

*‘Innovations in Technology, Institutional and Extension Approaches towards Sustainable Agriculture and enhanced Food and Nutrition Security in Africa’*



**Malawi  
Country Report**

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## Table of contents

1. Introduction.....	3
2. Project Sites and Context .....	6
2.1 Context.....	6
2.2 Project sites .....	6
3. Promising SAIs, IIAs, and EASs in Malawi Case Country .....	8
3.1 Sustainable Agricultural Innovations in Malawi.....	8
3.2 Institutional Innovations and Extension Advisory Services .....	9
4. Major Actors .....	10
5. Institutional and political setting.....	11
6. References.....	12

## 1. Introduction

Malawi is a small landlocked country of 15 million people, most of whom rely on agriculture for their food and livelihood (World Bank, 2013). Smallholder farmers farm on average less than 2 ha of land, and approximately half of all calories consumed by rural households come from their own food production (Dorward & Chirwa, 2011). Maize is the dominant staple crop in the country, covering over 60 percent of area planted and 70 percent of calories consumed (Ellis & Manda, 2012). High reliance on maize as a primary staple crop and low crop diversity leads to a primarily carbohydrate-based diet for most smallholder farming families, seasonal food insecurity and pervasive undernutrition (NSO 2012). Smallholder farmers in Malawi struggle with limited landholdings, diverse, complex agroecosystems, low access to agricultural inputs, high labour requirements and limited public extension support for smallholder agriculture. Recent studies have found that between 30-40% of the population experiences chronic food insecurity and the majority of rural households live in poverty (NSO, 2012).

For over three decades now, the Malawi nation has undergone a number of natural shocks that have rendered it partially incapable of producing enough food for all its citizens. The effect of climate change has been severely felt in Malawi from the 1980s, through the 1990s to the turn of the millennium. In 1989, the drought that hit Malawi brought a food crisis that coincided with the winds of change that blew multi-party democratization into the country. This was followed by the 2001/02, 2004/05, and then recently, 2014/15. The consequence of these occurrences is that an increasing number of Malawians became severely affected by food shortage. The 2001/02 affected about 2,829,425, with 30% shortage of maize production. Following the 2004/05 drought, 5,100,000 people were affected<sup>1</sup>. In the 2014/15 drought, the number of affected people had reduced to about 2.8 million due to favourable rainfall, which increased maize production. However, the persistence of the drought into 2016 raised the figures, according to MVAC 2015/16 assessment reports, even higher to 6.5 million people who would require food assistance<sup>2</sup>. In Malawi, the persistence of floods and droughts impacts domestic investment and food production.

Besides natural catastrophes, some analysts have mentioned planning and policy approaches that the Government of Malawi utilised. The new National Agriculture Policy states that:

‘...Of the total land cultivated, over 90 percent is under rain-fed agriculture, even though there are 407,862 hectares of land in Malawi that could potentially be irrigated. Over the years, some investments have been made in promoting irrigation farming in high-value crops, like sugarcane and rice, especially among small and medium scale farmers. Despite the potential for irrigation, the country had brought under irrigation only 104,000 hectares by 2014<sup>3</sup>.

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<sup>1</sup> Chabvungma S.D. Drought conditions and management strategies in Malawi, Malawi Country Report 2014: Centre for environmental Policy and Advocacy

<sup>2</sup> MVAC Assessment Report 2016

<sup>3</sup> Government of Malawi, National Agriculture Policy, 2016

Failure to plan for irrigation to increase crop production is a one further gap that the country is contending with. Additionally, apart from the planning and policy gaps, it has been observed that production and productivity of crops have generally been below the country's potential. The National Agriculture policy states that:

... maize yields were less than 1.3 metric tonnes (mt) per hectare (ha) before 2005/06 and increased to just above 2.0 mt per ha with the introduction of the Farm Input Subsidy Programme (FISP) in the 2005/06 production season. This made Malawi relatively food secure and self-sufficient. However, the current yields are still far below maize yield potentials of between five and ten mt per ha, implying a yield gap of three to eight mt per ha<sup>4</sup>.

It is within this context that for Malawi, issues of Food and Nutrition Security and Sustainable Agriculture (FNNSA) urgently require added efforts to what other players are already doing in the country.

**InnovAfrica**, a European Union Horizon 2020 project, is an 'Extension and Advisory Services (EAS)-based innovation project' striving to revitalize the research and extension systems in Africa by implementing best bet innovations in agricultural technology, extension and institutional approaches. It has established a strong EU-Africa Research and Innovation partnership on FNNSA to disseminate the acquired knowledge to be more widely disseminated and facilitate scaling out of results. Furthermore, **InnovAfrica** intends to contribute to policy-making for innovative EASs approaches and lay a foundation for regional and international cooperation in agricultural research and extension. Implemented from June 2017 to May 2021, it has a combination of sixteen European and African partner-institutions, and is realised in South Africa, Rwanda, Tanzania, Ethiopia, Kenya and Malawi as case countries where agricultural production intensification technology experiments will be conducted, with support from institutions and experts from Germany, the Netherlands, Italy, Zimbabwe, Kenya and Norway. It is coordinated by the Norwegian Institute of Bio-economy Research (NIBIO) and the International Livestock Research Institute (ILRI – BECA).

**InnovAfrica** links its efforts to the continuum of the Malawi Development agenda informed by overarching policies such as Vision 2020, the Malawi Growth Development Strategy II (MGDS II : 2012 – 2017), and the United Nation's Sustainable Development Goals (SDGs) Agenda 2030, which, amongst other pillars has pillar 2 – Zero Hunger, and Pillar 17 – Partnerships for the Goals.

In Malawi, the project will be implemented in two sites (Figure 1.1) namely Lobi, in Dedza, run by researchers from the University of Malawi, Chancellor College, and Ekwendeni, Mzimba run by the Soils, Food and Health Communities (SFHC) of Ekwendeni Hospital.

In this report, we present the Malawi Case Country by firstly exploring the contextual background as regards to policies, socio-economic issues, challenges, the stakeholders and actors who would contribute to the achievement of the intensification of agricultural production, before surveying the prevailing Sustainable Agricultural Intensification, Institutional Innovative Approaches, and Extension Advisory Services, leading to a description of technologies and extension advisory innovations used in the two sites of Lobi, Dedza in the central part of the country, and Ekwendeni, Mzimba in the northern part.

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<sup>4</sup> Ibid.

# MALAWI IN SOUTH EAST AFRICA



**Figure 1.1:** Map of Malawi showing study sites: Lobi, Dedza (Central Region) University of Malawi; Ekwendeni, Mzimba (Northern Region) Soils Food and Healthy Communities

## 2. Project Sites and Context

### 2.1 Context

R. Randall, IMF Representative in Malawi, in addressing the failing economic situation in Malawi, mentions some challenges that needed attention. Firstly, he points out that Malawi's economic growth needed to keep pace with a 2.8% to 3% per annum population growth needed if it was to achieve tangible poverty reduction and reach middle income status by 2020. However, with a limited domestic market, Malawi was not able to sufficiently generate a high growth rate without external linkages. Additionally, he pointed out the high susceptibility of natural shocks such as weather, aid and trade, and suggested that Malawi needed diversified productive base in order to mitigate vulnerability<sup>5</sup>.

Additionally, Malawi's poverty rates had minimally improved between 2004 and 2011, dropping from 52.40 % to 50.70 %.<sup>6</sup> Furthermore, being agricultural based, it depended on rain-fed agriculture, and 80% of crop production was unmechanised and done by smallholder farmers<sup>7</sup>. In terms of food security, 43% of the nation was food insecure, in varying rates of 30% as very low food secure, 8% as low food secure and 2% as marginally food secure<sup>8</sup>.

### 2.2 Project sites

The case study will be carried out in Mzimba District in the Northern region and Dedza District in the Central region (Figure 1.1). Mzimba District is a mid-altitude (1000-1200 m asl), sub-tropical ecosystem, with unimodal rainfall during the months of December to April (700-1300 mm/yr). Dedza District is a higher altitude (1200 – 1600 m asl) district along the Rift Valley.

The typical cropping pattern of smallholders in both sites has been maize (*Zea mays*) as the dominant staple crop, and other crops grown at low density including tobacco (*Nicotiana tabacum*), sweet potatoes (*Ipomoea batatas*) and groundnut (*Arachis hypogaea*). We have chosen these two sites in the mid - high altitude Miombo woodland region of Malawi as a focus for research, in part due to the evidence of frequent drought and flooding occurrences in these regions in the historical record, and the limited agricultural and social research in the north and central regions compared to the south. Another major reason for selection of these sites is the longer-term partnership with farmer groups in each area. A final reason for selection of Dedza District is the high level of child malnutrition and low dietary diversity (NSO 2014).

The two sites have some differences that will allow for useful comparison. Dedza District is located close to the capital city, Lilongwe, and has an active trading market, where many food crops such as beans and potatoes are sold. There are many NGOs and much more active extension in this district. Regular flooding is more of a challenge in this District. The majority of people are of Chewa ethnicity, and have a matrilineal and matrilineal system of land inheritance.

Mzimba District, which more often suffers from droughts, has more soils that are generally low in nitrogen. This region does not have the advantage of close vicinity to Lilongwe to allow for a major trading center as Dedza is. This area has also experienced a high level of food insecurity in the last two decades (Bezner Kerr 2005). Due to the distance from the capital there are fewer

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<sup>5</sup> Randall, R. 2013, Malawi: Economic Reforms and Economic Recovery, p. 7

<sup>6</sup> Ibid.

<sup>7</sup> Government of Malawi. 2016. Malawi National Resilience Plan, p. 3

<sup>8</sup> Government of Malawi. 2012. Integrated Household Survey, p. 188

organizations and government activities compared to the central and southern regions. The majority of people are from Tumbuka and Ngoni cultural-linguistic groups. The patrilineal system in operation in this region means that women do not own the land, but gain access to land through their husbands.

In both sites there is high levels of gender inequality, in that women have limited decision-making control over resources, high workloads, and there are relatively high levels of domestic violence. Women also care for young children, and often have to balance conflicting priorities between care for young children, food production, household work, income generation and other activities. In addition, women have a higher level of HIV/AIDS prevalence than men in southern Africa, and women are also disproportionately responsible for the care for people living with HIV-AIDS (Bezner Kerr 2008; Bezner Kerr 2005; Government of Malawi 2010).

### 3. Promising SAIs, IIAs, and EASs in Malawi Case Country

#### 3.1 Sustainable Agricultural Innovations in Malawi

Sustainability is viewed differently by environmentalists, sociologists and economists. However, the agreement is that the different views are complimentary in so far as they contribute to use of resources, natural or otherwise, to enhance agriculture for socio-economics responding to food, economic growth and sustenance of the resources (Chizimba 2010). In Malawi, there have been several endeavours in sustainable agriculture for food security, nutrition and economic growth. In the 1970s and 1980s, the Government introduced modern ways of farming, including conservation agriculture. Contour bands farming in crop production and use of intensive use of fertiliser saw food production rise, even at smallholder farmer level.

Besides that, by the turn of the millennium, Government, through the Ministry of Agriculture undertook a campaign for production of compost manure, and utilisation of compost manure called witchcraft of the garden (*ufiti wa mmunda*). In it, mounds of compost manure that appeared like grave mounds were done right in the fields. It's continuation was hampered, by among other things, labour intensity.

Further than that, there was a move to modify ridge formation and planting station spacing in the Government's introduction of Sasakawa 2000, which also included use of improved maize varieties. Its advantage laid in the increased yield per hectare. Challenges that went with this approach was labour intensity, especially in the 75 centimetres distance between ridges, which meant reworking the fields from the previously used ridge spacing of 90 centimetres between them.

Agroecological approaches to improve food security and nutrition for smallholder farmers include crop diversification and legume intercrops to improve food production, with evidence of positive impacts on livelihoods, nutrition, food security and ecosystem health (Snapp et al., 2010; Mhango & Dick, 2012). Legume diversification in Malawi has been found to build up soil quality, reduce fertilizer application, increase soil cover, maintain high yield and reduce yield variability (Snapp et al., 2010). A diverse cropping system also plays an important role in buffering farming households during times of drought (Brooks & Loevinsohn, 2011; Brooks, 2014). An agroecological approach also means building farmer capacity to improve soil quality through a range of methods (Bezner Kerr et al., 2007). Improved soil quality from organic material increases soil nutrient holding ability, alongside water carrying capacity during drought, which increases yield stability and increases the likelihood of production during low precipitation years (Snapp et al., 2014).

For **InnovAfrica** in Malawi, we propose that sustainable agricultural intensification approach includes experimenting with intercropping and planting systems of cereals and legumes, added to the intensive use of compost manure, inherited from previous projects implemented in the areas by Malawi Farmer to Farmer Agroecology and Soils, Food and Healthy Communities. However, while the intensification included intercropping in MAFFA and SFHC, **InnovAfrica** will focus on planting systems that increase yield per hectare for the different cereals and legumes, such as maize, millet, sorghum, intercropped with beans, soy beans, groundnuts, bambara nuts and green gram.

Farmer exchanges within Malawi would provide newly selected farmers to learn about legume diversification and agroecological methods already practiced in Malawi. We will use a pre-post longitudinal panel design for farmer testing of legume intercrops, which would also include community-based educational activities (i.e. farmer-to-farmer training on agroecology, distribution of legume seeds, community educational activities on child nutrition, and gender

equity issues). We will conduct detailed agricultural and social observations of 400 households to assess changes over time with the increased use of legume intercrops.

### **3.2 Institutional Innovations and Extension Advisory Services**

Paul Jere (2009) in a study called ‘Institutional Mapping for Malawi’, provided a detailed assessment of the structures and processes encompassing key Government institutions and civil society organisations in the area of development, environment and natural resource management. In identifying their roles, mandates and policies, he also highlighted their challenges and areas requiring support and action to address them...” (p.5).

He cited international government agencies like the United Nations, government ministries, and civil society organisations, which not only provided policy support and coordination, but also became involved in implementing development plans for Malawi, including agricultural production. The main point raised about the institutions was how they experimented with different innovations for growth.

For **InnovAfrica**, responding to the food and nutrition security through experimentation of different technologies is key. **InnovAfrica** builds on what MAFFA (Malawi Farmer to Farmer Agroecology) and SFHC did.

The unique farmer to farmer approach used in the project, in which the very food insecure people become lead farmers, sharing innovations and information became central. While the Government’s approach to the lead farmer approach utilised a so-called productive farmer to transfer information to other smallholder farmers, the creation of a village based farmer to farmer sharing system became very successful. While the Government’s approach ended working with ‘productive farmers’, the inclusion of those viewed as non-productive because of being food insecure helped to widen participation in farming activities as it empowered even those that were left out as key agricultural information leaders in society. The result of this approach saw a 6% improvement in food security amongst the 6000 participating farmers over a period of 5 years (Bezner-Kerr et. al: forthcoming).

Also a Farmer Research and Training Centre has been established by SFHC to facilitate farmer-to-farmer learning, experimentation and research, and this project would enhance capacity of this institution.

In **InnovAfrica** and other projects, we are now scaling out, working with thousands of farmers using a farmer-to-farmer approach (Bezner Kerr et al. 2010; Snapp et al. 2010).

## 4. Major Actors

Because of being a major socio-economic activity which determines the country's Growth Development Product (GDP), and export earnings through tobacco production, plus food security and nutrition, the agricultural sector has many players at many levels.

At governmental level, there is a linkage of stakeholders including government ministries, international partners, and non-governmental organisations. For example issues of agriculture are attended to by the Ministry of Agriculture in the major, but are also attended to by the Ministry of Environmental Affairs, Ministry of Education, and the Department of Economic Planning. International donors do provide policy and budgetary support through the Agricultural Sector-Wide Programme (ASWAP). ASWAP is a consortium consisting of international donors and all stakeholders including non-governmental organisations.

For **InnovAfrica**, a number of stakeholders, including those mentioned above will play a great role, not in disseminating results, but offering advice in the areas of policy, research, market information, and enhancement utilisable and agriculture sustaining technologies plus extension services. National Association of Farmers in Malawi (NASFAM) will offer support in market and technology information, while research complementation will be offered by The Lilongwe University of Agriculture and Natural Resources. The University of Malawi's Centre for Social Research and Biodiversity Conservation Initiative (BCI) would offer support in the areas of policy research. The project works hand in hand with the government Extension Aids Services by linking with agricultural field officers as district, area and local levels.

### *Development of Legume Products and Local Value Chain Links*

The newly established Farmer Associations will build local value chain links to market their agroecologically-produced legumes such as groundnuts, soya beans and pigeonpea. In addition they will test and market different legume food products as a means to increase value and subsequently their livelihoods. Some of these legume food products will be tested in the newly established Farmer Research and Training Centre in Ekwendeni.

## **5. Institutional and political setting**

Malawi is one of the only countries in Sub-Saharan Africa to contribute at least 10% of its national budget to agriculture, but the focus to date has largely been on conventional approaches. A national agricultural input subsidy program was launched in 2006 which provides coupons to smallholders for fertilizers and hybrid maize seeds at reduced prices. Food security increased (Fisher & Lewin, 2012), but the majority of producers remain net buyers of maize and inequality increased (Chirwa & Dorward, 2013; Holden & Lunduka, 2010; United Nations 2013). While overall food production increased, crop diversity declined, with evidence that maize and tobacco production increased at the expense of legume production (Chibwana et al., 2012). Lower crop diversity increases the risk of crop failure, lower dietary diversity, and in the case of legumes, less organic material and nitrogen added to the soils (Jones et al., 2014; Snapp, et al., 2010). The Malawi government has also prioritized smallholder agriculture in the Agriculture Sector Wide Approach (2006), the Malawi Growth and Development Strategy II (2011-2016), and the draft National Agricultural Policy (2014). The extension service has declined dramatically in the last few decades, with current estimates of 1 field extension worker responsible for between 2500 and 3900 farmers (CISANET 2013). A 'lead farmer' model was also initiated in the last decade, but lead farmers often lack adequate training or support to meet the needs of family farmers in their communities (CISANET 2013). Gender inequalities is also apparent in access to extension services (Fisher and Kandiwa 2014; United Nations 2013).

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