Nepal and Uganda may be cited as examples (Jones and Kimura, 2013; Biswas, 2010; van Damme, Ansoms and Baret, 2013; Diao, 2010; UNEP, 2010).

While many studies has addressed adoption of agricultural technologies and innovations, there are very few studies that provides intellectual knowledge on systemics to effectively engage policymakers in the agricultural innovation processes in African countries. This study aims to fill the knowledge gap and contribute to the success of agricultural development initiatives.

## **Study objectives and expected results**

### **Overall objective**

The overall objective of this study is to review and understand the success stories of the engagement of policymakers in agricultural innovation processes, and to draw lessons on which further policymakers' engagement initiatives may build in Africa.

### **Specific objectives**

The specific objectives of this study include:

1. to document stories of successful and non-successful agricultural innovation processes;
2. to identify the determinants (including contributions of policymakers) of success and failure of agricultural innovation processes; and,
3. to identify and characterise the key determinants of factors that drives effective engagement of policymakers in agricultural innovation processes.

### **Expected outputs**

Outputs expected from this study include:

1. Stories of success and failure case studies of agricultural innovation processes in African countries are documented.
2. Determinants of success and failure of agricultural innovation processes in African countries are identified and discussed.
3. Determinants of the engagement of policymakers in the success or failure of agricultural innovation processes are identified and discussed.

## **Conceptual Framework**

This study embraces the use of a handful of concepts and theories in its inquiry and reporting of key findings. Concepts addressed are: agricultural innovation; agricultural innovation process; engagement, policymaker/policymaking, and success stories.

### **Agricultural innovation**

Agricultural innovation is here referred to as all kind of perceived profitable, reproducible, and disseminable changes (radical and/or incremental) and/or adaptations that occur in the agriculture sector (Adekunle et al., 2013; Glin et al., 2016). Agricultural changes or innovations may therefore relate to the whole agricultural development system including: Capitals for production (land resources, financial resources, human resources, livestock, etc.); Inputs (varieties, seeds, breeds, water, fertilisers, feeds, pesticides, extension or advisory services, etc.); Techniques/practices/technologies (calendars, itineraries, technical practices, technologies, etc.); Infrastructure (input supply infrastructure, technology supply and maintenance infrastructure, marketing facilities, ICT service supply facilities, road facilities, etc.); and, Hard and soft institutions (policies and policy bodies or organisations) guiding access to, management of, learning from/about, and innovation on/in capitals, inputs, techniques, technologies, and infrastructure.

Studying agricultural innovation processes therefore implies researching on perceived profitable changes in given agricultural development systems. In the context of PARI, the

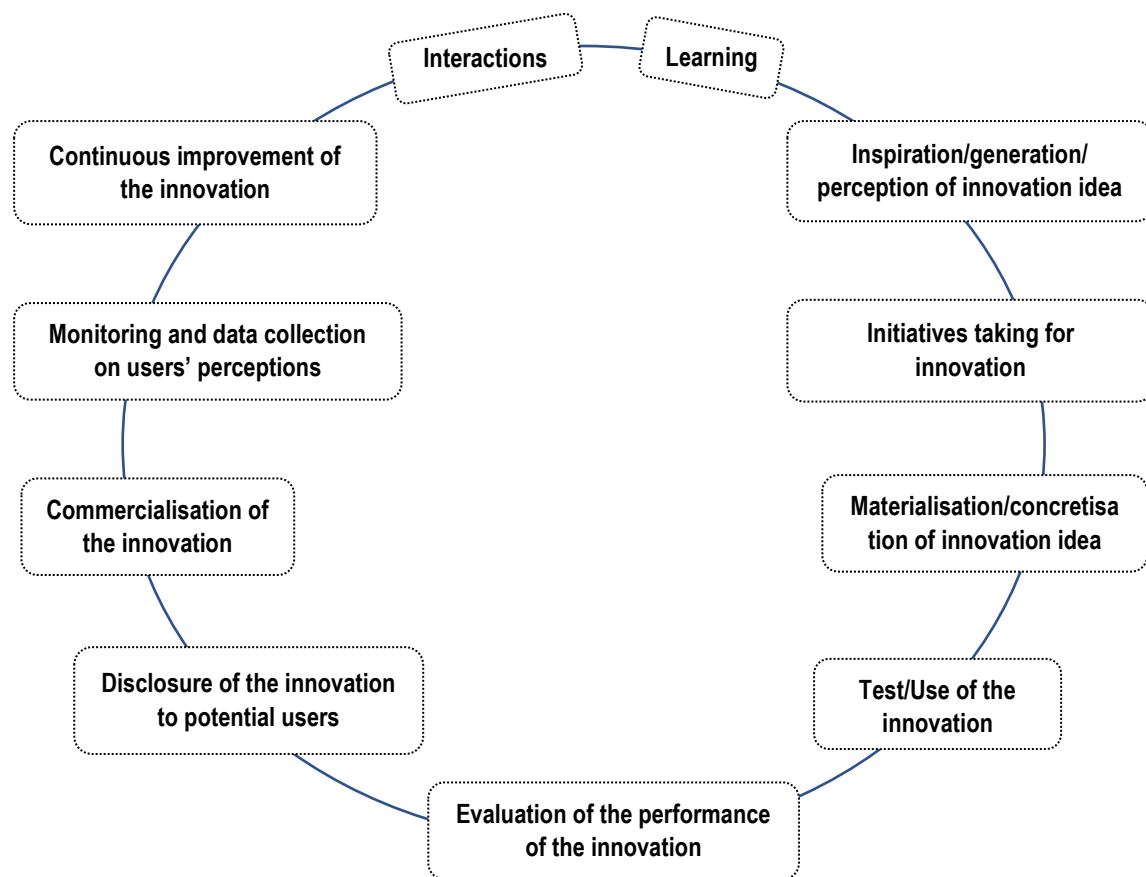
levels considered for the study are local and national. The study focuses on “significant/important, successful and non-successful” agricultural innovation processes in each target PARI country as perceived and suggested by country partners.

### **Agricultural innovation process**

By agricultural innovation process, this paper refers to all the iterative steps that lead to agricultural innovation. These steps essentially consist of:

1. **Interactions** (chosen, imposed or by chance/coincidence) with/among human beings (including innovators and policymakers), and between humans and natural phenomena/facts. Interactions among humans can take place in chosen or imposed/unplanned collaboration and/or communication networks (platforms, working groups, media, for example). Interactions with natural phenomena/events also occur by choice, force or by coincidence, because they and/or their outcomes are not often predictable in advance. (Leeuwis, 2004; Brouwer et al. 2015)
2. **Learning from/during interactions:** This consists of drawing lessons from the cognitive changes, transformations or reinforcements induced by diverse interactions (Kouévi et al. 2013). These cognitive effects can result from their match with learners’ interests/aspirations, or from shocks/surprises and cognitive dissonances they induce.
3. **Inspiration/generation or perception of innovation idea.** This can originate from intuition and all kind of experiences, interactions, and other sources of information.
4. **Taking of initiatives** (including engagement of policymakers) for the materialisation or concretisation of the innovation idea.
5. **Materialisation** of the innovation idea.
6. **Test or use of the innovation** (or the materialised innovation idea).
7. **Evaluation of the performance of the innovation** (with reference to initial expectations or emerging issues).
8. **Disclosure of the innovation to potential users** (in case the performance is perceived as acceptable and the dissemination of the innovation is desired).
9. **Commercialisation and/or dissemination of the innovation.**
10. **Monitoring and data collection** on users’ perceptions and additional aspirations about the innovation.
11. **Continuous improvement** (minor/petite/incremental innovation) of the innovation for improved performance, based on information gathered from users, or inspirations of innovators.

Figure 1 summarises iterative steps followed by agricultural innovation processes as follow.



**Figure 1: Iterative steps followed in agricultural innovation processes**

Engagement of policymakers may be part of any step of agricultural innovation processes.

### **Engagement**

In everyday interactions and talks, the concept of engagement is used to mean different acts such as – marriage, arrangement (to meet someone or to do something), fight, interest (in doing something), promise (to do something or be somewhere), employment, commitment, etc. An engagement can be based on signed contract or agreement, and/or on oral promise, constraint, incentive, threat, and/or trust (Cerna, 2013; Meyer and Allen, 1991; Meyer et al. 2002; Schwartz, 2017). However, effectiveness of engagement is mainly measured through the materialisation of promised acts or facts. In this study, engagement is meant for the *voluntary and/or stimulated involvement or participation* of policymakers in the success or failure of agricultural innovation processes. Thus, studying engagement of policymakers in agricultural innovation processes implies investigating on how (on voluntary or stimulation basis) and the extent to which (steps and levels for instance) policymakers are involved in given agricultural innovation processes.

### **Policymakers**

Policymakers refers to (Anderson, 2003; Cerna, 2013; Gerston 2010; Grindle, 1980; Migdal, 1988; Najam, 1995):

1. **Politicians** (from parliaments/congress, governments, political parties, and other members of political/policymaking institutions) who decide on the social, political, economic, etc., orientations of policies at local, national, regional and/or international levels. They are often considered as high or strategic level policymakers. This category of policymakers will further be referred to as high policy-decision making level policymakers (HPDLP).
2. **Government or organisations' officials** (administration staff; technicians; managers; extensionists, etc.) who are often appointed by politicians or high-level policymakers, and operate/implement policies defined by their hierarchical seniors. This category of policymakers are often in direct contact with both beneficiaries and high-level policymakers, and behave strategically (based on their knowledge of contexts, aspirations, and threat potentials of both beneficiaries and high-level policymakers) to satisfy their own aspirations/stakes as well as those of their seniors and beneficiaries. Given their legitimacy or power positions and knowledge about both beneficiaries and senior policymakers, they can facilitate the success or failure of their top (senior policymakers) and down (beneficiaries) partners, especially in situations where there is hardly direct interaction between high-level policymakers and beneficiaries, and/or loose effectiveness monitoring, evaluation and incentive systems. In general, these intermediary policymakers hold more power than their top and down partners because they concentrate more information and therefore more knowledge about contexts/situations than all the other partners. Some authors qualify these policymakers as street-level policymakers (Migdal, 1988). This category of policymakers will further be referred to as implementation level policymakers (ILP).
3. **Scientists** who are expected to contribute to orientation of policies with scientific knowledge. This category of policymakers is also strategic and intermediary because as street level policymakers or policy implementers, they also have the potential legitimacy to interact with all other policymaking stakeholders while working to generate scientific evidence to inspire policymaking processes. Given their profile, scientists are expected to be truthful and objective. However, they often hold ambiguous positions (dependence on research funders and sometimes salary payers), which do not allow them to always access to and build on evidence, especially when evidence are not in favour of their employers or funders' aspirations, mainly in poor information circulation contexts. This category of policymakers will further be referred to as research level policymakers (RLP).
4. **Financial and technical partners** who often promote some political or strategic views and practices while assisting beneficiaries, financially and technically. People/institutions from private sector may be included in this category of policymakers. This category of policymakers will further be referred to as financial and technical level policymakers (FTLP).
5. **Advocacy and beneficiaries groups** (NGOs; professional associations; civil society organisations; etc.) who often push the other policymakers towards the satisfaction of



beneficiaries' aspirations. This category of policymakers will be referred to as beneficiaries and advocacy level policymakers (BALP).

Given the poor definition of profiles of each category of policymakers, and the loose and flexible boundaries between the categories, it appears difficult to specify the exact level or category to which each policymaker belongs. Policymaking meaning policy design and implementation, it also appears that beneficiaries, policy implementers, policy financiers, and policy guides and designers, are all policymakers in one sense or the other. Thus, one may conclude that policymakers contribute to and/or influence in one way or the other, the initiation, (re)design, funding, implementation, monitoring, evaluation, and documentation of given policies.

Policy may be understood as a relatively stable (timewise) and purposive course of action followed by an actor or set of actors in dealing with a problem or matter of concern (Anderson, 2003). Policy is different from decision. Policy unfolds over time while a decision is often a specific choice made among alternatives, at a given point of time (Anderson, 2003). Policy making includes many routine and non-routine decisions. Rules setting as well as rules enforcement are both part of policy making process. Projects and programmes are considered as policy operationalisation or implementation frameworks.

In the context of this study, the target policymakers are those concerned with agricultural innovation processes in PARI countries. High-level and street level policymakers scientists, financial and technical partners, advocacy and beneficiaries' groups involved in agricultural innovation processes were targeted. The study identified influential agricultural policymakers of the target innovations and countries, discussed with them, and investigated on their involvement and contributions in concerned agricultural innovation processes.

### **Success stories**

Success stories narrate, as detailed as possible, steps of agricultural innovation processes or initiatives, and their success or failure outcomes. The objective is to allow readers to learn from/about key details of an agricultural innovation process such as to capture key success and failure factors, especially while comparing successes to failures. We consider as successful, all agricultural innovation processes that have reached outputs/outcomes targeted by the process initiators. Non-successful or failure cases relate to agricultural innovation processes that did not reach the target outputs according to respondents. In the follow up, some partially successful innovations may sometimes be classified as successful or non-successful based on interviewees' suggestions.

### **Methodology**

The methods used in selection of case studies, identification and discussion with policymakers, determination of success and failure factors, and documentation of innovation processes and engagement of policymakers.

#### **Selecting agricultural innovation case studies**

Agricultural innovation case studies were selected at the country level by PARI research partners – a list of 5 to 10 major, innovative and “successful”, and another list of 5 to 10 major, innovative and non-successful initiatives, all taken from the agriculture sector over

the last 5 to 50 years. The case proposed by partners are related to in-kind credit, inputs delivery systems, agricultural production techniques or practices, technologies and interventions. From each of the lists, “successful” and “non-successful” cases were selected and studied (see table 1 on case studies per country).

**Table 1: Agricultural innovation process case studies per country**

	<b>Benin</b>	<b>Ghana</b>	<b>Mali</b>	<b>Togo</b>	<b>Tunisia</b>
Successful case studies	Technology for improvement of egg-laying and hatching rates of local hens in rural areas	Improved soybean variety (ISV) (Jenguma)	<i>Vote and promulgation of Récépissé d'entreposage</i> (Storage receipt) and establishment of warehousing regulation authority	« IR-841 » rice Variety	New improved durum wheat variety “Mâali”
	Manual Sheller for cashew nuts	Improved technology for Tilapia (ITT)		Cotton variety « STAM129A »	Organic olive oil
	Clean BENTO 01 tomato variety	High Quality Cassava Flour (HQCF)		Extension of “Ikenne” maize variety	Rapeseed crop (Extending legume and pulse crops areas in cereal rotation)
	NERICA-L14 rice variety	Simple Water Control Strategies for Rice (SWCR) (management)			
Failure case studies	Rice based Pella Breakfast	Formulated Feed for Growing Tilapia in Ponds (FFT)	Livestock market information system (LMIS)	NERICA rice varieties	Labelling systems of animal products-case of tarentaise
	Amaranthus seed production techniques	Combined Starter and Finished Diet for Broilers of	Rice value-Chain information bulletin ( <i>Bulletin d'information</i> )	Brazilian sowing stick	Conservation agriculture in Tunisia

		Chicken (CSFD)	<i>sur la filière riz « réseau riz »)</i>		
	Feeding of goats with « Pachyrhizus erosus (AHIPA)» flake flour	Maako Ntoose (MNT) (Biology)	E-voucher	Yam mini-set technology	
	<i>Economic ration for 1- day local chicks of Benin</i>	Utilisation of Azolla as manure in lowland rice cultivation on vertisols (UAM) (Management)		Distribution of sheep-parents among livestock farmers	

Source: Country study reports, 2017-2018

### **Identifying and discussing with policymakers on their engagement in agricultural innovation processes**

Policymakers interviewed about the selected agricultural innovations were those directly involved in the innovation processes, and those who were not involved but were competent to contribute to the understanding of the processes. This implies that after the agricultural innovation processes were selected, their historical trajectories were documented using a snowball sampling approach, and an interview guideline. The snowball sampling allowed surveyors to identify and interview key policymakers and informants. The sampling and interviews started from national PARI partners who helped identifying the agricultural innovation case studies. Key target beneficiaries of the agricultural innovations were also identified and interviewed on their understanding and appreciation of the innovation processes and outputs. Evidence (photos, documents, etc.) related to the histories were collected to triangulate information provided by informants.

Interviewers were master's degree students (2 in Benin, 1 in Mali, and 2 in Togo) from Universities of partner countries, and consultants (in Ghana and Tunisia). The students were selected and supervised by qualified country partners in partnership with university professors. In countries where it was necessary, FARA staff provided supervision support.

### **Determining key factors of success and failure of agricultural innovation processes**

Key factors of success and failure of agricultural innovation processes are inferred from the stories narrated and specific responses from interviewees whose responses are summarised in categories suggested by their contents and counted.

### **Documenting the agricultural innovation processes and engagement of policy makers**

The full histories of the processes of the selected agricultural innovations (chronological description of events, stakeholders, periods of time, locations, inputs, outputs, etc.) are summarised in tables as narrated by interviewees, and triangulated. The histories of the

engagement of policymakers are part of the agricultural innovation processes, and therefore, they are isolated in separate sections.

## **Results and Discussion**

This section reports on successful and non-successful agricultural innovation processes in Benin, Ghana, Mali, Togo, and Tunisia. It also addresses determinants of success and failure of the processes, and of the engagement of policymakers. Discussions will highlight that very few high-level policymakers could be engaged in the innovation processes studied, and the engagement of high-level policymakers does not automatically guarantee the success of the processes.

### **Successful agricultural innovation case studies**

This subsection highlights agricultural innovations, their period of initiation, their objectives, key stakeholders engaged, stakeholders' contributions, status (success or failure) of the innovation processes, and evidence of success/failure, per study country. In total 5 technology/techniques, 9 variety improvement, and 1 organisation/institution related innovations are discussed. It will be observed that:

- Most of these successful innovation processes have been initiated based on requests/demands from end users/farmers and their clients;
- many categories of stakeholders were involved in these case studies, including high-level policymakers; and,
- the innovations present comparative advantages for beneficiaries, and hence were largely adopted.

### **In Benin**

Two technological and two varietal selections and adoption have been studied as successful agricultural innovation processes in Benin. Details on these innovations are provided in Table 2 below.

**Table 2: Successful agricultural innovation case studies in Benin**

Innovation name	Period of initiation	Description	Key Stakeholders engaged	Roles	Status	Evidence of status
Technology for improvement of egg- laying and hatching rates of local hens in rural areas	2010	<ul style="list-style-type: none"> <li>- Manufacturing of 30x20x15 cm<sup>3</sup> wood cuboid nests for hens at beginning of laying.</li> <li>- Reduces scattering of eggs and attacks from predators</li> <li>- Allows to provide laying hens with feed supplements.</li> </ul>	Head of <i>Laboratoire de Recherches Zootechnie, Vétérinaires et Halieutiques</i> (LRZVH/INRAB) (Prof. GBEGO-TOSSA Isidore)	Research and initiation of innovation project	Partially successful (not sustained)	<ul style="list-style-type: none"> <li>- Hatching rate raised from 64% (without the improved nest) to 90% (when the improved nest and feed supplements are used)</li> <li>- The improved nest provides 1.4 times more chicks than traditional practice.</li> <li>- Death-rate reduces by 60% with the use of the improved nest.</li> </ul>
			Consultant (BANKOLE Camille)	Research		
			Head of <i>Sous-Programme Santé animale et Éco toxicologie du LRZVH/INRAB</i> (Dr. Ir. MENSAH Serge)	Research		
			Head of Government funded Project (PIP/APRA)	Funding, monitoring and evaluation		
			Technical and financial partners	Funding and technical supports		
			Agents of Regional Centre for Agricultural Development (CARDER)	Research and extension		
Manual cashew nuts sheller	2013	<ul style="list-style-type: none"> <li>- Manual cashew nut sheller is equipment that allows to easily and efficiently value cashew fruits and nuts (less than 1% breaked nuts) and to improve exports rate of raw nuts.</li> <li>- Can process 75-100kg of nuts per</li> </ul>	Decision-makers of ProCAD/PPAAO project	Funding	Success	
			Coordinator of <i>PTAA/CRA-Agonkanmey/INRAB and EPAC/UAC Project</i> (Dr. Ir. AHOUANSSOU Roger H)	Research and project coordination, initiation		
			Prof SANYA Emile (Researcher and Professor of EPAC/UAC)	Research		
			Prof DOSSOU Joseph (Researcher and Professor of FSA/UAC)	Research		
			Dr PADONOU Wilfrid (Researcher of PTAA/CRA-Agonkanmey/INRAB)	Research		
			Cashew nuts and fruits processors	Supply, test, and use of		

		day per manpower		end results		
			Equipment manufacturers	Manufacture and supply of equipment		
Clean BENTO 01 tomato variety	2006	BENTO 01 ( <i>Tounvi épuré</i> ) variety of tomato cleaned to allow vegetable growers to access clean tomato seeds	Public Investment Programme (PIP) (Government funds)	Funding	Success	<ul style="list-style-type: none"> <li>- 90% of Klouékanmey market gardeners use the variety</li> <li>- High demand of the seeds</li> <li>- Inscribed in the crop catalogue of the Republic of Benin (CaBEV)</li> <li>- Inscribed in the catalogue of promising agricultural technologies developed by the national agricultural research system SNRA 1999 -2015 »</li> </ul>
			<i>Projet d'Appui au Développement dans le Mono Couffo (PADMOC)</i>	Funding and Extension		
			Extensionists of the <i>Agence Territoriale de Développement Agricole (ATDA) former CARDER of Mono-Couffo</i>	Research and Extension		
			INRAB	Research		
NERICA-L14 rice variety	2006	Developed to fill resistant, good yield, and short-term variety gaps.	National Agricultural Research Institute of Benin (INRAB)	Funding, research and extension	Success	<ul style="list-style-type: none"> <li>- Cropped everywhere in Benin, especially in the Collines Department (Dassa, Glazoué, Savalou) and in the North (Malanville, Tanguiéta).</li> <li>- Inscribed in the catalogue of promising agricultural technologies developed by the national agricultural research system SNRA 1999 -2015 »</li> </ul>
			Africa Rice	Funding, research/innovation and extension		
			Head of <i>Sous-Programme Recherche Rizicole of INRAB</i> (Mr. AKAKPO Cyriaque)	Research and extension		
			Crop selection Scientists of INRAB (Madame Bello Ilyath )	Research and extension		
			Crop Scientists from INRAB (KOUKE Rosanolff and BALOGOUN Pascal)	Research and extension		

Source: Benin study reports, 2017-2018

## In Ghana

Table 3 describes successful innovation processes studied in Ghana, two technical/technological, and two related to varietal improvements.

**Table 3: Successful agricultural innovations studied in Ghana**

Innovation name	Period of initiation	Description	Stakeholders	Roles	Status	Evidence of status
Improved soybean variety (ISV) (Jenguma)	Between 1991 and 2003	<ul style="list-style-type: none"> <li>Considered as a crop biological/genetic change.</li> <li>It is a response to farmers' requests through the Regional Research and Extension Linkage Committee for a solution to the early shattering problem in soybean.</li> </ul>	Savanna Agricultural Research Institute of CSIR (CSIR-SARI)	Initiator, research (genetics), and extension	Successful	<ul style="list-style-type: none"> <li>Jenguma variety is still top of the list among farmers in Northern Ghana.</li> <li>Increased area under cultivation (62,000Ha in 2006 to 86,000 Ha in 2015),</li> <li>Increased production (from 54,000 metric tonnes in 2006 to 142,000 metric tonnes in 2015)</li> <li>Yield gap bridging from less than 0.5 Mt/Ha in 2000 to 1.2 Mt/Ha in 2014, achieving 57% of expected yield improvement</li> </ul>
			Ministry of Food and Agriculture (MoFA)	Funding, research and extension		
			Food research Institute (FRI)	Research and extension (nutrition)		
			Food Crops Development Project	Research and extension		
			IITA	Technical backstopping and germplasm		
			Crop research institute (CRI)	Research (varietal selection) and extension		
			African Development Bank (AfDB)	Funding		
			Women in Agricultural Development Directorate-(WIAD)	Research and end use (food preparation)		
			National Varietal Release Committee	Inspection visits		
			Grains and Legumes Board	Research (provision of foundation seeds)		
			Seed growers	Research (production of certified seeds) and extension		
Improved technology for Tilapia (ITT)	1997 - 2006	<ul style="list-style-type: none"> <li>Akosombo strain of the <i>Oreochromis niloticus</i> (Nile Tilapia) was initiated in 1997 and the process was completed in 2006.</li> <li>All male fingerlings of 5.0g were stocked in either ponds</li> </ul>	Scientists at the ARDEC of CSIR-Water Research Institute (WRI)	Initiation, Research and extension	Successful	<ul style="list-style-type: none"> <li>The strain has higher qualities compared to the traditional tilapia.</li> <li>During the 28th National Farmers Day celebration in December 2017), the WRI was awarded winner of the</li> </ul>
			Breeding and selection of <i>Oreochromis niloticus</i> for faster growth (Project)	Research and extension		
			Government of Spain	Funding of phase 1		
			Food and Agriculture Organisation	Funding of phase 2		

		<p>or cages at appropriate densities and fed with pelleted feed based on monthly fish biomass.</p> <p>The normal culture period of between 8 and 9 months was shortened to between 5 and 6 months because of the 30% faster growth of the improved strain.</p>	(FAO)			<p>National Best Agricultural Researcher Award in Ghana for the development of the Akosombo strain of Tilapia</p> <p>The output of cultured fish has increased from 1,667 Mt in 2006 to 44,515 Mt in 2015</p> <p>The advantage of the improved strain includes its fingerling growth rate that is at least 25% faster than that of those collected from the wild.</p> <p>It has higher survival rate, fecundity, flesh quality and better resistance to diseases</p>
			World Fish Centre	Funding of phase 2		
			Volta Basin (Burkina Faso, Togo, Mali and Cote d'Ivoire)	Funding of phase 2		
			Farmers operating hatcheries for grow-out farmers (Hatchery companies such as Tropo Farms and West African Farms as well as small cages on the Volta Lake in Kpong)	Research and extension (production of fry and fingerlings)		
			Fish farmers across Ghana and within the West-African Sub-region	End users		
			Women fish traders	Trade and processing		
High Quality Cassava Flour (HQCF)	Early 2000s.	<p>The common cassava varieties planted included Afisiayi, Ampong, Doku, Botann and Esam-bankyi.</p> <p>High quality flour</p>	Root and Tuber Improvement Programme (RTIP)	Design, implementation and funding of RTIP project phase 1	Partially successful (not sustained)	<p>In 2013, firm orders amounted to 1,765Mt but the processors could not meet this, mostly due to insufficient working capital.</p> <p>Small scale processors of HQCF had challenges with high quality specifications particularly with the production of HQCF for the food industry.</p> <p>National policy on composite flour production and usage in Ghana developed and yet to receive parliamentary assent</p> <p>Cultivated areas have increased from 790,000 Ha in 2006 to 917,000 Ha in 2015.</p> <p>Production increased from 9.6 million metric tonnes in 2006 to 17.2 million metric tonnes in</p>
			MoFA	Funding and extension		
			Root and Tuber Improvement and Marketing (RTIMP) project of MoFA	Design, implementation and funding of Root and tuber project, phase 2		
			CSIR-Food Research Institute (FRI)	Research and project implementation		
			CSIR-Forest Research Institute of Ghana (FORIG)	Research and project implementation		
			National Board for Small-scale Industries (NBSSI)	Research and project implementation		
			Department of Nutrition and Food Science at the University of Ghana	Research and project implementation		
			Natural Resources Institute of the United Kingdom	Research and project implementation + funding		
			Department of International Development (DFID) of UK	Funding of the projects, research and publications		
			Cassava: Adding Value for Africa (C:AVA) Project	Phase 3 of cassava project (develop value chains for		



				HQCF in Ghana, Tanzania, Uganda, Nigeria and Malawi) plus extension and linkage		2015. - The yield gap is bridging from less than 12 Mt/Ha in year 2000 to 18.3 Mt/Ha in 2014, achieving 37% of expected yield. - Together, the collaborating organizations demonstrated that HQCF could be produced at an economic price and incorporated in common snack food items such as biscuits and cakes. - Market acceptability studies in Greater Accra showed that consumers would accept substitution levels of 35% cassava flour in soft dough biscuits and 60% cassava flour in hard dough biscuits - The technology offered a solution to the needs of a growing number of rural-based bakeries who partially substitute wheat flour with HQCF - Guinness Ghana Breweries Ltd (GGBL) started buying HQCF in 2012 and by 2013 the company had purchased 3,500 metric tonnes.
			West African Agricultural Productivity Project (WAAPP) of MoFA	Funding		
			Small scale processors (SMEs like Cassacoxa, Bredi, AMASA and St Bassah) and large-scale processors (such as Caltech Ventures)	Processing		
			Cassava farmer groups (out-growers)	Cassava producers		
			Community based processors	Processing		
			Educational institutions, hospitals and hotels, SMEs, Industries	End users/consumers		
			Ministry of Science and Technology and Innovation (MESTI)	Funding of Policy formulation		
			FAO	Funding and technical support to policy formulation		
			Technical policy formulation committee	National HQCF policy formulation on composite flour production and usage in Ghana		
Simple Water Control Strategies for Rice	Began in the 1990s	- The SWCR innovation employed locally available materials in the construction of dams, micro-reservoirs and spillways and relied on	Government of Ghana through the Ghana Irrigation Development Authority (GIDA) of MoFA	Funding and material support	Successful	- Area under cultivation has increased from 125,000 Ha in 2006 to 233,000 Ha in 2015. - Output of paddy rice has increased from 250,000 Mt in
			Japan International Research Centre for Agricultural Service (JIRCA)	Initiation and funding		

(SWCR)		natural resources such as hills and rain water in lieu of the irrigation system for the rice crop. It included cheap and easy-to-construct terraces that can be replicated by farmers in many places for soil and water management. - It aimed to minimise the use of fertilisers and chemicals and increase profits; and to ensure sustainability, employment, and reduce food insecurity for both locals and the country.	Ministry of Food and Agriculture	Project design and implementation		2006 to 641,000 Mt in 2015. - The yield gap is bridging from less than 1Mt/Ha in year 2000 to 2.6 Mt/Ha in 2014, achieving 33% of expected yield. - The innovation enabled reduction of production costs and improvement of farm management practices.
			West Africa Rice Development Association (WARDA)	Funding		
			Agricultural Services Sub-Sector Investment Programme (AgSSIP)	Project implementation		
			Adapted Social Security Strategy and Action Plan (ASSAP)	Project implementation		
			Soil Research Institute (CSIR-SRI)	Project implementation		
			Water Research Institute (CSIR-WRI)	Capacity building		
			Crop Research Institute (CSIR-CRI)	Project management, research,		
			Regional sectors	Project implementation		
			Rice farmers	Beneficiaries		
			Agricultural extension agents	Extension		
			SRID of MoFA	Rice data provision		

Source: Ghana study reports, 2017-2018

**In Mali**

The only one successful innovation studied in Mali relates to institution/organisation. It is described in Table 4 as follow

**Table 4: Successful agricultural innovations studied in Mali**

Innovation name	Year/period of initiation	Description	Key Stakeholders engaged	Roles	Status	Evidence of status
Vote, promulgation and adoption of <i>Récépissé d'entrepasage</i> (and establishment of warehousing regulation authority	2013	<ul style="list-style-type: none"> <li>- To allow smallholder farmers to access financial institutions' credits using agricultural products' warehousing receipts as warrants. The warehouses belong to private or farmers' organisations.</li> <li>- To facilitate access to markets for smallholder farmers</li> <li>- To replace third party detention.</li> </ul>	Alliance for green revolution in Africa (AGRA)	Initiation and funding	Success	<ul style="list-style-type: none"> <li>- Vote of "récépissé d'entrepasage" (inventory credit or warrantage) and "warehousing regulation authority" laws by the parliament</li> <li>- Promulgation of the laws by the President of the Republic of Mali</li> </ul>
			<i>Projet « promotion des politiques pour un environnement propice à l'accès aux marchés des petits producteurs agricoles »</i> (Project for promotion of favorable marketing policy environment for smallholder farmers)	Implementation		
			Researchers	Research		
			Groupe d'Action Politique Nationale marché (PAN) (National Policy Action) (composed of OMA, IER, APCAM, AMASSA-Afrique verte, DNCC, AMI, DNA)	Initiation, research, fund raising, and implementation		
			Jurists	Inventory credit law project drafting		
			Economists	Inventory credit law project drafting		
			Bank institutions	Participation to inception meetings		
			Assurance institutions	Participation to inception meetings		
			Farmers	Participation to inception meetings		
			Ministry of agriculture	Institutional and political support		
			Ministry of trade	Institutional and political support		
			General secretary of the Government	Institutional and political support		
			Agricultural development committee of the National Assembly/Parliament	Institutional and political support		
			Parliament	Institutional and political support		
			President of the Republic of Mali	Institutional and political support		

Source: Mali study report, 2017-2018

## In Togo

Three variety improvement related innovation processes had been studied in Togo, as successful case studies (see table 5 below for details).

**Table 5: Successful agricultural innovation case studied in Togo**

Innovation name	Period of initiation	Description	Stakeholders	Roles	Status	Evidence of status
« IR-841 » rice Variety	1973	IR-841 is a long grain, flavoured, drought and resistant to violent crop lodging, and pyricularia oryzae tolerant with a potential yield of 6 metric tonnes per hectare	International rice Institute (IRRI)	Introduction of innovation and funding	Success	<ul style="list-style-type: none"> <li>- Cropped by 41% of rice farmers of Togo, on 42% of rice cultivation areas</li> <li>- ESOP linked up seed producers, rice producers, rice processing companies, and traders</li> <li>- IR-841 packaged and marketed under the label « Delice » by ESOP in Togo and other West African countries</li> </ul>
			Research organisations	Research		
			Extension organisations	Research and extension		
			FAO	Documentation		
			Multi-stakeholder platform (Entreprise de Service et d'Organisation des Producteurs «ESOP »)	Provision of credits, extension and monitoring of farmers		
			Entreprise Territoire et Développement (ETD) NGO and the Centre International de Développement et de Recherche (CIDR)	Extension and funding		
« STAM129 A » cotton variety	Created in 1998 and cropped for first	Performant and responsive to the market needs	Geneticists of the Centre de recherche agronomique de la savane humide (CRASH)	<ul style="list-style-type: none"> <li>- Varietal selection,</li> <li>- Seed production and</li> <li>- Extension</li> </ul>	Success	<ul style="list-style-type: none"> <li>- Cropped by all cotton farmers of Togo since 2007</li> <li>- Cropped by other West African countries such as Senegal.</li> <li>- High yield (more than</li> </ul>
			IRCT, now programme national coton under the Agricultural	Research and extension		

	time in 2007		research institute of Togo (ITRA)			2,5mt/ha) ; high fiber yield (42-44 % compared to 35% for previous variety) and good technological quality compared to the previous variety MONO
			<i>Société cotonnière</i>	Extension		- It multiplied MONO cotton-seeds yield by 6 (from 500kg to 3000 kg per ha)
			Seed producers	Seed production		
			Nouvelle Société Cotonnière du Togo (NSCT, former SOTOCO)	Seed production and distribution		
Extension of “Ikenne” maize variety	1982	<ul style="list-style-type: none"> <li>- Selected by IITA-Ibadan and first introduced in Togo in 1982 under the name «Ikenne 8149 ».</li> <li>- Improved in 1994 and named “Ikenne 9449”</li> <li>- Improved later in 2004 by the National Agricultural Research Institute of Togo (ITRA), in order to provide maize farmers with quality and desired seeds.</li> </ul>	IITA	<ul style="list-style-type: none"> <li>- Research and selection of the variety</li> <li>- Introduction in Togo</li> </ul>	Succes	<ul style="list-style-type: none"> <li>- Most cultivated variety in Togo</li> <li>- Resistant to maize streak virus and crop lodging,</li> <li>- Appreciated yield (2.5-5 mt/ha)</li> </ul>
			ITRA	Research and extension		
			West Central Africa Maize Network (WECAMN)	Funding		
			Agricultural Extension Institute of Togo (ICAT)	Extension		
			Radios and TV	Extension		
			NGOs	Extension		

Source: Togo study reports, 2017-2018

**In Tunisia**

In Tunisia, we studied two successful variety improvements and one successful technical change related innovation processes (see table 6 below for details).

**Table 6: Successful agricultural innovation case studied in Tunisia**

Innovation name	Period of initiation	Description	Key Stakeholders engaged	Roles	Status	Evidence of status
New improved durum wheat variety “Mâali”	1992 to 2007	<ul style="list-style-type: none"> <li>- Strategic crop for Tunisia, multiple use of same economic value as olive</li> <li>- Yield decrease after 15 years of each variety, need for regular release of improved varieties</li> <li>- Genetic improvement program put in place since 1960s to create new varieties with higher yields</li> <li>- Involves all agricultural research institutes, national and international partners</li> <li>- Resistant to many fungal diseases</li> </ul>	Researchers of cereals development laboratory	Initiation in 1992	Success	<ul style="list-style-type: none"> <li>- 25% more yield than the most cultivated variety Karim</li> <li>- Large adoption by farmers</li> </ul>
			Ministry of agriculture	Financial and political support for creation of new varieties		
			National Durum Wheat Breeding Programme of INRAT	Initiator		
			Seed companies	Seed production		
			Farmers	End use		
			National institute of field crops (INGC, created in 2009 by president)	Extension of research results		
			President of Tunisia	Institutional and political backing		
			INRAT	Research		
			Directorate general for agricultural production (DGPA) of Ministry of Agriculture	Extension; intellectual property right protection		
			International and national partners	Funding		
Organic olive	1999	<ul style="list-style-type: none"> <li>- Olive=traditional production/economic activity that has lasted for thousands of years in Tunisia</li> <li>- Concern for healthy production</li> <li>- Commitment of private sector and farmers for organic production</li> </ul>	Bio certification operators	Bio-certification	Success	<ul style="list-style-type: none"> <li>- Extensive adoption by farmers</li> <li>- 30% organic oil production</li> <li>- Increased areas of organic olive trees</li> <li>- Creation of five bio-territories for promotion of</li> </ul>
			Former President/government	Initiation for health reason; ministerial decrees of 2010		
			Farmers (Committed to bio production)	End users		
			Private sector	Funding, extension and commercialisation		
			Technical centre for organic agriculture of Ministry of agriculture (CTAB, late 1990s)	Certification rules setting and enforcement		

		perceived as profitable	Ministry of trade	Certification		organic agriculture - In mandate of ministry of agriculture.
			Agency for promotion of agricultural investments (APIA)	Subsidies of equipment		
			Regional commission for agricultural development (CRDA)	Subsidies of controls and certification process		
			Organic farming development project	Funding and extension		
			Regional commissionerships for agricultural development	Promotion of regional agriculture		
			CPPQAP	Testing of inputs		
Rapeseed crop (Extending legume and pulse crops areas in cereal rotation)	2014-2015	<ul style="list-style-type: none"> <li>- Started in 1990s but stopped in between. Restarted in 2014</li> <li>- Oil plant that produce edible oil rich in vitamins and omega 3 and 6 acids</li> <li>- Furnish nectars to bees</li> <li>- Used for production of biodiesel</li> </ul>	Ministry of agriculture (Department of industrial crops)	Introduction/initiation	Success	<ul style="list-style-type: none"> <li>- Organised from field to bottle</li> <li>- Used in crop rotation</li> <li>- From 470 hectares in 2015 to 1390 ha in 2018</li> <li>- Sale at attractive price defined in advance</li> <li>- Cakes used to feed cattle</li> <li>- Increasing demands for vegetable oil</li> </ul>
			<i>Researchers of INRAT</i>	Steering committee, research		
			AVRIL groups subcontractors (Cristal Tunisie, Lesieur, Lesieur Cristal, Sanders Tunisie)	Structuring and development of agro-industrial sectors, processing, marketing, promotion of rapeseed production and commercialisation		
			AGROPOL	Promotion of vegetable oil		
			Terres Inovia	Technical support		
			Carthage grains	Industrial processing into oil and cakes		
			Tunisian refiner	Refining of oils		
			Farmers	End users		
			Ministry of industry and trade	Institutional support		
			Government of Tunisia	Initiation through a project		

Source: Tunisia study report, 2017-2018

### **Non-successful agricultural innovation case studies**

In this sub-section, 10 technology/techniques, 2 variety improvement, and 5 organisation/institution related innovations are described. The details provided on these innovations are the same as in subsection 4.1 above. However, the following observations are highlighted:

- Some of these innovation processes did not clearly emanate from the requests/demands of end users/farmers and their clients, but from researchers and/or financial and technical partners;
- many categories of stakeholders were to some extent involved in these case studies, including high-level policymakers;
- some of the innovation processes lacked required infrastructure, inputs, and financial support, and hence could not be completed;
- some of the innovations could not be tested at end-users' level; and,
- most of the innovations could not be adopted (at all or for long) because of mismatch with contexts, aspirations and capacities of stakeholders.

Further details are provided per country and innovation in subsection 4.2.1 to 4.2.5.

#### **In Benin**

In Benin, 4 technologies related innovations processes were studied as non-successful innovations. They are described in Table 7 as follow:



**Table 7: Non-successful agricultural innovation case studies in Benin**

Innovation name	Period of initiation	Description	Stakeholders	Roles	Status	Evidence of status
Rice based Pella Breakfast	2009	Breakfast made with a mixture of torrefacted cashew, parboiled rice pop, sorghum, and fonio, sugar, and flavour	Director of PTAA (Dr. FANDOHAN Pascal)	Initiation and research	Failure	Not tested and finalized Not commercialised
			PhD student (Mr Paul HOUSOU)	Research		
			Students (DJDOHOKPIN Ella & KOUMASSEGBO Chimène)	Research		
Amaranth seed production techniques	2008	Production of appreciated quality seeds of amaranthus	Dr. Komlan Assogba Françoise (Head of vegetable production programme [PCM] at INRAB)	Research (Seed production and distribution) & extension	Failure	Not commercialised Not adopted by farmers.
			Technicians of PCM project (AZAGBA Joël; ASSOGBA Thierry; AHE Victoire; AHONONGA Noël; and DEGNIDE Comlan)	Research (Seed production and distribution) and extension		
			<i>Programme de développement des cultures de grande consommation</i> of PACER	Funding and extension		
			Public Investment Programme (PIP)	Funding		
			Vegetable producers	Seed production and end users		
<i>Feeding of goats with « Pachyrhizus erosus (A HIPA)» fl</i>	1987	<ul style="list-style-type: none"> <li>Used to feed goats in dry seasons</li> <li>Improves average daily weight gain of goats.</li> <li>Generates aflatoxin safe and fatless meats.</li> </ul>	International Potato Centre (CIP)	Initiation, research and funding	Failure	Not adopted
			<i>Coopération Universitaire de Développement (CUD)</i>	Funding and research		
			Prof. GBEGO-TOSSA Isidore (Director of LRZVH/INRAB)	Research		
			Prof. MENSAH Guy-Apollinaire (Head of <i>Sous-programme Elevage</i> )	Research		

<i>ake flour</i>			<i>des Espèces non-Conventionnelles au LRZVH)</i>			
			Dr. ADEGBOLA Y. Patrice (Director General of PAPA)	Research		
			Ir. DOSSOU-GBETE Gérard (independent consultant)	Research		
			Feu Ir. OLAFA M. (research assistant)	Research		
			Ir. BADAROU Kadidjatoulaï O. (Research assistant)	Research		
<i>Economic ration for 1-day local chicks of Benin</i>	2001	<ul style="list-style-type: none"> <li>- Feed made with local products and by-products of local materials, mainly maize, cassava, groundnuts, palm-nuts, coconuts, and fisheries</li> <li>- Cheaper than manufactured feed</li> </ul>	Feu DOSSA Sylvain and MENSAH Serge (researchers of <i>Laboratoire de Recherches Zootechniques, Vétérinaires et Halieutiques (LRZVH)</i> of INRAB) (heads of Sous-programme Santé animale et Éco toxicologie)	Initiation and research	Failure	Not adopted
			YEKPON Télesphore (Technician)	Research and extension		
			PARM-Mono and AGRAN-GTZ	Funding and extension		

Source: Benin study reports, 2017-2018

## In Ghana

In Ghana, 3 technology/techniques and 1 variety improvement related innovations are described as non-successful case studies as described in Table 8 below:

**Table 8: Non-successful agricultural innovation case studies in Ghana**

Innovation name	Period of initiation	Description	Stakeholders	Roles	Status	Evidence of status
Formulated Feed for Growing Tilapia in Ponds (FFT)	Early 1990s	<ul style="list-style-type: none"> <li>- The Ghana Food Company (GAFCO) started selling and formulating sinking pellet fish feed in 2005 and</li> <li>- Agricare Ltd. started formulating and selling in 2007.</li> <li>- A community mill at Duayaw Nkwanta (Brong-Ahafo region) has been in operation since 2010.</li> </ul>	ARDEC of WRI	Project initiator (Research and extension: fingerlings provision, ponds construction; etc.)	Failure	<ul style="list-style-type: none"> <li>- Prior to 2005, 90% of fish farmers formulated their own feed from agro-industrial by-products.</li> <li>- The Brong Ahafo Regional Chairman of Fish Farmers Association, Paul Chame in an interview with Department of Agricultural Economics and Agribusiness lamented on the lack of patronage of local feed.</li> <li>- Most of the fish farmers use commercially formulated feed, accounting for about 88% of farmers while 12% use locally formulated feed or agricultural/farm feed.</li> <li>- Currently, the fish farmers who produce their own farm-made fish diets, do not use ingredients and follow protocols that meet the nutritional requirements of cultured fish</li> </ul>
			Animal Research Institute (ARI)	Research and extension (feed formulation and testing, carcass evaluation, etc.)		
			Agricare Ltd. (private feed company)	Feed marketing		
			Government of Ghana	Funding		
			World Bank	Funding		
			National Agricultural Research Programme (NARP) of the Ministry of Environment, Science and Technology (MEST)	Project (Research and extension)		
			Raanan Fish Feed West Africa Ltd.	Competitor selling commercially formulated feed to farmers		
Combined	1980s	- The technology resolves these	Department of Animal	Initiation and	Failure	Apart from KNUST Farms and

Starter and Finished Diet for Broilers of Chicken (CSFD)		feeding regime challenges by providing a single diet for broiler chickens. - Prior to the development of this broiler feed, poultry farmers were administering two main feeding phases.	Science, Kwame Nkrumah University of Science and Technology	funding of the project	e	Animal Research Institute experimental station, no other poultry farmers were introduced to the innovation
			National Agricultural Research Project (NARP) of MEST	Funding		
			Sasakawa Global 2000 project	Funding		
			Animal Research Institute	Technical support		
Maako Ntoose (MNT) (Biology)	Late 1990 to early 2000s	- The Maako Ntoose is a variety of pepper, which was developed by CSIR-CRI in the late 1990s to the early 2000s. The innovation combined some characteristics of pepper with those of tomatoes. - The advantage of this innovation was its nutritional qualities, particularly its higher content of Vitamin C compared to other varieties.	World Vegetable Centre (AVRDC)	Funding	Failure	- Initially, members of the VEPEAG who realized that the new product was good, patronized it and provided a ready market for it. However, due to lack of support for further innovation and scaling of the project, VEPEAG patronage could not be sustained. - Work on the innovation has ceased at the research stations and the current staff of MoFA's Crop Services Directorate (CSD) and Plant Protection and Regulatory Services Directorate (PPRSD) could not provide information on the innovation. - Although recent statistics on pepper suggest that the area under cultivation has increased slightly (from 13,200 Ha in 2010 to 14,680 Ha in 2015), the yield gap remains wide. The national
			Ministry of Food and Agriculture	Funding, research and extension		
			A. Panford Ltd-a private commercial agro-processing company	Research and processing		
			Vegetable Producers and Exporters Association of Ghana (VEPEAG)	Trading		
			National Agricultural Research Project (NARP)	Funding, research		
			CARE International	Funding		
			Export Development and Investment Fund (EDIF)	Funding		
			Ministry of Trade and Industry (MoTI)	Funding		
			Agricultural Subsector Investment Programme (AgSSIP) of MoFA	Funding		
			Extension officers	Extension		
			RMG (Private sector company)	Offers agronomic and technical services to farmers		

			Farmers	End use		yield gap bridging achieved is only 25.7% of expected; in 2014 the yield was estimated at 8.3 Mt/Ha instead of the 32 Mt/Ha anticipated
Utilisation of Azolla as manure in lowland rice cultivation on vertisols (UAM) (Management )	Late 1990s	<ul style="list-style-type: none"> <li>- UAM was developed in the early 1980s to enhance the fertility of the vertisols in the Accra plains, for increased rice productivity, manage the high cost of inorganic fertilizers, declining soil fertility and growing demand for organically produced foods.</li> <li>- Azolla plant was to be utilized as green manure in rice fields.</li> <li>- Azolla is a fern mainly found growing on the surfaces of ponds and along the lower Volta Lake. It fixes nitrogen through a symbiotic association with an alga, Anabaena azollae.</li> <li>- It leads to a saving of 21 percent in the use of organic fertiliser. Nitrogen is a major constraint in the production of rice grown under irrigation on vertisols of the Accra Plains.</li> </ul>	Agricultural Research Centre (of Kpong)	Research and extension	Failure	<ul style="list-style-type: none"> <li>- Due to intense heat, Azolla is not available all year round. Replication can only be done in some parts of the country provided the temperature is high enough to support the growth of the fern.</li> <li>- There was no widespread dissemination of the innovation among farmers and industry.</li> <li>- Extension workers in the Ministry of Food and Agriculture at the local level were not involved sufficiently in disseminating the innovation due to logistical and technical constraint.</li> </ul>
			Ecological Laboratory	Research		
			Soil Science Department	Research and extension		
			University of Ghana	Initiation and implementation		
			MoFA's Agricultural Subsector Investment Programme (AgSSIP)	Funding		
			MoFA-GIDA's Kpong Irrigation Project (KIP)	Extension		
			University of Philippines	Funding and research		
			WARDA	Research and extension		
			Government of Belgium	Funding		

Source: Ghana study reports, 2017-2018

**In Mali**

Establishment and operationalisation of livestock market information system (LMIS), rice value chain information bulletin, and E-voucher, are the three non-successful innovation processes studied in Mali. They all relate to organisation/institution as described in table 9.

**Table 9: Non-successful agricultural innovation case studies in Mali**

Innovation name	Period of initiation	Description	Key Stakeholders engaged	Roles	Status	Evidence of status
Livestock market information system (LMIS)	2008	Aimed at facilitating regular access to information on quantity and price of livestock in target markets, via mobile phones, radio and internet.	USAID	Initiation, financial and technical support	Discontinued success/partial success	<ul style="list-style-type: none"> <li>- Discontinued because of social political unrest and end of funding by USAID</li> <li>- 52 markets monitored out of 70 expected</li> <li>- No national funding</li> <li>- Overdependence on external funding.</li> <li>- Weakly adopted by livestock farmers because of poor literacy.</li> </ul>
			Texas University (TAMU)	Initiation, financial and technical support		
			Researchers	Research		
			Administrative manager	Implementation		
			<i>Observatoires des marchés agricoles</i> (OMA) (agricultural markets observatory)	Implementation (server management, and information on price)		
			<i>Direction nationale des pêches et industries animales</i> (DNPIA)	Implementation (diffusion of cattle prices)		
			Département de suivi des marchés (Department of market monitoring)	Implementation (diffusion of cattle prices)		
			International Livestock Research Institute (ILRI)	Financial and technical support		
			<i>Projet régional d'appui aux pastoralismes au Sahel (PRAPS)</i>	Implementation		
			Surveyors	Implementation (Market price information collection)		
			World Bank	Funding		
Rice value-chain information bulletin	1999	Gather rice value-chains' stakeholders in the same	Farmers	Beneficiaries and informants	Partial success/Failure	<ul style="list-style-type: none"> <li>- Bulletin 00 published in August 2001</li> <li>- Discontinuation of publication because of poor performance</li> </ul>
			<i>Equipment suppliers</i>	Key informants and beneficiaries		
			Inputs and service providers	Key informants and beneficiaries		
			Traders	Key informants and beneficiaries		

(Bulletin d'information sur la filière riz « réseau riz »)		platform - Capitalise all rice related information in a same database accessible for all rice value chains stakeholders - Disseminate rice information among rural stakeholders - Boost rice production to improve livelihoods of rural populations	Processors	Key informants and beneficiaries		and end of funding. - 3000 bulletins published instead of 10,000 targeted - Non-timely translation of the bulletin in local languages
			Industries	Key informants and beneficiaries		
			Exporters	Key informants and beneficiaries		
			Funding agencies	Funding		
			APCAM (farmers' organisation)	Initiation and implementation		
			European Union	Funding		
			CIRAD	Initiation, research, financial and technical support		
			West African network of farmers organisations (ROPFA)	Initiation, extension and implementation		
			France Development Agency (AFD)	Funding		
			Rice programme (Programme riz, based at APCAM)	Implementation		
			Researchers	Research		
			Ministry of agriculture and rural development	Institutional and political support		
			Director of statistics and planning (CPS)	Institutional and political support		
			Publication committee	Review and publication		
			Institute of Rural Economy (IER)	Research and implementation		
			National Agriculture Directorate (DNA)	Institutional and political support		
			Farmers' Organisations (CNOP, AOPP)	Institutional and political support, extension		
			Nationale Directorate of Trade and Competition (DNCC)	Institutional and political support, extension		
			Rice farmers union of the <i>Office du Niger</i>	Extension and end use		
E-voucher	2014	- Technology that directly connects clients and	Government	Initiation	Partial success	- Better understanding of the E-Voucher system - Functioning limited by availability of mobile phone
			World Bank	Initiation, and funding		
			West African Agricultural Productivity Programme (WAAPP)	Funding and implementation		

		service providers via telephones to reduce intermediaries and improve governance of fertiliser subsidies.	<i>Comité National de Recherche Agricole (CNRA)</i>	Implementation, training and monitoring		network (slow and absent at some places) - Resistance of some stakeholders whose interests are compromised by the system - Limited availability of financial resources - Delay in and limited adaptation of the application to Mali context - Farmers receive fertilisers on time - Reduction of intermediaries in the subsidy process - Farmers lack identity card - Poor communication around the system - Mismatch between fertilisers distributed and real needs of farmers
			Consultants	Research		
			ECOFIL/IER Programme	Research and implementation		
			<i>Direction Nationale de l'agriculture</i> (National Agriculture Directorate) (DNA)	Subsidies/funding, institutional and political support		
			Cabinet of the Minister of agriculture	Institutional and political support		
			Ministry of finance	Institutional and political support		
			APCAM (farmers organisation)	Implementation		
			Compagnie Malienne de Développement des Textiles (Textiles development company of Mali) (CMDT)	Implementation, Training and monitoring		
			<i>Office du Niger</i>	Implementation, Training and monitoring		
			Director of statistics and planning (CPS)	Censing of farmers		
			Input providers	Beneficiaries and implementation		
			DNPIA	Implementation, Training and monitoring		

Source: Mali study report, 2017-2018

**In Togo**



Table 10 below describes 2 technology/techniques, 1 variety, and 1 organisation/institution related innovations, as non-successful innovation process case studies of Togo.

**Table 10: Non-successful agricultural innovations studied in Togo**

Innovation name	Period of initiation	Description	Key stakeholders	Roles	Status	Evidence of status
NERICA rice varieties	Introduced from 1998	<ul style="list-style-type: none"> <li>Resulted from crossing of African rice variety (<i>Oryza glaberrima</i>) and Asian rice variety (<i>Oryza sativa</i>)</li> <li>Resistant and high yield</li> </ul>	AfricaRice (former WARDA/ADRAO)	<ul style="list-style-type: none"> <li>Introduction of innovation, research and extension</li> <li>Technical and financial support</li> </ul>	Failure	<ul style="list-style-type: none"> <li>Cropped by only 7.4% of Togo rice farmers and on 2% of rice cultivation areas (640ha)</li> <li>Initially adopted but later abandoned due to the seed cost and to poor marketability of the NERICA rice.</li> </ul>
			African Rice Initiative (ARI)	Extension		
			West-African Rice Network (RoCaRiz)	Extension platform		
			Seed Producers	Seed production		
			Agricultural Research Institute of Togo (ITRA)	Research and extension		
			Institute of Technical and Advisory Services of Togo ( <i>Institut de Conseil et d'Appui Technique</i> [ICAT])	Training/extension, credits, inputs		
Brazilian sowing stick ( <i>canne planteuse brésilienne</i> )	2011	<ul style="list-style-type: none"> <li>Manual sowing material that allows to fastly sow and fertilise from standing position.</li> <li>Allows to sow 0.7 to 1 ha per day, to save 40% of sowing time and 91% of</li> </ul>	President of the Republic of Togo (Mr. Faure Essozimna Gnassingbé) who discovered the tool in a farm during a cooperation visit to Brazil in 2011.	Introduction of the tool to the Minister of agriculture for adoption and dissemination	Failure	<ul style="list-style-type: none"> <li>The sticks could not be imported, demonstrated and distributed to farmers as expected.</li> <li>The locally manufactured sticks (<i>canne planteuse locale</i> « KAG ») could not perform well on clay soils (their holes got blocked</li> </ul>
			Minister of Agriculture	Introduction of the stick to farmers and ITRA researchers and extensionists		

		fertilisation time, and to reduce work load by 51%.	National Forum of Togo Farmers (Forum national du paysan togolais [FNPT]) (platform of all Togo farmers)	Evaluation of agricultural campaigns, discussion of innovations, government's objectives and strategies; and extension of the stick		with clays), and therefore could not be adopted by farmers.
			Brazilian technicians	Demonstration of the technology to extensionists and potential users		
			« <i>Projet agro-écologique pour le développement à la base</i> » (initiated and co-executed by Togo and ADFIN SA company of Swizerlands with technical support from Brazil. Objective was ecological agriculture with « zero tillage»).	Extension		
			Agricultural advisors from ICAT	Extension		
			Pilot farmers	Extension		
			Local manufacturer of the sowing stick	Local production of the sticks		
			West-African Agriculture Productivity Programme (Programme de Productivité Agricole en Afrique de l'Ouest [PPAAO/WAAP])	Funding and extension		
Technique of mini-fragmentation of yam seedlings	1990s	Allows to faster get up to 12 times more seedlings than traditional techniques	INCV ( <i>Institut National des cultures Vivrières</i> ) ( <i>current ITRA</i> )	Introduction of innovation	Failure	<ul style="list-style-type: none"> <li>- Was not adopted because it was difficult to find mother tubers</li> <li>- Lack of money needed to purchase mother tubers.</li> </ul>
			Yam seedling production project in Nigeria, Ghana, Benin and Togo	Research and extension		
			USAID	Funding		
			CORAF/WECARD	Project initiation and funding		

			Extension agents of ICAT	Extension		
			Farmers/Entrepreneurs	Seed production and extension		
			NGOs	Seed production and extension		
Distribution of sheep-parents among livestock farmers	2013	Improve commercial formats and motherhood quality of Djallonke sheep through selection and dissemination of aries and female yearlings in Togo	Programme National Ovins-Caprins (PNOC)/PASA	Improve productivity of national livestock (research) Extension	Partial success	<ul style="list-style-type: none"> <li>Only 2489 sheep-parents out of 5000 could be distributed to 1<sup>st</sup> generation of beneficiaries</li> <li>Less than half of the 2489 first beneficiaries gave out sheep-parents to the next generation of beneficiaries.</li> <li>Funding ended in 2015 before the end of the project.</li> </ul>
			Centre d'Appui Technique de Kolokopé/current Programme National Ovins-Caprins	Research and reproduction of sheep parents		
			World Bank	Funding		
			Minister of agriculture (through ICAT, ITRA and <i>Agronome vétérinaires sans frontières</i> )	Project management, research and extension		
			Farmers	Beneficiaries		
			Farmers Organisations and village development committees and heads of villages	Extension/facilitation		
			Government	Funding		
			NGOs	Extension		
			Entrepreneurs	Extension		

Source: Togo study reports, 2017-2018

## Tunisia

Animal products labelling systems and conservation agriculture (CA) are the non-successful agricultural innovation processes studied in Tunisia.

Table 11 below provides key details about these innovations.

**Table 11: Non-successful agricultural innovation case studies in Tunisia**

Innovation name	Period of initiation	Description	Key Stakeholders engaged	Roles	Status	Evidence of status
Labelling systems of animal products-case of tarentaise	2006	Develop quality standards for red meat (beef of Tarentaise cattle and sheep of Black race of Thibar) in Tunisia	Inter-professional Group of Red Meat and Milk (GIVLAIT)	Initiation	Failure	<ul style="list-style-type: none"> <li>- First results published in December 2007</li> <li>- Ending of the project activities in 2008 because of discontinuation of the World Bank's funding for second phase</li> <li>- Non-adoption by end users</li> <li>- Poorly organised value chain</li> <li>- No competitive selling price/comparative advantage</li> <li>- Limited supply of Tarentaise meat</li> <li>- No respect of quality standards by value chain stakeholders</li> <li>- Poor marketing</li> </ul>
			Quality improvement and capacity building of interprofessional groups (research and development project)	Funding and institutional support		
			World Bank	Funding		
			Private breeder (	Import of breeds		
			Tunisian group of Tarentaise breeders (GERT)	Project management		
			Union of Breeders' Cooperatives of Rhone Alpes (UCEAR)	Project management		
			Minister of Agriculture of Tunisia	Institutional agreement/support		
			Minister of agriculture of France	Institutional agreement/support		
			Tunisian Union for Agriculture and Fisheries (UTAP)	Technical and institutional support		
			Office of livestock and pasture (OEP)	Technical and institutional support		
			Sylvo pastoral development office of the north west (ODESYANO)	Technical and institutional support		
			Employment and housing promotion agency (APEL)	Technical and institutional support		
			National school of veterinary medicine of Sidi-Thabet (ENMVT)	Technical and institutional support		
			High school of agriculture of Mateur (ESA Mateur)	Technical and institutional support		
			Tarentaise UPRA of France	Technical and institutional		

				support		
			Savoyard Breeders' cooperative (COPELSA) of France	Technical and institutional support		
			Rhone-Alpes Region of France	Technical and institutional support		
			Livestock Institute of France	Technical and institutional support		
			Researchers	Research		
			Standardisation Institute (INNORPI)	Registration of standards		
Conservation agriculture in Tunisia	1999	<ul style="list-style-type: none"> <li>- To improve soil fertility through increased availability of soil organic carbon.</li> <li>- To combat soil erosion</li> </ul>	France Fund for Global Environment (FFEM)	Funding	Failure	<ul style="list-style-type: none"> <li>- 12000 ha CA cultivated by 200 farmers</li> <li>- Low investment capacity of smallholder farmers</li> <li>- Mixt nature of agriculture (Crop-Livestock) involves abundance of livestock (small ruminants) creates higher demand for biomass leading to less availability of mulch</li> <li>- Shy commitment of the government since 2016</li> </ul>
			France Development Agency (AFD)	Funding and initiation		
			Director of technical cereals centre (CTC) (actual INGC)	Initiation		
			A prof. of High Agriculture School (ESAK)	Initiation		
			Siliana Governorate	Initiation		
			Integrated rural and agricultural development project (PDRAI)	Initiation		
			IFAD	Funding		
			Association of sustainable agriculture farmers (APAD)	Implementation		
			Conservation Agriculture in North Africa Project (CANA)	Implementation		
			Australian Centre for International agricultural research (ACIAR)	Funding of CANA		
			INRAT	Research		
			ICARDA	Research		
			CLCA project	Implementation		
			General directorate of planning and conservation of agriculture lands (DGAFTA)	Shy political commitment buy-in (since 2016)		

Source: Tunisia study report, 2017-2018

### Summary of determinants of success and failure of agricultural innovation processes

Up to 16 major factors have been identified to influence the success and failure of agricultural innovation processes as suggested by stakeholders interviewed and as inferred from success stories (see Table 12 below).

**Table 12: Influential factors of success and failure of agricultural innovation processes in study countries**

	Nr	Determinants	Benin	Ghana	Mali	Togo	Tunisia	Total
Success	1	Engagement of relevant Stakeholders (competent and committed with the help of advocacy, lobbying, and agreements)	4	5	6	3	8	26
	2	Match of innovation with aspirations of stakeholders (end users and high-level policy makers included)	10	3	0	3	5	21
	3	Availability of required financial resources	4	1		2		7
	4	Relevant communication around the innovation (advantages of the innovation for stakeholders)		1	4	1		6
	5	Existence of market and availability of the innovation in the market	1	3			2	6
	6	Existence of success recognition mechanism	2	1				3
	7	Existence of relevant infrastructure		2				2
	8	Shareholding				2		2
<b>Subtotal (on success factors)</b>			<b>21</b>	<b>16</b>	<b>10</b>	<b>11</b>	<b>15</b>	<b>73</b>
Failure	9	Limitation of financial resources	4	7	3	4	1	19
	10	Engagement of irrelevant stakeholders (incompetent and non-committed)	1	9	1	2		13
	11	Limited policy Environment		3	2		3	8
	12	Limited evidence and communication around the relevance of the innovation	2	6				8
	13	Limited infrastructure and access to inputs		6		1		7
	14	Mismatch of the innovation with the context and aspirations of stakeholders	2			2	2	6
	15	Limited cost effectiveness of the innovation and lack of market	1	2		2	1	6
	16	Existence of competition around the innovation				1	1	2
<b>Subtotal (on failure factors)</b>			<b>10</b>	<b>33</b>	<b>6</b>	<b>12</b>	<b>8</b>	<b>69</b>

Source: Content analysis of country study reports, 2018

Content of table 12 indicates that – engagement of relevant (competent and committed) stakeholders (36%, with N=73) and match of innovations with aspirations of end users (high-level policymakers included) (27%) – are determinant in the success of agricultural innovation processes. This trend is to some extent confirmed by – limitation of financial resources (27.5%; N=69) and engagement of stakeholders with limited capacity and commitment to success (19%) – pointed out as major causes of failure of agricultural innovation processes. In total one can summarize determinants of success or failure of agricultural innovation processes in terms of engagement of relevant stakeholders (27.5%, N=142), match with aspirations of stakeholders (19%), and relevant funding (18%). These findings suggested that to succeed agricultural innovation processes, one might ensure to engage competent and committed stakeholders (policy makers included) whose aspirations are communicated about and cared for, and to timely mobilise required amount of financial resources.

### **Policymakers engaged in the agricultural innovation processes studied**

As earlier mentioned, five categories/levels of policymakers engaged in the innovation processes studied were identified. These are:

1. High political decision-making level (HPDLP)
2. Scientists or researchers' level (RLP)
3. Financial and technical decision making or support level (FTLP)
4. Government officials and other organisations policy implementation level (ILP)
5. Beneficiaries and advocacy stakeholders' level (BALP)

The extent of engagement of these policymakers in the 32 agricultural innovation processes under study is presented in Table 13 as below.

**Table 13: Policymakers engaged in agricultural innovation processes studied in Benin, Ghana, Mali, Togo & Tunisia**

	Category of policymaker	Benin	Ghana	Mali	Togo	Tunisia	Average percentage
<b>Success</b>	RLP	100% (4/4)	100% (4/4)	100% (1/1)	100%(3/3)	100% (3/3)	100% (15/15)
	FTLP	100% (4/4)	100% (4/4)	100% (1/1)	67%(2/3)	100% (3/3)	93% (14/15)
	ILP	100% (4/4)	100% (4/4)	100% (1/1)	67%(2/3)	100% (3/3)	93% (14/15)
	BALP	50% (2/4)	100% (4/4)	100% (1/1)	100% (3/3)	100% (3/3)	87% (13/15)
	HPDLP	75% (3/4)	100% (4/4)	100% (1/1)	33% (1/3)	100% (3/3)	80% (12/15)
<b>Average percentage success) (on</b>		<b>85% (17/20)</b>	<b>100% (20/20)</b>	<b>100% (5/5)</b>	<b>73% (11/15)</b>	<b>100% (15/15)</b>	<b>91% (68/75)</b>
<b>Failure</b>	RLP	100% (4/4)	100% (4/4)	100% (3/3)	100% (4/4)	100% (2/2)	100% (17/17)
	FTLP	75% (3/4)	100% (4/4)	100% (3/3)	100% (4/4)	100% (2/2)	94% (16/17)
	ILP	75% (3/4)	100% (4/4)	100% (3/3)	100% (4/4)	100% (2/2)	94% (16/17)
	BALP	25% (1/4)	75% (3/4)	67% (2/3)	100% (4/4)	100% (2/2)	71% (12/17)
	HPDLP	25% (1/4)	75% (3/4)	100% (3/3)	75% (3/4)	100% (2/2)	71% (12/17)
<b>Average percentage failure) (on</b>		<b>60% (12/20)</b>	<b>90% (18/20)</b>	<b>93% (14/15)</b>	<b>95% (19/20)</b>	<b>100% (10/10)</b>	<b>86% (73/85)</b>

Source: Content analysis of country study reports, 2018

Table 13 indicates that each innovation process engaged at least three categories of policymakers. Successful innovation processes tend to engage more (91% of cases with N=75) categories of policymakers than non-successful processes, with active presence of researchers (RLP) (100% of cases, with N=15), financial and technical partners (FTLP) (93% of cases), implementers (ILP) (93% of cases), beneficiaries and advocacy stakeholders (BALP) (87% of cases), and high-level policymakers (HPDLP) (80% of cases). However, in non-successful agricultural innovation processes, policymakers were engaged in 86% of case studies (N=85) as follow: researchers (RLP) (100% of cases, with N=17); financial and technical partners (FTLP) (94%); implementers (ILP) (94%); high-level policymakers (HPDLP) (71%); and beneficiaries



(BALP) (71%). In all, one can observe that the agricultural innovation processes studied are dominated by researchers (100%), implementers (94%), and financial and technical partners (94%). In both success and failure case studies, the high-level policymakers and beneficiaries engaged respectively represent 75% and 78% of the 32 case studies. While comparing success and failure cases, it is clear that beneficiaries and high-level policymakers are less represented in failure (71% of the 17 failure cases) than success (83%, with N=15) case studies.

These differences of level of engagement of the identified policymakers may be due to the fact that the case studies were mostly from agricultural research domains and hence dominated by researchers, implementers and their financial partners, with little involvement of high-level policymakers and beneficiaries. Based on the relative link between the weak engagement of beneficiaries and high-level policymakers and the failure of the innovation processes, it is plausible to conclude that these two categories of policymakers are important for the success of innovation processes. However, the Tunisia case studies (Tables 13, and 28 and 29 in appendix 2), where all categories of policymakers have been engaged at 100% level in both success and failure case studies, suggest that not only the engagement of 100% of all categories of policymakers may matter in the success or failure of innovation processes. A combination of these with other success factors may be needed as suggested in the previous section 4.3. The competence and the commitment to success of all these policymakers and other stakeholders may for instance matter as well.

#### **Determinants of engagement of high-level policymakers in agricultural innovation processes**

Reasons behind the engagement of policymakers according to interviewees are summarised in Table 14 below. Four main reasons have been identified, viz. (1) Perceived potential contribution of the innovation to the improvement of livelihood of stakeholders and of GDP or agricultural development (34%, N=93 responses); (2) Match of the innovation process with stakeholders' duties/mandates and commitment to comply with duties (27%); (3) Perceived availability of required financial, technical and/or institutional support/resources (24%); and (4) Perceived comparative political, social, economic and/or professional retributions/advantages of the innovation (15%). However, in all cases, policymakers and other stakeholders engaged with/in the studied agricultural innovation processes based on self- commitment or initiative, or after being informed/convinced, invited and/or lobbied.

**Table 14: Determinants of engagement of policymakers in agricultural innovation processes**

<b>Determinants</b>	<b>Benin</b>	<b>Ghana</b>	<b>Mali</b>	<b>Togo</b>	<b>Tunisia</b>	<b>Total</b>
Perceived potential contribution of the innovation to the improvement of livelihood of stakeholders and of GDP or agricultural development (after being informed, invited and/or lobbied or based on self-commitment)	6	5	16	3	2	<b>32</b>
Perceived match of the innovation process with duties/mandates and commitment to comply with duties (after being informed, invited and/or lobbied or based on self-commitment)	3	8	11	3		<b>25</b>
Perceived availability of financial, technical and/or institutional supports/resources (after being informed, invited and/or lobbied or based on self-commitment)	4	5	11	1	1	<b>22</b>
Perceived potential political, social, economic and/or professional retributions/advantages of the innovation process (after being informed, invited and/or lobbied or based on self-commitment)	4	6	1	2	1	<b>14</b>
<b>Total</b>	<b>17</b>	<b>24</b>	<b>39</b>	<b>9</b>	<b>4</b>	<b>93</b>

Source: Content analysis of country reports, 2018

Based on these determinants, it may be concluded that the engagement of policymakers in agricultural innovation processes depends on: (1) the extent to which they are convinced about the potential advantages or disadvantages that they or their clients can gain from engagement/non-engagement in the innovation process; and (2) their commitment to the effective development of agriculture. This implies that, to secure the engagement of policymakers, agricultural innovation process initiators (if different from target policymakers) may find relevant ways to convince the target policymakers about advantages/ disadvantages (social, political, financial, economic, professional, etc.) they would gain from their engagement or non-engagement in the processes. Further analysis would suggest that persuasive communication may be required for ensuring the engagement of policymakers in agricultural innovation processes.

## Discussion

This section discusses the importance of technical and organisational aspects and, the importance of competence and commitment mechanism in the success of engagement of policymakers on the innovation processes.

**Technical and organisational/institutional aspects matter in the success of engagement of policymakers and of innovation processes**

The innovation processes at the country levels did address substantial technological issues (78% of the 32 proposed case studies) compared to organisational and institutional issues (22% of proposed case studies). This is conventional and aligns with the popular perception that the core issue limiting agricultural development in the countries are largely technological in nature. Apparently there are more technology driving initiatives and such would influence the natural choice in this study. While prime attention to technological constraints did have its merit, recent continental actions are considering devolution of attention to other institutional issues that are strongly limiting the realization of benefits from the best bet technologies. Institutional, organization and infrastructural issues such as capacity of the stakeholders to deliver, access to input and output market, access to land and other production assets, lack of infrastructure, poor funding mechanism and trade issues. Recent initiative like the Technologies for Africa Agricultural Transformation (TAAT) supported by the Africa Development Bank are built on the notion that Africa has many proven technologies with potentials to transform the agricultural sector, yet these technologies are only used in pilots. This initiative aims to ensure the scaling up and scaling out of a handful of proven technologies beyond their test environment. Meanwhile analysis of success and failure of the innovation processes indicate that the success of these processes requires the engagement of competent and committed stakeholders (not only policymakers) and such should have good opportunities to express their needs and aspirations. Indeed, the findings revealed that the studied conventional innovation process is dominated by core scientific research partners as against socio-economists. Other stakeholders are largely the financial service providers, input dealers and farmers as core beneficiaries. The high-level policymakers and beneficiaries were less engaged in the processes; indicating that the process initiators may certainly overlooked the relevance of these stakeholders' groups in the processes. The poor participation of the high-level policymakers and beneficiaries could be attributed to the mismatch of the interventions with aspirations and capacities to deliver. These findings confirm that technical as well as institutional and organisational issues need to be taken into consideration during innovation processes (Brouwer *et al.* 2015; Hall *et al.* 2006; Leeuwis, 2004;). More specifically, innovation processes should pay attention to the competence and the potential contributions of stakeholders for the timely mobilisation of resources towards the completion of activities.

### **Competence and commitment mechanism also matter in the success of engagement of policymakers and of innovation processes**

Our observation on the importance of funding to the success of agricultural innovation processes resonates with the reports of Najam (1995), Meyer *et al.* (2002), and Schwartz (2017). Najam (1995) identified five important variables as drivers of the success or failure of action implementation in an innovation process. It includes, the content (i.e. causal theory), context (political, social, economic, legal, etc., environment), commitment (framed as willingness to do), capacity (necessary resources), and clients and coalitions (who lobby for outcomes). These variables and their dynamic combinations are not always mutually exclusive. And they explain outcomes of implementation processes. In the light of this implementation

analysis framework and of the main reasons advanced (funding and adoption related issues) to justify the success or failure of the studied innovation processes, it appears that the failed processes may have been ill-designed and poorly contextualised.

Building on commitment and public policy making theories, the importance of commitment and triggering mechanisms in the successful engagement of policymakers and of innovation processes needs to be emphasized. Indeed, according to commitment theorists, human behaviours are dictated by what they want and value (affective or attachment commitment), what they feel the need for from a cost-to-benefit perspective (continuance commitment), and what they feel obliged to do (obligation or normative commitment) (Meyer et al., 1991; Meyer et al., 2002; Schwartz, 2017). This view underscores the mechanism put in place in the study contexts for ensuring the affective, continuance and/or normative commitment of stakeholders to the success of the innovation processes. In the absence of such commitments, innovation processes may unsurprisingly fail or lead to limited outputs and outcomes (Kouevi & Fatunbi, 2016). As mechanism to trigger engagement and commitment, the policymaking theorist Gerston (2010) stresses, among other things, evidence-based or persuasive communication around advantages and disadvantages of initiatives. This re-joined the targeting of stakeholders' aspirations as suggested by respondents. The limit of all these theories is that none of them states exactly to what extent each variable influences the overall process results. Therefore, the merit of this study is its relative appreciation of the extent to which competence/capacity and commitment, aspirations and financial resources contribute to the success of the studied innovation processes.

## **Conclusion and Policy Implications**

This study identified the key factors influencing the engagement of policymakers in the success and failure of agricultural innovation processes in Africa. It studied the historical success or failure of 15 successful and 17 non-successful agricultural innovation case studies. The innovations case studies span over a period of 5 to 50 years in the different countries. Findings from the study suggest that both technical, organisational and institutional issues are vital to the success of agricultural innovation processes. Our study also indicated that the engagement of relevant (i.e. competent and committed) stakeholders; matching of the interventions with the need of stakeholders; and the appropriateness of funding are keys to the success of agricultural innovation processes. Based on the identified categories of policymakers (researchers [RLP], financial partners [FTLP], implementers [ILP], beneficiaries [BALP], and high level policymakers [HPDLP]) the study revealed that researchers, financial and technical partners, and implementers were predominantly engaged in the agricultural innovation processes studied. Meanwhile, beneficiaries and advocacy policymakers and high-level policymakers were relatively poorly engaged but are vital to the success or failure of the processes studied. It is therefore concluded that the engagement of competent and committed researchers, financial and technical partners, implementers, beneficiaries and high decision-making level policymakers whose aspirations are communicated about and cared for; and the

timely raising of required financial resources are key to the success of agricultural innovation processes. The process of engagement of the policymakers by innovation process initiators can take place through self-commitment, invitation, advocacy, lobbying (possibly with media), and compliance with mandates/duties, all built around convincing arguments, evidence and aspirations of target stakeholders.

## References

Anderson, J. E. (2003). *Public policymaking: an introduction*. Boston: Houghton Mifflin Company.

Biswas, B. C. (2010). *National Agriculture Related Policies Success Story of a U.P.* Farmer Fertiliser Marketing News, Vol. 41 (4), pp.1-7.

Brouwer, H., Woodhill, J., with Hemmati, M., Verhoosel, K., and van Vugt, S. (2015). The MSP Guide: How to Design and Facilitate Multi-stakeholder Partnerships. Centre for Development Innovation, part of the Dienst Landbouwkundig Onderzoek foundation. Wageningen: The Netherlands. [www.wageningenUR.nl/cdi](http://www.wageningenUR.nl/cdi).

Cerna, L. (2013). The Nature of Policy Change and Implementation: A Review of Different Theoretical Approaches. OECD.

Diao, X. (2010). Economic Importance of Agriculture for Sustainable Development and Poverty Reduction: Findings from a Case Study of Ghana. *Global Forum on Agriculture 29-30 November 2010, Policies for Agricultural Development, Poverty Reduction and Food Security*. OECD Headquarters, Paris.

Fatunbi, A. O., Ajayi, M. T., Obi, A., Odularu, G. O., and Adekunle A. A. (2015). *Spreading the Gains of Agricultural Innovations in Africa: A Strategy to Scale-out and Scale-up the IAR4D Concept*. Forum for Agricultural Research in Africa (FARA), Accra Ghana. [www.faraafrica.org](http://www.faraafrica.org). ISBN 978-9988-8518-4-8 (pdf).

Gerston, L. N. (2010). Public Policy Making: Process and Principles. 3<sup>rd</sup> Edition. United States of America: M. E. Sharpe, Inc.

Glin, L. C., Fatunbi, A. O, Kouévi, A., Togbé, E (2016), Facilitation strategies and experiences for managing Research for Development (R4D) on an innovation platforms, *Forum for Agricultural Research in Africa (FARA), Accra Ghana*.

Grindle, M. S. (1980). "Policy Content and Context in Implementation". In Politics and Policy Implementation in the Third World edited by Merilee S. Grindle. Pp. 3-34. Princeton, NJ: Princeton University Press.

Hall, A., Mytelka, L. and Oyeyinka, B. (2006). Concepts and guidelines for diagnostic assessments of agricultural innovation capacity. Working Paper series. United Nations University, UNU MERIT. Maastricht: The Netherlands

Jones, R. and Kimura, S. (2013). *Reforming Agriculture and Promoting Japan's Integration in the World Economy*. OECD, Economics Department Working Papers, No. 1053, OECD, Publishing, Paris. <http://dx.doi.org/10.1787/5k4695710rf4-en>.

Kouevi, T. A., and O. Fatunbi. (2016). "Achieving Sustainable Impact from Development Projects through Multistakeholders Innovation Platforms: Lessons from Ghana and Rwanda". In *Innovation Conference Ghana 2016 proceedings*, edited by P. Boadu, W. Quaye, J. Onumah, and G. O. Essegbey, 123 – 131. Accra: CSIR-STEPRI.

Kouevi, T.A., B. van Mierlo, and C. Leeuwis. (2013). "Learning About Fishery Management: Evaluation of a Contextualized Responsive Evaluation Approach Evaluation and ProgramPlanning." *Evaluation and Program Planning* 41: 1\_11.

Leeuwis, C. (with contributions by A. van den Ban). 2004. *Communication for Rural Innovation: Rethinking Agricultural Extension*. Oxford: Blackwell Science.

Meyer, J. P., and Allen, N. J. (1991). A Three-Component Conceptualization of Organizational Commitment. *Human resource management review*, Vol. 1 (1), pp. 61-89. JAI Press, Inc.

Meyer, J. P., Stanley, D. J., Herscovitch, L., and Topolnytsky, L. (2002). Affective, Continuance, and Normative Commitment to the Organization: A Meta-analysis of Antecedents, Correlates, and Consequences. *Journal of Vocational Behavior* 61, 20–52. doi:10.1006/jvbe.2001.1842.

Migdal, J. S. (1988). *Strong Societies and Weak states: State-Society Relations and State Capabilities in the Third World*. Princeton, NJ: Princeton University Press.

Najam, A. (1995). Learning from the Literature on Policy Implementation: A Synthesis Perspective. IIASA, Laxenburg, Austria: WP95061. <http://pure.iiasa.ac.at/id/eprint/4532/>

Schwartz, A. J. (2017). The Call of Commitment: Implications for the Direction and Intensity of Our Leader Behaviors and Actions *THE JOURNAL OF CHARACTER & LEADERSHIP INTEGRATION* / WINTER 2017.

United Nations Environment Programme (UNEP). (2010). *Developing Countries Success Stories*. Green Economy Initiative. [www.unep.org/greeneconomy](http://www.unep.org/greeneconomy). van Damme, J., Ansoms, A. and Baret, P. V. (2013). *Agricultural innovation from above and from below: Confrontation and integration on Rwanda's hills*. African Affairs Advance Access, Oxford University Press on behalf of Royal African Society. doi: 10.1093/afraf/adt067.