

# Six policy briefs specifying effective governance pathways and guidelines

**Deliverable 5.5** 



Horizon 2020 European Union funding for Research & Innovation This project has received funding from the European Union's H2020 Research and Innovation program under Grant Agreement No. 727201



DOCUMENT SUMMARY		
Project Information		
Project title:	Innovations in Technology, Institutional and Extension Approaches	
	toward Sustainable Agriculture and Enhanced Food and Nutrition	
	Security in Africa	
Project acronym:	InnovAfrica	
Call identifier:	H2020-SFS-2016-2	
Grant agreement no.:	727201	
Project duration	Starting date 01.06.2017 End date: 30.11.2021	
Website address:	www.innovafrica.eu	
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Report Information		
Deliverable name:	Six policy briefs specifying effective governance pathways and	
	guidelines	
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Deliverable Number	D5.5	
Work Package no.	WP5	
WP Leader	Norwegian University of Life Sciences (NMBU)	
Task no. (title)	5.5 (Develop effective governance pathways for innovation)	
Task leader	Norwegian Institute of Bioeconomy Research (NIBIO)	
Dissemination Level	Public	
Dissemination Type	Report	
Delivery Date	30.09.2021	



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### 1 Introduction

Sustainable agriculture and improved food security are one of the main priorities for African governments and policymakers. The continued efforts to make improvements to agricultural production and productivity, especially in in Sub-Saharan Africa (SSA) is necessary to meet the rising food, feed, and fiber needs of a growing population. One major avenue for achieving this is adopting agricultural technology innovations combined with appropriate institutional support services (e.g., extension and advisory services). To improve food and nutrition security in SSA, InnovAfrica has integrated sustainable agriculture intensification systems (SAIs), innovative institutional approaches (IIAs) with novel extension and advisory services (EAS). In addition, it has attempted to enhance capacity building and knowledge sharing among smallholders in the six case countries. These InnovAfrica innovations align with the goals of Agenda 2030 Sustainable Development Goals (SDGs) by the United Nations, particularly, Goal 2 (zero hunger); Goal 5 (gender equality); Goal 8 (decent work, economic growth) and Goal 13 (climate); (UN, 2015).<sup>1</sup>

The three EAS approaches tested and eventually upscaled in InnovAfrica including the village knowledge centers (VKCs) in Kenya and Tanzania, farmer participatory research integrated with farmer-to-farmer extension (F2FE) in Malawi, and integrated farm plan (PIP) in South Africa, Rwanda and Ethiopia, have shown promising results and increased farmer participation and adoption of best practices The three EAS approaches are participatory, decentralized and community inclusive when compared to the conventional extension approach commonly used in the case countries.<sup>2</sup> The EAS approaches complement and further contribute to strengthen the linkages between public and private sector EAS providers in each case study country. A guiding principle in InnovAfrica was that EAS approaches should be i) linked to wider stakeholder consultation so as to provide useful insights and feedback, and ii) be adapted to the needs of the clients and therefore monitored and evaluated regularly.<sup>3</sup> The main SAI innovations at the technological level promoted through the EASs were *1) farmer-led field experiments on maize/millet - legume cropping systems* in Ethiopia, Malawi, South Africa and Tanzania and 2) *farmer-led field experiments on Brachiaria forage grass systems* in Rwanda, Kenya and Tanzania.

Work package (WP) 5 was coordinated by the Norwegian University of Life Sciences (NMBU) and supported by three other task leaders and a number of partners. The main objective of WP5 was to develop integrated frameworks (both institutional and policy) for wider implementation of innovative agricultural systems and extension services. One of the tasks under WP5 is Task 5.5 that aimed to develop effective governance pathways for innovation by synthesizing relevant information from WP5 tasks and other WPs and by taking inputs from policy dialogue meetings. In the context of InnovAfrica, 'governance is defined as 'the collection of action arrangements (decision-making processes) designed to achieve implementation of targeted agricultural innovations'.

This deliverable 5.5 includes six policy briefs that provide specific policy recommendations for the respective case countries. The policy brief identifies key governance pathways and suggests measures to facilitate the scaling-up of SAIs, IIAs, and EASs. Relevant inputs from the policy dialogue workshops in the six case countries, and project outputs were synthesized to develop the deliverable 5.5. These outputs and key messages included *field trial reports (D3.1), strategic document on strengthening seed system (D3.3), farmer manuals on SAIs, IIAs, and EASs (D3.4), policy guidelines to upgrade value chains for smallholder farmers (D4.4), policy manual with guidelines for effective adjustments in agricultural policies (D5.4)* and policy dialogue workshop proceedings (D6.3).

<sup>&</sup>lt;sup>1</sup> United Nations. 2015. The 2030 Agenda for Sustainable Development. New York: United Nations.

<sup>&</sup>lt;sup>2</sup> Kassa, B & Alemu, D. 2016. Agricultural research and extension linkages: Challenges and intervention options. *Ethiopian J of Agricultural Sciences* 27(1), 55-76.

<sup>&</sup>lt;sup>3</sup> Klerkx, L., Schut, M., Leeuwis, C., & Kilelu, C. 2012. Advances in Knowledge Brokering on the Agricultural Sector: Towards Innovation System Facilitation. *IDS bulletin*, *43*, 53-60.



# 2 Ethiopia: Policy brief on effective governance pathways for upscaling sustainable agriculture systems and improving food and nutrition security

#### Key policy messages

- Need for support and provide conducive institutional environment for private sector and seed producer cooperatives' growth and investment in seed production. This should include easy credit access and better transportation arrangements.
- Scaling up innovation approaches by facilitating successful experiences and sharing of knowledge between farmers to exploit the actual benefits of integrated farm planning and maize-legume intercropping systems that demonstrated promising results in InnovAfrica.

The Ethiopian population is expected to grow from 118 million today to almost 190 million by 2050.<sup>4</sup> Such increase in population will demand for more food in the future. The performance of the agricultural sector is critical in ensuring food and nutrition security in the country. In response to this challenge, the InnovAfrica project has introduced: i) improved maize-common bean intercropping systems with integrated seed delivery systems in areas with maize monoculture, ii) Integrated Farm Plans (PIP), and iii) multi-actor platforms (MAPs) in Ethiopia (Box 2.1). The project was implemented in two districts, the Kombolcha and Meta district, in the East Hararghe zone of Oromia region in the eastern part of the country.

#### Box 2.1: InnovAfrica integrated innovations tested in Ethiopia

- Maize-common bean intercropping has demonstrated improved soil fertility, diversification of household diets and risk reduction in years with weather extremes.
- The **PIP** approach based on a visionary Integrated Farm Plan developed and drawn on a map was useful in engaging all family members and providing a concrete action plan to realize that vision.
- MAP in Ethiopia has brought together relevant actors along the value chain, including farmer's organizations, public sectors, research sector, NGOs, private organizations and Small and Medium Enterprises (SMEs). MAP will ensure that the government agencies will follow up policy recommendations from InnovAfrica.

Intercropping maize with beans has not only increased the yield of maize but also overall farm income of smallholder farmer participants (refer D3.1). Some of the benefits from the interventions show the potential to contributing to several Sustainable Develop Goals such as, SDGs 1, 2, 3, 13, 15.

In this policy brief, the governance challenges related to market-, state- and community-based-led efforts in implementing of InnovAfrica innovations in Ethiopia were briefly analyzed together with measures to overcome the challenges and to increase adoption of the interventions.

### Challenges in scaling-up sustainable agricultural intensification

- *Inadequate infrastructure.* Lack appropriate means of communication as well as infrastructure facilities (e.g., roads and storage facilities) limit farmers access to markets.
- *Difficult access to credit and other financial services.* Smallholder farmers need to cover the costs of seeds, fertilizers, pesticides, and other inputs. The majority of the maize farmers still have limited access to capital/credit from formal institutions due to the requirements lenders demand to provide loan (e.g., lack of collateral) and past failure in repayment of credit. Thus, they are forced to rely almost exclusively on their own meager resources and/or family and friends to purchase inputs, hire labor, and pay for consumption goods.

<sup>&</sup>lt;sup>4</sup> Food and Agriculture Organization, 2019.



- *Poor implementation and enforcement of Ethiopia's policy.* Ethiopia has instituted several agricultural policies that facilitate diffusion of technologies and development of appropriate innovations (e.g., Agricultural Extension Strategy 2017 and Seed System Development Strategy). However, inadequacies exist in the implementation of policies at grassroot level. Moreover, there are no monitoring (and evaluation) systems to evaluate if specific policies are achieving their objective of boosting technology dissemination and to be able to arrange for corrective adaptations when necessary at the grassroot level.
- *Limited extension system.* Majority of the smallholder farmers do not receive sufficient extension services, resulting in low level of technology adoption among them. Lack of conducive working environment and amenities, inadequate financial support, less attractive benefit packages including salary, and limited investment in human capacity building hinder the efficiency of the extension workers. Many extension staff leave their job after being trained in other fields (e.g., accounting and management) to find other jobs in the urban areas, and replacement is not easy.
- *Limited government support to encourage and organize seed production activity* in terms of investment incentives, investment guarantees, market access, and tax exemption. For example, there are no input subsidies in Ethiopia and the public seed company monopolies maintain exclusive rights to seed distribution for multiple crops. While national and regional seed enterprises created by the government are involved in this activity, they may not fully meet smallholder farmers' seed demand.
- *Widespread illiteracy among majority of the current farmers in PIP*. As many activities in PIP require collaboration with fellow farmers, the lack of literacy skills of smallholder farmers undermine their abilities to contribute meaningful inputs for collective plans and optimally utilize opportunities for growth. PIP requires frequent follow up and monitoring until farmers internalize PIP into their farming strategy.
- *Gender inequality.* Women provide the majority of agricultural labor in farming communities. However, women contributions are often unrecognized because they have restricted access to extension, land, and markets. Gender gap also exists in breeding, production, selection, and distribution stages, as well as in how seeds are used and who reaps the benefits from this use.

### Actors that can promote adoption of agricultural innovations

i) Public sector plays a great role in the seed system development that includes variety development and production of breeder seeds (e.g., the Ethiopian Institute of Agricultural Research), variety release and registration of seed production (The National Variety Release Committee), and overseeing quality control of seed production, processing, and marketing (e.g., the Ministry of Agriculture).

**ii) Private sector** engagement in the seed sector is limited to producing basic and certified seeds (e.g., hybrid maize) to end-users. They supply only a small portion of the total quantity of seed demanded by farmers. Most of the seed that farmers use is from the informal seed system (farmers seed system).

**iii)** Seed producer cooperatives: smallholder farmers are also encouraged to organize themselves in seed producer cooperatives to produce and sell quality seed to narrow the gap between seed demand and seed supply. State support may include provision of post-harvest technologies and technical training on how to prevent segregation of the seeds to increase their genetic purity. Today, seed producer cooperatives are the major seed delivery organizations in the country, and it will be in the country's interest to strengthen and support the cooperatives for ensuring affordable and stable seed supply.



### Key policy recommendations enabling effective governance pathways

- Improve the enabling environment to strengthen private sector and seed producer cooperatives growth and investment in seed production. The government can (i) introduce partial guarantee scheme and digital credit system to create a fair playing grounds for private sectors to easily access credit from banks and other formal finance institutions; (ii) create new institutional arrangements that integrate extension and credit services with regular performance monitoring and provision of technical support (e.g., advice on crop choice based on meteorological data) to improve smallholder farmer's repayment capacity; (iii) strengthen market institution through, for example, better transport arrangements and use of information and communication technology; and (iv) devote resources to evaluate programs, policies and business models that can improve the access, availability, use and control of quality seeds in a cost effective, inclusive, and equitable way.
- Institutionalize MAPs at local and national levels and implement a joint vision for the agricultural innovations. Development agencies (e.g., World Food Program) can be invited to be members of the MAPs which can provide resources for sustaining MAPs' activities and strengthen existing seed producer cooperatives.
- Ensure that the process and implementation of national and local agricultural policies is enforced strongly and gender inclusive. Attention must be given to the capacity issues regarding implementation capability, and to the way monitoring and evaluation has been done while implementing policies at different levels. Support research to improve understanding of gender dynamics, opportunities and constraints related to gender and further integrating women and youth in agriculture.
- Facilitate the scale up innovative approaches in its extension system. MAPs and PIP could be scaled-up to other areas in the country that will improve smallholder farmers' capacity to plan and implement farm plans.



# 3 Kenya: Policy brief on effective governance pathways for upscaling sustainable agriculture systems and improving food and nutrition security

#### Key policy messages

- Need to build a conducive policy environment to attract private firms to engage in Brachiaria seed production, multiplication and sale.
- Encouraging collaborative investments and partnerships among public sector, private sector, research sector, and non-government organizations for upscaling SAIs.

The livestock productivity in Kenya has generally remained low mainly due to poor infrastructure and weak institutions, fragmented markets, inadequate investments to research and development, and extension services. Climate change has added challenges for the livestock sector with frequent cycles of drought and increased prevalence and outbreaks of diseases, lack of adequate fodder for the livestock. InnovAfrica interventions (in particular Brachiaria grass) address some of the livestock sector constraints. The interventions have showed the potential to contribute to several SDGs 2, 3,13, 15. The VKC, has been instrumental for scaling up *Brachiaria* grass-dairy cattle value chain. It has helped in bridging the knowledge, reducing gender and digital divides. In addition, MAPs have been instrumental in the scaling-up and validation of *Brachiaria* grass. MAP members have actively participated in investment plans preparations for scaling up of innovations.

#### Box 3.1: InnovAfrica innovations in Kenya

- *Brachiaria* grass with high-quality biomass production improves the availability of quality livestock feed, and high nutrient value and increases productivity of meat and milk.
- Village Knowledge Center (VKC) information and communication technology based digital platform has helped to link farmers through smart phones and social media as a conduit for faster and effective information and knowledge transfer.
- **Multi-actors Platform** (MAP) established in InnovAfrica has brought together relevant actors along the value chain, including farmer's organizations, public sectors, research sector, NGOs, private organizations and Small and Medium Enterprises (SMEs).

In this policy brief, we identify the governance challenges related to market-, state- and communitybased-led efforts in implementing SAIs, IIAs and EASs to ensure that these innovations and approaches are adopted, sustained, and scaled up successfully in Kenya. The brief synthesizes the relevant outputs from InnovAfrica tasks including policy dialogue event that aimed to support a more evidence-based focus on policy options open to national government and other relevant stakeholders.<sup>5</sup>

### Challenges in scaling-up sustainable agricultural intensification

• Seed related constraints: i) High import cost of Brachiaria seed is a constraint to scale up the production. Smallholder farmers are less likely to benefit from the Brachiaria grass because they cannot afford to pay for it. *ii*) Local Brachiaria seed production is underdeveloped. This is partly due to lack of registered varieties for commercialization and high seed costs. In April 2021, four Brachiaria varieties were registered for commercialization that helps farmers better access to seed material. In addition, farmers are also sharing and or selling planting materials (rooted tillers) for expanding acreage under Brachiaria.

<sup>&</sup>lt;sup>5</sup> These InnovAfrica outputs are: (i) field trial reports, (ii) strategic document on strengthening seed system, (iii) farmer manuals on sustainable agricultural intensification (SAI), innovative institutional approaches (IIA), and extension and advisory service approaches (EAS), (iv) policy guidelines to upgrade value chains for smallholder farmers, (v) policy manual with guidelines for effective adjustments in agricultural policies, and (vi) policy dialogue workshop proceedings.



- *Low milk price and high transportation cost*. Milk is collected directly from farmers and sold to small business. This usually compromises the hygienic standards of milk, hence fetching low prices. Moreover, the poor road networks in the villages make it difficult during rainy seasons for milk transport to markets. If the milk cannot reach markets on time, it reduces the price and increases cost for farmers.
- *Limited investment in new forages like Brachiaria and upscaling the use of Brachiaria.* As a result, only a few species of forages are registered for commercialization for feed production, which overtime have become susceptible to pest and diseases resulting in low production. There is also insufficient data available on the agronomic performance and the resistance or tolerance of *Brachiaria* cultivars to pests and diseases.
- *Limited resources and capability of extension staff.* The extension officer to farmer ratio, is about 1:1000, compared to recommended ratio of 1:400. In the last three decades, the number of farmers per extension worker have increased, which has constrained both intensity and breadth of extension and advisory services coverage.
- Sustainability of VKCs and MAPs. A good exit strategy with less dependence on public funding is required to maintain its operation if sustainability and ownership issues are not carefully integrated into the process from the beginning. For example: KALRO signed a Memorandum of Understanding (MoU) for transferring the operation of VKC to Biovision Africa Trust (BvAT), a not-for-profit organization. BvAT has taken over the operation of VKC in June 2021 and will help in maintenance and operation after the project.
- *Poor access to agricultural finance and information.* More than half of smallholder farmers reported no access to formal credit. Farmers usually take loan from family/friends and community groups.
- *Poor cooperative management.* While farmers join cooperatives to address problems jointly and increase bargaining power, cooperatives are not efficient in securing what they promise in relation to extension, credit, transport, and market access. However, farmers can request the government for efficient services or enforce co-operative norms among themselves.
- *Gender discrimination* and very limited number of rural youths engaged in farming. Adoption was more likely to take place in male-headed households. This is for obvious reasons of disproportionate access to productive resources by women compared to men. Given that farming in Kenya also relies mostly on manual labor and less mechanized, young people become uninterested in farming or in rural futures

### Actors that can promote adoption of agricultural innovations

**i) Private sector:** The involvement of MAP members (Kenya Seed Company and the Dairy Cooperative) led to wider dissemination of *Brachiaria- The* Kenya Seed Company Limited (KSC) facilitated the importation and selling of *Brachiaria* grass, while the dairy co-operative assisted in distribution of *Brachiaria* seeds to members of the cooperatives.

**ii) Public sector:** The government institutions play a crucial role in research and extension service related to *Brachiaria*. For example, KALRO a partner in the InnovAfrica consortium was responsible not only for research in *Brachiaria* but also in the VKC initiative in partnership with Kenya National Farmers Federation (KENAFF), the other project partner from Kenya.

**iii)** Other sectors: Most farmers access credit, market, and financial services through communitybased organizations. Farmers also belong to these organizations (either crop-based or livestock-based groups) whose main services offered to members include produce marketing, input provision and credit, savings and credit and processing. One example is KENAFF which promotes value chainbased agribusiness models, mobilize, and organize farmers into commercially viable commodity



associations for the market. Thus, both KALRO and KENAFF will be able to utilize the knowledge and networks from InnovAfrica and continue disseminating outputs even after the project ends.

- **Build a conducive policy environment** to attract private firms to engage in *Brachiaria* seed production, multiplication, and sale instead of relying on imports. This includes providing incentives for private sector (e.g., KSC) to market *Brachiaria* seeds, avail modest funding for research on improving *Brachiaria* seed production, and removal of unnecessary legal and regulatory barriers to participation by private firms. One example is the intention of the KALRO seed unit, to commercialize *Brachiaria* grass by bulking seeds/vegetative planting material to increase farmers' access to *Brachiaria* planting materials and other crop seeds.
- Combine advantages of different sectors by encouraging collaborative investments and partnerships among public (e.g., KALRO), private (e.g., KSC), research (e.g., ILRI) and NGOs (e.g., BvAT). For example, VKCs can be integrated into existing government strategies like the Agriculture Sector Growth and Transformation Strategy (2018-2019). The government can work closely with private extension organizations to develop reward system for extension workers.
- **Provide complementary support.** Financial subsidies in the adoption of labour-saving technologies (such as chaff cutters and milking machines) will support livestock farmers. This will also address the huge agricultural workload for women.
- Encourage youth to pursue a career in agriculture. The government should work with universities to make agriculture-based courses more relevant to the skills and opportunities the youth are currently seeking. Existing courses can be reviewed and redefined to meet the needs and priorities of youth.



# 4 Malawi: Policy brief on effective governance pathways for upscaling sustainable agriculture systems and improving food and nutrition security

#### Key policy messages

- Promote government subsidy intervention to other crops besides maize to encourage crop diversification
- Address seeds availability for upscaling crop diversification, empower farmer- and community-based organizations to produce quality seeds.

The food and nutrition security in Malawi is generally defined in terms of adequate production of and access to maize, the country's dominant staple crop. The high reliance on maize as a primary staple crop and low crop diversity has led to a primarily carbohydrate-based diet, seasonal food insecurity and widespread undernutrition.<sup>6</sup> Currently, about 30–40% of the population experiences food and nutrition insecurity.

The InnovAfrica project in Malawi has accelerated the uptake of SAIs technologies (integrated innovations: *intercropping of cereals with legumes using farmer-led on-farm pilot studies supported by MAP* (Box 4.1). The InnovAfrica project has been implemented in Mzimba district in the Northern region and Dedza district in the Central region that are representatives of the two different regions.

#### Box 4.1: InnovAfrica innovations in Malawi

- Farmer-led demonstrations in maize-sorghum-millet and legume intercropping that ensures diversification of diets and risk reduction in the case of failure of one of the crops.
- **Multi-actors Platform** (MAP) brings together relevant actors along the value chain, including farmer's organizations, public and private sectors, and non-government organizations.
- Farmer to farmer exchange of information has promoted upscaling of SAIs in the project areas

Small-scale farmers, including women and youth, have benefited from the interventions of the project in terms of improved soil fertility, increased productivity, and growing diversified crops for better nutrition, healthy food, and market access. These outcomes have the potential to contribute to several SDGs 2, 3,13, 15.

In this policy brief, we identify the governance challenges of market-, state- and community-based led efforts related to successful implementation and scaling-up of InnovAfrica agricultural innovations. The brief synthesizes the relevant outputs from InnovAfrica tasks including policy dialogue event that aimed to support a more evidence-based focus on policy options open to national government and other relevant stakeholders.<sup>7</sup>

Challenges in scaling-up sustainable agricultural intensification

• Limited access to input and output markets. High input price (e.g., maize seed and inorganic fertilizer), limited access to output market, and high transport cost are largely a reflection of the country's landlocked geography and poor road network. Farmers' capacity to market maize is thus hindered by low prices as middlemen who buy the maize from them also need to make a profit from their services. Yet those farmers without their own maize also cannot afford to purchase the crop. The dilemma is that, enforced by policy, there is a need for a low price of maize for consumers (as

<sup>&</sup>lt;sup>6</sup> National Statistics Office. 2012. Integrated Household Survey 2010–11: Household Socio Economic Characteristics Report. Zomba, Malawi.

<sup>&</sup>lt;sup>7</sup> These InnovAfrica outputs and key messages are: (i) field trial reports, (ii) strategic document on strengthening seed system, (iii) farmer manuals on sustainable agricultural intensification (SAI), innovative institutional approaches (IIA), and extension and advisory service approaches (EAS), (iv) policy guidelines to upgrade value chains for smallholder farmers, (v) policy manual with guidelines for effective adjustments in agricultural policies, and (vi) policy dialogue workshop proceedings.



maize is the staple cereal) and at the same time farmers need high output price to allow high farm profit.

- Limited access to credit markets. While there is emergence and proliferation of microfinance institutions (MFIs) in Malawi, for example, accessing loans is difficult because of high interest rates and stiff repayment conditions.
- **Small land size.** Smallholder farmers in Malawi are constrained by limited land to produce maize surplus for sale.
- **Inadequate fertilizer subsidy system.** While there is a new subsidy program called "Affordable Inputs Program" (AIP) for both seeds and fertilizer (formerly fertilizer input subsidy program or FISP), it mainly targets maize leaving out other important crops (grain legumes, sorghum, millet, vegetables) to farmers' dietary needs. In InnovAfrica, the soil fertility improvements can be attributed to the combined effects of agro-ecological practices such as legume intercropping, and organic manure application, locally produced compost called *bokashi*. The complementarity of organic and inorganic fertilizer proved to be effective. Hence, fertilizer subsidy might not be appropriate in areas where soils have limited organic matter content and organic manure is not available.
- Weak/Limited extension and advisory service. After many years of introduction of the National Extension Policy in 2000 to promote provision of quality agricultural extension services, many key elements of the policy remain largely unimplemented (e.g., demand-driven extension service). Limitation of funds to undertake field extension work. Maintenance resources for push bikes and motorcycles are not always available, to increase mobility of extension workers.
- Capacity constraints. While the National Smallholder Farmers' Association of Malawi (NASFAM) has a ready market demand that requires a quota of 5000 metric tons of beans production in Malawi, the production capacity of smallholder farmers has only been about 1000 metric tons due to limited landholdings. There is also an inadequate supply of labor even though the average household size in target areas is large. Young are not attracted to farming and inclined towards urban migration to seek work in industries.<sup>8</sup>
- Financial constraints. Liquidity also presents substantial difficulties for smallholder farmers to avail inputs, e.g., fertilizer, despite the subsidy. The decisions of smallholder farmers about fertilizer use depend upon which fertilizers are cheaper to obtain and apply. The inconsistent use of fertilizer is a major contributing factor to low crop yields.
- Gender inequality and youth discrimination. High levels of gender inequality exist throughout the country. While women play a more important role in production-related decision-making in Malawi, they generally experience limited access and decision-making control over resources and have high workloads.<sup>9</sup> Under the FISP (now AIP), youth are less likely to receive (or receive a smaller quantity) of inputs as they are distributed to households that young people might not have as a unit.
- Scale and seed quality control. For most community seed banks, acquiring the necessary land, water, and human capital for adequate seed management, processing, and storage poses a challenge for bulk seed production and quality assurance.<sup>10</sup> There exists no technical guidelines yet for determining the resources necessary for producing specific quantities of seed for different crop varieties.

<sup>&</sup>lt;sup>8</sup> Rachel Bezner Kerr, Esther Lupafya, Mangani Katundu, Mufunanji Magalasi et. al, Malawi Farmer to Farmer project (1), Objective 4 reports [ND] on entrepreneurship for young people in Ekwendeni, Mzimba, 2012 to 2017.

<sup>&</sup>lt;sup>9</sup> Haug, R.; Mwaseba, D.L.; Njarui, D.; Moeletsi, M.; Magalasi, M.; Mutimura, M.; Hundessa, F.; Aamodt, J.T. Feminization of African Agriculture and the Meaning of Decision-Making for Empowerment and Sustainability. Sustainability 2021, 13, 8993. <sup>10</sup> Vernooy, R., Shrestha, P., Sthapit, B., (2015). Community seed banks: Origins, evolution and prospects. Earthscan (Routeledge). New York, NY.



### Actors that can promote adoption of agricultural innovations

**i) Public sector.** The government of Malawi recognizes importance of a sustainable seeds industry for increased agricultural production and diversification. Various institutions are in place with designated roles along the seed system (e.g., Department of Agricultural Research Services for variety release and regulation; NASFAM and seed companies for seed production, extension, and sales of quality seeds) that can play an important role in facilitating farmers.

**ii) Private and third sectors.** At least 24 seed companies and agro-dealers are operating in Malawi (e.g., Multi-Seeds Company Limited). The Seed Trade Association of Malawi (STAM) is an umbrella association for the seed companies in the country. Other local non-governmental organizations such as the Banki Mkhonde, where members pool money at local level and lend to farmers in need are important, and they operate without the involvement of formal credit institutions.

- **Build a conducive environment for input and output markers.** The government should invest in farm-to-market roads that would reduce the costs of crop production and transport and increase farmers' ability to buy inputs and sell outputs. Additionally, the government can revive Agricultural Development and Marketing Corporation (ADMARC) as a main buyer from farmers
- Expand existing rural credit system and access to other financial services. The government should consider expanding the activities of MFIs, establish more micro credit and restructure current village savings programs. The public costs of an expansion, however, must be carefully studied and measured against its benefits. It is also necessary to design credit packages that are tailored to meet the needs of specific target groups (e.g., women farmers) with limited collateral security to offer.
- Strengthen and support the capacity of farmer- and community-based organizations. Organizations such as NASFAM, can be incentivized to set-up grower schemes to ensure improved market access by farmers. As community seed banks (CSBs) scale up to reach more farmers, an intermediate seed quality control system should also be put in place. Greater member outreach and location-specific seed multiplication guides could also help CSBs better calculate and respond to demand for certain popular varieties, both maize and other crops. Also, strengthen village-level farmer to farmer extension approaches (F2F) by improving the training of lead farmers, targeting men, women, and young farmers. The delivery of EAS should also be supported by information and communication technologies (e.g., mobile phones).
- **Promote integrated fertilizer management and conservation agriculture.** The government should not only focus on policies conducive to increased availability and consumption of inorganic fertilizers, but also strongly promote conservation agriculture/agro-ecological farming approaches. In addition, the fertilizer subsidy intervention could be extended to other crops beside maize to encourage crop diversification.
- Address land size issues by considering i) restoring degraded land and then redistribute, ii) enforcing the available law on access to land to enable vulnerable groups to benefit from available land; and iii) promoting intercropping as more suited to farmers with small pockets of land as opposed to crop rotations.
- Facilitate the creation of institutionalized MAPs to strengthen the engagement of different stakeholders to jointly cooperate and develop solutions in delivering goods and services related to SAI. Moreover, several donors are currently supporting agricultural development in Malawi (e.g., World Bank, USAID). These development partners can be invited to be members of the MAPs and can provide resources for sustaining MAP's activities.



# 5 Rwanda: Policy brief on effective governance pathways for upscaling sustainable agriculture systems and improving food and nutrition security

#### Key Policy Messages

- There is a need to develop an extension partnership among public, private and third sectors to up-scale the adoption of *Brachiaria* and meet the expected high extension demand.
- PIP (Integrated farm planning) approach will lead to increased farmers' participation and can further strengthen diversity of extension and advisory services.
- Farmers will need resources to implement the integrated farm plans and will therefore expect more government support.

In Rwanda, livestock farming is increasingly becoming difficult because of increasing competition in land and water resources. The natural pasture acreage has shrunk over the years, resulting to shortage of feed in terms of quantity and quality. The crop residues, the fibrous parts of plants that remain after harvest of crop for human consumption, are also of low nutritive value that is not adequate for the maintenance of animals.

To address these issues, the InnovAfrica project has implemented farmer led *Brachiaria* forage field demonstrations in the past three years (Box 5.1). The *Brachiaria* technology was supported with a novel extension approach called *Integrated Farm Planning* (PIP, French acronym) and with stakeholders' engagement through a Multi-Actor platform (MAP). PIP trainings and regular follow up have improved overall understanding of the integration of crop and livestock production systems, which resulted in increased production, especially in milk yield up to 33% when using Brachairia grass compared to existing Napier grass fodder. Increased production results in higher income, which some farmers use to invest in new activities. InnovAfrica innovations have shown a potential to contribute to several SDGs, particularly 2, 3, 5, 8, 13, and 15.

#### Box 5.1: InnovAfrica innovations in Rwanda

- Farmer-led *Brachiaria* forage trials in Nyamagabe and Kirehe districts were demonstrated, validated and upscaled. The adoption of *Brachiaria* has proven to increase access to high quality feed and enhance livestock productivity.
- **PIP** has enhanced cooperation among farmers, enhance the willingness of farmers to work in their fields and improve knowledge and skills transfer through designing an integrated farm plan.
- MAP has brought together relevant actors along the value chain, including farmer's organizations, public and private sectors, and NGOs.

### Challenges in scaling-up sustainable agricultural intensification

- Lack of seeds. *Brachiaria* grass cultivars do not produce seeds for commercial purposes because the grass does not produce enough seeds in areas close to equator (2° latitude south for Rwanda). Farmers who had planted *Brachiaria* in the project sites had obtained vegetative planting materials (rooted tillers) from fellow farmers from other part of the districts who had benefited from the *Brachiaria* grass. Also, *Brachiaria* seeds were procured from outside of Africa and distributed to farmers in Nyamagabe and Kirehe districts.
- Shortage of grazing land. Land limitation is an eminent constraint of fodder production for the majority of farmers in Rwanda. The average land holding per household is 0.5 hectare for the majority of farmers. In dry areas, irrigation would also be needed to successfully grow *Brachiaria* grass, especially for commercial farmers.
- Limited knowledge of farmers with forages. Smallholder farmers are not that familiar with forages. This could be a challenge because the grass harvested under a cut and carry system mines soil fertility quickly if no fertilizer/manure is added to land under *Brachiaria* grass production or in other forage species.



### Actors that can promote adoption of agricultural innovations

Stakeholders from diverse sectors and their collaboration can play a crucial role in facilitating scaling up of *Brachiaria* grass cultivars. InnovAfrica mapped the different actors that can help in the adoption of agricultural innovations.

i) **Private sector.** The private sector like National Dairy Platform is also promoting the *Brachiaria* grass technology through dairy farmer members' mobilisation. They are important actors and should be part of upscaling efforts in Rwanda.

**ii) Public sector.** The public institutes that promote the Brachiaria for livestock feeding include Rwanda Dairy Development Project (RDDP), and the Climate-Smart *Brachiaria* grass projects. In addition, the Rwanda Agriculture and Animal Resources Development Board is responsible for the development and dissemination of livestock and forage technologies in the country.

**iii) Other sectors (NGOs and cooperatives):** Dairy Sector Working Group (DSWG) is chaired by the Ministry of Agriculture and Animal Resources and is composed of various stakeholders including NGOs. One of NGOs member, the Send a Cow Rwanda is disseminating the *Brachiaria* technology in seven districts where it is operating. Also, the dairy farmer cooperative (IAKIB- Kinyarwanda acronym) is promoting *Brachiaria* grass in the country.

- Create an enabling environment for up-scaling *Brachiaria*. Incentives to make the adoption of *Brachiaria* depend heavily on enabling economic and financial environment. The government, for example, should provide incentives (e.g., tax exemption, subsidies to forage seeds, provide land for seed multiplication) for private seed companies to produce seed/planting materials of improved forages. This also should include investing in education and training of farmers in forage cultivation.
- Develop an extension partnership among public, private and third sectors to up-scale the adoption of Brachiaria. This can be supported through the national funds. Public sector can provide training and advisory services to farmers on forage production and feeding systems. Private seed companies can provide access to *Brachiaria* seeds for those who can afford to buy such seeds and have land to grow it and can provide farmers with information relevant to *Brachiaria* production. The NGOs, on the other hand, can help organize smallholder farmers to have better access to Brachiaria seeds, fodder grass and other goods and services.
- **Institutionalize MAPs and strengthen PIP**. This to ensure there is sustainability in stakeholders' involvement in the development and promotion of new technologies like *Brachiaria*. In addition, more (on-farm and off-farm) income generating activities, actively engaging with others, and applying more resource conserving practices need to be incorporated in PIP.



# 6 South Africa: Policy brief on effective governance pathways for upscaling sustainable agriculture systems and improving food and nutrition security

#### Key policy messages

- Incentivise participation (of smallholder farmers including women and youth) that can play a key role in successful implementation of integrated farm planning (PIP)
- NGOs and other development organizations participations in MAPs to be institutionalized, which can facilitate upscaling of SAIs technologies

Despite huge efforts made in agricultural research, extension services and government institutions in the past, the agricultural productivity of smallholder farmers remains low in South Africa. The low agricultural productivity triggers food and nutrition insecurities amongst most of the smallholder farmers, who are primarily dependent on rainfed agricultural production for their livelihood and have a limited adaptation capacity. With this in mind, the InnovAfrica project integrated SAI practices with institutional innovations and extension and advisory services in South Africa (Box 6.1). The project was implemented in the eastern parts of Thabo Mofutsanyana district in the Free State province of South Africa.

Adoption of SAIs has i) increased crop maize and dry bean yields by over 36 percent and thereby farmer's profitability, ii) increased land intensification and productive use in land-constrained smallholdings, and iii) improved household's nutrition through diet diversification (proteins and vitamin A). The farming planning tool- PIP has improved the cooperation amongst farmers, enhanced their willingness toimprove their farms, improved knowledge and skills transfer through co-learning and helped extension officers to plan better with farmers, learn from farmers and understand more their backgrounds, mindsets and experiences which improved the effectiveness of their extension service. InnovAfrica innovations have shown a potential to contribute to several SDGs, particularly 2, 3, 5, 8, 13, and 15.

#### Box 6.1 InnovAfrica innovations in South Africa

- Farmer-led trials of locally available improved maize-dry beans varieties and climate-smart technologies were demonstrated, validated and upscaled.
- **Multi-actors Platform** (MAP) **brought** together relevant actors along the value chain, including farmer's organizations, public sectors, research sector, NGOs, private organizations and Small and Medium Enterprises (SMEs).
- Plan Integre de Paysan In French (PIP) enhanced cooperation among farmers, the willingness of farmers to work in their fields and improve knowledge and skills transfer through designing an integrated farm plan.
- improve their farms and improved their knowledge and skills.

In this policy brief, we identify the governance challenges of market-, state- and community-based led efforts related to successful implementation and scaling-up of InnovAfrica agricultural innovations. The brief synthesizes the relevant outputs from InnovAfrica tasks including policy dialogue event that aimed to support a more evidence-based focus on policy options open to national government and other relevant stakeholders.<sup>11</sup>

### Challenges in scaling-up sustainable agricultural intensification

• Access to agricultural inputs: Currently, most agro-dealers sell inputs such as seeds, herbicides and pesticides in large packages, which are not affordable by the majority of smallholder farmers.

<sup>&</sup>lt;sup>11</sup> These InnovAfrica outputs are: (i) field trial reports, (ii) strategic document on strengthening seed system, (iii) farmer manuals on sustainable agricultural intensification (SAI), innovative institutional approaches (IIA), and extension and advisory service approaches (EAS), (iv) policy guidelines to upgrade value chains for smallholder farmers, (v) policy manual with guidelines for effective adjustments in agricultural policies, and (vi) policy dialogue workshop proceedings.



In addition farmers do not have access to low-cost farm machinery. Capital remains a major constraint for farmers to purchase inputs or adopt new innovations.

- Insufficient production capacity and low quality of produce in the output market. The produce from the majority of smallholder farmers is insufficient in quantity and quality due to low soil fertility, lack of farm equipment, poor access to extension services, inputs, weather information as well as the lack of knowledge and awareness of SAI. While poor qualities could be attributed to lack of knowledge on sustainable crop management practices.
- **Policy contradictions:** There are cases where the same government is putting in place policies with conflicting objectives. For example, there are policies that support agricultural production, but at the same time, there is a policy that provides social grants to buy food, which discourages recipients to intensify agricultural production.
- Poor quality of extension service and outreach: Only one personnel with specific expertise are assigned at local offices to provide services to whole community. Yet, different farmers are involved in different farming commodities of which the allocated extension personnel might not even have any clue/know how about. Multiple expertise operating at the local level is critical to improve the quality of government extension services.
- Limited participation of the civil society organizations (CSOs). CSOs have an important role to play in assisting smallholder farmers to increase their production capacity. However, mobilizing civil society to implement agricultural projects and processes, remains a challenge.<sup>12</sup>
- Non-membership in farmer- and/or community-based groups. None of the households had any household member as a member of a group. While there are a few local cooperatives in the area, stakeholder engagements need to be strengthened at local scale as there are no formal organizations for smallholder farmers.
- Lack of motivation by youth in agriculture and gender inequalities. The majority of youth do not want to work in the agriculture sector because they consider agriculture as not as attractive enough. They perceive agriculture to be an 'old-fashioned' industry. On the other hand, challenges faced by women farmers include legal and cultural restrictions around land inheritance and ownership. For example, while women dominate farm labor contributions, they do not have the same access to information, markets, and credit.

### Actors that can promote adoption of agricultural innovations

**i) Private sector.** In the project site, inputs (e.g., seeds, fertilizers) and services (e.g., silo storage, loans) are mainly provided by agri-business companies. VBK Agriculture and AFGRI Agri Services are the two most important agri-business companies in the project area, but it mainly caters for commercial farmers.

**ii) Public sector.** Ilima/Letsema (Zulu/seSotho language for group of farmers) and the Comprehensive Agricultural Support program are two programs that support smallholder farmers through the provision of inputs. Meanwhile the Food Security program supports subsistence smallholder farmers through the provision of vegetable seeds. Agricultural funding for young people is provided by the National Youth Development Agency, Small Enterprise Development Agency, Small Enterprise Finance Agency, banks and other development agencies.

<sup>&</sup>lt;sup>12</sup> Chitiga-Mabugu, M., et. al., 2016. Civil society organizations' participation in food security activities in South Africa. Food Security Study Report by NDA Research and Policy Unit in Collaboration with the Human Science Research Council Economic Performance and Development.



- Institutionalize the MAP and integrate with the government system. Stakeholder engagement through the MAP established in InnovAfrica improved the dissemination and adoption of SAI practices (e.g., farmer-led experiments). ARC (project partner) will continue to work closely with MAP members even after the lifespan of the InnovAfrica project. There is a scope for involving other NGOs, business and development organizations working in the area.
- Encourage participation in civil society organizations such as farmer- and/or communitybased organizations. Cooperative members can pool their resources in buying inputs in bulk and at reduced transaction costs, thereby improving their bargaining power. Regional government in collaboration with other concerned bodies (e.g., local extension staff) should expand awareness campaigns and capacity building activities related to cooperatives to encourage more farmers to be members and actively participate in agriculture, especially targeting women and youth. PIP can help in further motivating youth and their engagement in agriculture.
- Make the extension and advisory service demand driven. One strategy is for public extension services to involve NGOs, research institutions, FBOs, and private sector agencies in the management and execution of extension services. NGOs can play a key role in providing and financing agricultural extension. Research institutions can train extension staff on new technologies and innovations. FBOs can hire extension agents, and their service is free to members. Private sectors, like VBK and AFGRI, can provide extension and advisory service with sale of inputs or purchases of outputs.
- Create an enabling environment for input and output markets. Improve access to inputs through the provision and accessibility of both formal and informal financial resources such as agricultural grants, loans and saving groups as well as incentives. Small packaging of inputs by agro-dealers is recommended so that inputs can be affordable to smallholder farmers. Linking farmers with suppliers and value chains through the engagement of different stakeholders could also improve the access to inputs and output markets.



# 7 Tanzania: Policy brief on effective governance pathways for upscaling sustainable agriculture systems and improving food and nutrition security

#### Key policy messages

- Provide conducive policy environment for private markets and seed producers to guarantee production, packaging and sale of high-quality forages.
- Institutionalize Village Knowledge Centers through linking them with the Ward Resource Center, which operates as the District Resource Center.
- Ensure sustainability of Multi-Actor Platforms by encouraging strong collaboration among public sector, private sector, non-government organizations and other development partners.

In Tanzania, livestock productivity is low mainly due inadequate quantity and poor quality of feed. Smallholder livestock farmers meet their feed requirements through a combination of mainly freerange grazing, crop residues (i.e., legume and cereal residues) and some planted forages. To address the feed shortage issue, the InnovAfrica project in Rungwe District (representing the Southern Highland, Humid zone) focused on the introduction and promotion of *Brachiaria* grass and sorghumlegume intercropping systems as a technological innovation together with two complementary innovations i.e., Multi Actor Platform (MAP) and the Village Knowledge Centre (VKC) as innovative institutional and extension and advisory services approaches, respectively (Box 7.1) in the past three years. VKCs have improved the delivery of extension and advisory services at the village level that can lead to sustainable communities. Smallholder farmers reported *Brachiaria* fodder has contributed to increase in the quality and quantity of milk yield that leads to increase of their farm income. InnovAfrica innovations have shown a potential to contribute to several SDGs, particularly 2, 3, 5, 8, 13, and 15.

In this policy brief, we identify the governance challenges of market-, state- and community-basedled efforts related to components of the InnovAfrica tested, integrated, and disseminated in Tanzania to ensure that they are adopted, sustained, and scaled up successfully. The brief synthesizes the relevant outputs from InnovAfrica tasks including policy dialogue event that aimed to support a more evidence-based focus on policy options.<sup>13</sup>

#### Box 7.1 InnovAfrica innovations in Tanzania

- *Brachiaria* grass a drought tolerant forage has resulted in high-quality fodder, increased the availability of quality livestock feed and improved milk and meat productions.
- **Sorghum-legume intercropping** ensured diversification of diets and risk reduction in the case of failure of one of the crops.
- The Village Knowledge Center (VKC) is an information and communication technology based digital platform linking farmers through smart phones and social media and has provided faster and effective information and knowledge sharing.
- Multi-actors Platform (MAP) bring together relevant actors along the value chain, including farmer's organizations, public sectors, research organization, private sector organizations, and Small and Medium Enterprises (SMEs).

<sup>&</sup>lt;sup>13</sup> These InnovAfrica outputs and key messages are: (i) field trial reports, (ii) strategic document on strengthening seed system, (iii) farmer manuals on sustainable agricultural intensification (SAI), innovative institutional approaches (IIA), and extension and advisory service approaches (EAS), (iv) policy guidelines to upgrade value chains for smallholder farmers, (v) policy manual with guidelines for effective adjustments in agricultural policies, and (vi) policy dialogue workshop proceedings.



# Challenges in scaling-up sustainable agricultural intensification

- Unavailability, unaffordability, and inaccessibility of *Brachiaria*, sorghum and cowpeas seeds. Seeds are distributed and marketed in limited points. Farmers also source seeds from agro-dealers who usually travel long distance to reach the seed producers. At present, *Brachiaria* seed is not produced locally, hence it commands high price in the market. Also, reliable market for some crops, like sorghum, is lacking as they are considered inferior products by consumers because of its high tannin chemical content, giving it bad/sour taste.
- Inadequate seed demand forecasting system and limited use of forage seeds. There is no formal process in which the demand for different commercials seeds (e.g., forage and legumes) is quantified that can inform how much breeder seed needs to be produced in a set time horizon to reach economies of scale. It would be difficult to plan and budget seed production to supply the market and take advantage of economies of scale. There is no significant improvement on production and availability of improved seeds of grasses and legumes because of lack sufficient funds to access forage seed breeders, technical knowhow and processing machinery needed in different research and training centers.
- Insufficient land for establishment of pastures in Rungwe district. This is a big challenge given that fertile land is expensive and not always readily available. Hence, farmers are either forced to purchase forage off farm, underfeed their cow with less forage, or feed excessive levels of concentrates, which is very costly for smallholder farmers.
- Limited access to and inadequate extension services supporting livestock sector. Too few sufficiently competent extensions workers advice farmers on farm and forage production. While public extension officers increasingly use mobile phones in their jobs, the motivation to utilize the potential of mobile phones decreases when they have to pay the costs of using mobile phones themselves.
- **Budget constraints and lack of access to credit:** In Tanzania, farmer seed producer groups are engaged in seed production and quality declared seed (QDS) production in close collaboration with the local branch of the agricultural research station of the national research organization and certification organization. However, these groups also face challenges such as budget constraints and limited access to credit. Smallholder farmers lack access to affordable credit options that would allow them to purchase seeds and other high-quality inputs. They are a credit risks, hence banks and other financial institutions are reluctant to finance them. Moreover, most farmers are in remote areas making it difficult and unattractive for financial institutions to link with them.
- Low demand for agricultural information. Farmers rely on personal experience and informal networks. Hence, the use of VKCs and information and communication technology (SMS) in this regard is minimal, and the potential of VKCs as a form of extension and advisory service remains untapped. The sustainability of approaches such as VKCs is challenging due to costs of maintenance in the given context.

### Actors that can promote InnovAfrica Innovations

**i) Private sector:** the engagement of the private sector is critical to have an assured market for *Brachiaria* and sorghum. In particular, the Tanzania Breweries Limited (TBL) can play an important role in the promotion of acceptance of new seeds of sorghum through contract farming proposal.

**ii) Public sector** : Forage seed production is mainly carried out by the public sector (e.g., government farms and research institutions) with limited support and limited forage species. For example, the Tanzania Official Seed Certification Institute (TOSCI) has a mandate for seed certification and promotion of quality agricultural seeds, either produced or imported into the country for sale, and establishment of government foundation seed farms. The Tanzania Agricultural Research Institute



(TARI), and Tanzania Livestock Research Institute (TALIRI) could also promote the use of both tillers and seeds to enhance the adoption of *Brachiaria* on a short-term basis.

**iii)** Non-government organizations (NGOs), e.g., Heifer Project International (HPI), OX–Farm, World Vision and Missionaries that aim to improve smallholder dairy production and environmental management, also demand for forage seed to ensure that livestock farmers are sustainably while taking care for environment. International research institutes are also active in forages development (e.g., ILRI and CIAT).

- Support the private sector and seed producer groups in the seed production and promotion by i) lowering seed import costs, ii) ease seed registration processes, and iii) providing institutional support with policies such as infrastructure investments for transportation and communication systems in conducting awareness campaigns and forecasting seed demand.
- Land reallocation to avail more land for grazing. Conduct a policy dialogue on proper use of land to explore possibilities of using forages available in the production forests and shifting cultivation areas involving the relevant government ministries (e.g., Agriculture, Natural Resources and Tourism, local government), which are the main stakeholders of land in Tanzania.
- Institutionalize VKCs and link them to financial institutions. The VKCs cannot be stand-alone interventions and have to be integrated with the District Resource Center in order to ensure their sustainability. The DRC can provide manpower and other resources for VKCs to be able to make extension and advisory services more effective at both village and district levels. In this regard, it is important to review and redefine the organizational structure, operation, and mandate of the VKC to the given context and farmer needs. To improve smallholder access to credit, the VKCs can help farmers to link with financial institutions and access to loans from formal credit institutions.
- Ensure sustainability of MAPs for promoting the adoption of the Brachiaria. NGOs (e.g., World Vision) can be invited to be members of MAPs and they can provide the necessary capacity to sustain and upscale MAPs' activities in terms of time, money, training, and experience.



# 8 Conclusion

The six policy briefs have examined the main governance challenges related to market-, state- and community-based led efforts in implementing InnovAfrica innovations in Ethiopia, Kenya, Malawi, Rwanda, South Africa, and Tanzania to identify key areas for focusing governance pathways and suggest measures to facilitate the scaling up of SAIs, IIAs, and EASs. The key policy messages are a synthesis of recommendations from the policy dialogue meetings and some of them are not only relevant for the project areas in each case country but also for similar settings in other parts of African that currently aim to promote agricultural innovations. Our findings also call for more research to quantify the implications of the identified governance challenges.

The governments must also focus on the role that the private sector, the government and the other sectors currently play to make agricultural innovation sustainable from an economic, social, and environmental perspective. Government efforts usually put emphasis on the supply side elements and less on the demand side. Besides putting emphasis on the supply of subsidized inputs (e.g., fertilizer, seeds), the government should also support a conducive environment for increasing market access to sell products. Such support could include investment in farm-to-market roads to improve market access by farmers, incentives for private sector, community-based organizations and other development partners to market goods and services, and provision of modest funding for research on agricultural innovations.

Moreover, there are already several agricultural policies and programs that can facilitate the diffusion of agricultural innovations. However, these policies and programs have to be effectively enforced. For these to effectively generate agricultural innovation adoption and scaling up, operational aspects of their implementation should be carefully designed. Monitoring and evaluation systems are needed to evaluate if specific policies and programs are achieving their objectives of boosting technology dissemination and to be able to arrange for corrective adaptations when necessary.

A combination of public (e.g., government institutions including research), private (e.g., seed companies, farmers) and third sector (NGOs, community-based organizations) institutions are critical in effectively implementing and sustaining agricultural innovations such as VKCs and MAPs. Involving the third sector may ensure not only broader participation but also sustainability of existing agricultural innovations in the African context, where farmers outreach by government extensions is limited due to infrastructure and institutional challenges.