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The U.S. Government's Global Hunger & Food Security Initiative

Malawi: Desk Study of Extension and Advisory Services

Developing Local Extension Capacity (DLEC) Project
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ACRONYMS

ACL	Access Communications Limited
ADDS	Agricultural Development Divisions
AEDOs	Agricultural Extension Development Officers
ASPs	[Local] Agribusiness Service Providers
ASWAp	Agriculture Sector Wide Approach
ASWAp-SP	Agriculture Sector Wide Approach – Support Project
CAADP	Comprehensive Africa Agriculture Development Program
CADECOM	Catholic Development Commission
CIP	International Potato Center
CISANET	Civil Society Agriculture Network
CRS	Catholic Relief Services
DLEC	Developing Local Extension Capacity
DADOs	District Level Agricultural Development Officers
DAECC	District Agricultural Extension Coordination Committee
DAES	Department of Agricultural Extension Services
DAESS	District Agricultural Extension Services System
DEC	District Executive Committee
DCAFS	Donor Committee for Agriculture and Food Security
EPAs	Extension Planning Areas
FBO	Farmer Based Organization
FFSs	Farmer Field Schools
FRT	Farm Radio Trust
FUM	Farmers Union of Malawi
FICA	Flanders International Cooperation Agency
FSP	Food Security Policy
GoM	Government of Malawi
GDP	Gross Domestic Product
GFRAS	Global Forum for Rural Advisory Services

ICT	Information Communication Technology
IDAF	Institutional Development across the Agro-Food Sector
IFPRI	International Food Policy Research Institute
IHS	Integrated Household Survey of Malawi
IITA	International Institute of Tropical Agriculture
LUANAR	Lilongwe University of Agriculture and Natural Resources
MaFAAS	Malawi Forum for Agricultural Advisory Services
mFA	Marketing Field Agents
MTL	Malawi Telecommunications Limited
MGDS II	Malawi's National Growth and Development Strategies
MoAFS	Ministry of Agricultural and Food Security
MoAIWD	Ministry of Agriculture, Irrigation and Water Development
MEAS	Modernizing Extension and Advisory Services
M&E	Monitoring and Evaluation
MDTF	Multi-Donor Trust Fund
NAP	National Agricultural Policy
NNPSP	National Nutrition Policy and Strategic Plan
NASFAM	National Smallholder Farmers' Association of Malawi
NRC	Natural Resource College
NECS	Nutrition Education and Communication Strategy
PSP	Private Service Providers
R&D	Research and Development
SAFE	Sasakawa Africa Fund for Extension
SUN	Scaling Up Nutrition
SMS	Subject Matter Specialist
TNM	Telecom Networks Malawi
USAID	United States Agency for International Development
VSLAs	Village Savings and Loans Associations
WALA	Wellness and Agriculture for Life

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INTRODUCTION

Extension and advisory services (EAS) play a crucial role in improving agricultural production and alleviating rural poverty in Malawi. Due to this reason, both public and private sector providers are exploring best-fit strategies to serve farmers' needs. Drawing conclusions from existing literature as well as syntheses of contextualized conditions, this report provides an analysis of the EAS system in Malawi, including the role of different providers, the use of information and communication technologies (ICTs) and the extent of its market orientation, offering recommendations for the Government of Malawi, donors and other stakeholders including the private sector to strengthen the system and better serve smallholder farmers' needs.

The diagnostic report was written under Feed the Future's Developing Local Extension Capacity (DLEC) project, a network of the world's foremost extension experts that provides technical and strategic support to USAID missions and country extension and advisory service (EAS) systems to improve smallholder farmers' livelihoods. The five-year (2016-2021) leader with associates (LWA) project is designed to diagnose, test and share locally-customized, best-fit solutions for agricultural extension systems and services to help missions across the Feed the Future countries meet their objectives. Led by Digital Green in partnership with Care International, the International Food Policy Research Institute (IFPRI) and the Global Forum for Rural Advisory Services (GFRAS), DLEC is an action-oriented, evidence-based learning project. Three mechanisms work together to help reach the project's end goal of building the capacity of country actors increase access, quality and sustainability of EAS systems. These mechanisms are diagnostics, on-the-ground activities and communities of practice.

The mechanisms, including this report, employ the modified DLEC best-fit conceptual framework described below for structure and focus.

CONCEPTUAL FRAMEWORK

DLEC uses the best-fit adapted framework (Birner et al., 2009) shown in Figure 1 to guide analyses and to determine EAS areas of focus for on-the-ground activities that are within DLEC's manageable interests. We use the framework to guide DLEC's learning agenda because it outlines EAS system parameters and identifies the levers of change within it. In each country, the levers of change will differ. The best-fit framework allows us to analyze a country's EAS system, begin conversations with local stakeholders to understand the state of their EAS system and where the critical levers for change might be, and analyze and recommend systems change. The framework also enables us to compare across countries.

The framework identifies characteristics of EAS systems on which policy decisions must be made, and the frame conditions to be considered when making decisions. The frame conditions include: the political economy, the business/market and civil society environments, agroecology and the agricultural innovation system. The framework suggests an impact chain approach to analyze the performance and impact of EAS.

The critical factors for DLEC to understand are the EAS characteristics shown in the framework. Referring to Figure 1, the **governance structures and policy environment** variables (box F) refer to the institutional set-up of EAS, or the "rules of the game." The **organizational and**

management capacities and cultures variables (box G) refer to the capacity for provision of advisory services, and way in which the services are managed within the respective governance structures. These are essentially the “players” of the game, their abilities and the way they play.

Advisory methods (box H) are used by EAS field staff in interactions with farmers. Advisory methods can be classified according to various aspects, such as the number of clientele involved (individuals, groups); the types of decisions on which advice is provided (specific to the production of certain crops or livestock; managerial decisions; group activities, etc.); and media used (radio; internet, etc.).

Market engagement (box I) refers to the market elements that EAS can use to better serve farmers, such as aggregation, finance, price discovery, and input and output markets. **Livelihood strategies** (box J) refers to how EAS develops content to meet the unique needs of clientele and how gender roles impact farming strategies. **Community engagement** (box K) refers to EAS services based on local social institutions, mechanisms to articulate demand and community psychosocial characteristics.

The frame conditions (boxes A-E) are outside DLEC’s manageable interests. The “manageable” outcomes of this framework include the system-level performance areas (box L). The outcomes and ultimate impact at the farm household level (boxes M and N) are outside the core DLEC leader award manageable interests.

Further the building blocks for EAS are also useful in framing recommendations for engagement. They are as follows:

- ◆ Customer – farmers and their unique needs
- ◆ Content – knowledge being shared
- ◆ Methods – how information and knowledge is shared
- ◆ Provider – who shares information and knowledge

This report also addresses cross-cutting EAS issues, such as women and youth engagement, climate change resilience, food and nutrition security, and use of information and communication technologies (ICTs).

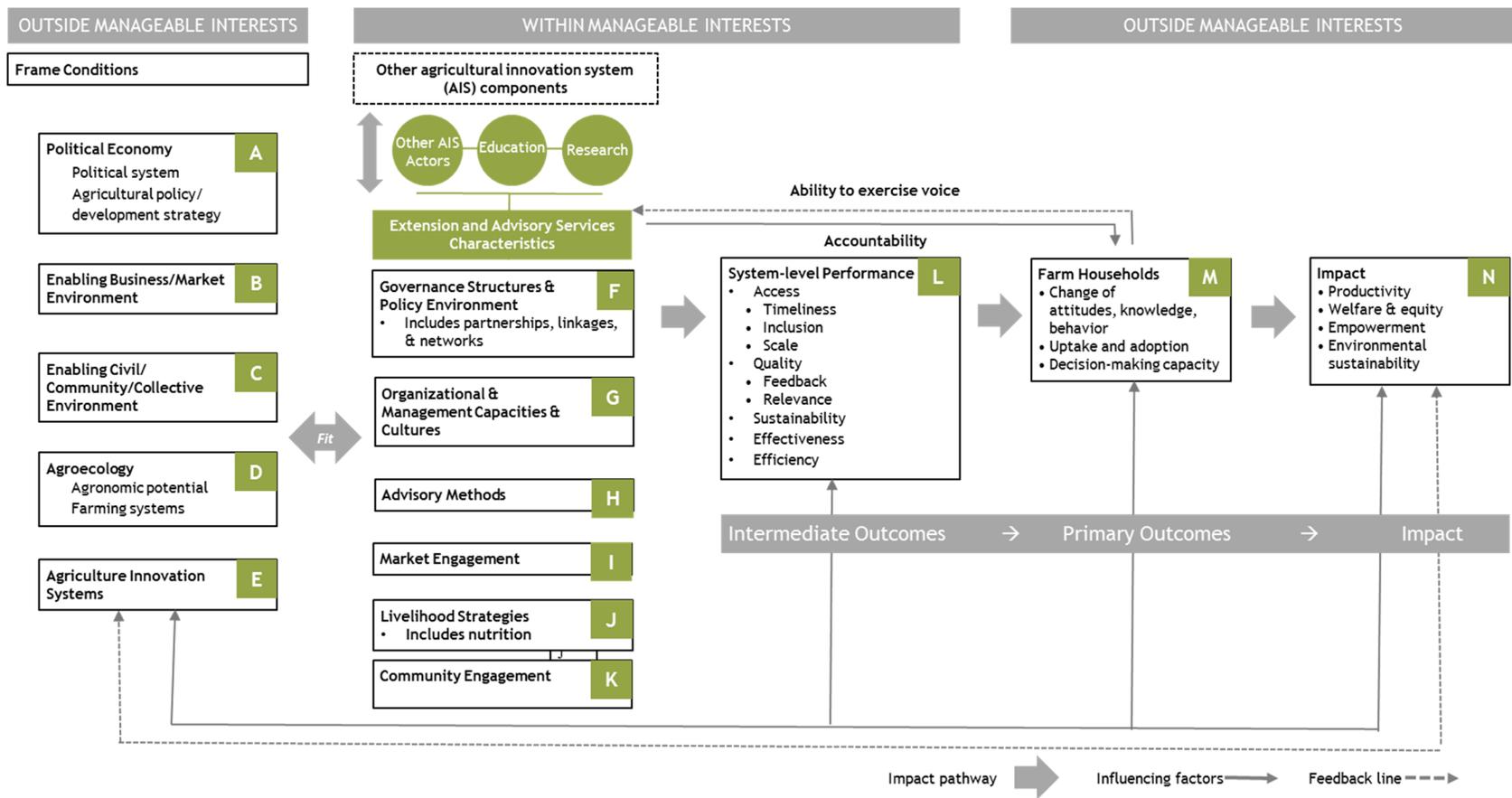


Figure 1. Conceptual Framework for the Study

Source: Adapted from Birner, et al., 2009.

METHODS

This report is based on a 2017 review of existing literature on the status of Malawi's EAS system and providers. The review includes annual reports, monitoring and evaluation reports, academic studies, and government policies published over the past five years by both local and foreign governments, non-governmental organizations (NGOs) and universities. Several stakeholders were contacted via Skype or email to provide further information. This report does not include any primary data or direct observation of EAS activities in Malawi.

BACKGROUND

Malawi is a landlocked country in Southeast Africa (see Figure 2) with Zambia to the west, Mozambique to the southeast and Tanzania to the northeast. It has 28 districts in three regions. As of 2015, its population numbered 17 million people, with an estimated population of 21 million by 2020 (NSO, 2008). With 146 people per square kilometer of land area, Malawi has one of the highest population densities in the region (UN, 2015). Northern Malawi has a population density of 69 people per square kilometer, and comprises 13 percent of the country's total population. The central region has a population density of 194 people per square kilometer, and comprises 42 percent of the country's total population. The southern region has a population density of 258 people per square kilometer, and comprises 45 percent of the country's total population (Ricker-Gilbert, Jumbe & Chamberlin, 2014). The country's official language is English, though most farmers in rural Malawi speak Chichewa and other local dialects. Adult literacy is 69 percent for women and 79 percent for men (Government of Malawi (GoM), 2012a).

Around two-thirds of the population live on less than US\$1.25 per day, and most of the poor live in rural areas (World Bank, 2013). Agriculture-based economic activities are the main sources of livelihood for 84 percent of the population in Malawi (Ministry of Agriculture and Food Security, 2011). The results of the national food security assessment conducted by the government for the 2015-2016 consumption period indicate that over 17 percent of the total population is food insecure (Ministry of Agriculture and Food Security, 2011), and the Economist Intelligence Unit assess Malawi as being highly food insecure with a ranking of 105 out of 113 countries in 2016 (The Economist Group, 2017). Malawi's Gross National Income per capita reached US\$350 in 2014 (World Bank, 2015). The World Bank's "Ease of Doing Business" indicator ranks Malawi 133 out of 190 countries in 2017, eight places higher than in 2016, reflecting an increase in opportunities to do business in Malawi.



Figure 2. Malawi District Map

Source: d-maps.com

A 2013 review indicates that Malawi has 5.79 million hectares of agricultural land, which comprises 61 percent of the country's total land (FAO, 2015). Around 4.5 million hectares of agricultural land are cultivated by smallholder farmers (Ricker-Gilbert et al., 2014). The per capita cultivated land reduced from 0.35 hectare per person in 1961 to 0.24 hectares in 2013 (FAO, 2015). As a proportion of gross domestic product (GDP), agriculture has varied over the last two decades, dropping from 48.9 percent in 1993 to 25.08 percent in 1994, the lowest point in the country's history since 1960, and to 29.49 percent in 2015 (World Bank, n.d.). In 2014, 60 percent of agricultural production value came from crops and the rest from fisheries, livestock and forestry, in that order. The main food crop is maize. In dry areas, people also grow millet and sorghum as food crops (Save the Children, n.d.). Tobacco has been and remains to be, the leading cash crop in the country's economy, accounting for around 63 percent of the country's total export incomes (FAO, n.d.). Tea and sugar are other key cash crops accounting for eight percent and seven percent of export earnings, respectively. Nearly all agriculture is rain-fed, making the country susceptible to climate variability and change (Masangano & Mthinda, 2012; Snapp, 2014). Decline in soil fertility due to continuous cultivation and soil erosion are some of the key threats to food security as well as to the economic growth and environmental wellbeing of the country (Ngwira et al., 2013). Low crop productivity and small farm size cause and reinforce the high rural poverty rate.

Malnutrition and micronutrient deficiency are serious issues in Malawi. Per the 2010 Malawi Demographic and Health Survey (NSO, 2011), 47 percent of children under five years of age experience chronic malnutrition with higher prevalence (48 percent) in rural areas, 17.4 percent of children under five years of age are underweight and four percent are wasted. Per the 2001 National Micronutrient Survey, more than 38 percent of the population has vitamin A deficiency, with more than half that number consisting of children under five years of age and expectant women (NSO, 2011).

Rural populations in Malawi often lack reliable and accessible information sources that can help increase their agricultural productivity (Steinfeld et al., 2015). Radio is the most used ICT channel for rural Malawians to access agricultural information. Malawi has more than 30 radio stations run by both government and NGOs with wide range of reach. Around 75 percent of radio stations have farming-related programs (Sigman et al., 2014). In total, 42.2 percent of rural households had access to radio in 2014. Both public and private radio stations offer programs for agriculture, and these programs are commonly sponsored by the government, NGOs or donor agencies (Chapota, Fatch & Mthinda, 2014).

Ownership of a TV set or laptop is rare in rural Malawi; most internet connections are purchased via mobile-broadband subscriptions. According to the International Telecommunication Union, mobile and internet subscribers are a low proportion of the population at 35.3 percent and 9.1 percent, respectively (International Telecommunication Union, 2015). These numbers can be even lower in rural areas. A baseline survey conducted in central Malawi in 2015 showed the rate of mobile phone penetration per household was below 25 percent (Steinfeld, 2015). Furthermore, the majority of farmers lack basic mobile phone literacy (i.e., sending text messages or making phone calls) (Steinfeld, 2015).

Currently, Malawi has four mobile phone operators: Airtel Malawi, Telecom Networks Malawi (TNM), Malawi Telecommunications Limited (MTL) and Access Communications Limited (ACL) (Malawi Communication Regulatory Authority, 2015). In 2014, more than half of mobile phone users subscribed to Airtel and 43.7 percent chose TNM. MTL owns most key infrastructure in the

inter-network connections (GSMA, 2014). The other two service providers shared the remaining 0.3 percent of the market. Only one-third of the mobile phone users own a device capable of accessing the internet. Only 9.8 percent of the population had access to electricity in 2012, and more than two-thirds of rural users charge their mobile phone at charging kiosks, which are commonly powered by car batteries or solar panels (Malawi Communication Regulatory Authority, 2015). Steinfield (2014) found that some mobile phone subscribers owned a SIM card but need to borrow other people's mobile phones to use their card simply because they cannot afford a device. Therefore, these users have limited access to phone services. The majority of respondents subscribed to prepaid phone services. The prepaid and post tariffs in Malawi are some of the highest in the region: the cost to make 30 calls and send 100 texts messages is four times more expensive than it is in Kenya, and twice as much as it is in South Africa (ResearchICTAfrica, n.d.).

RESULTS

Frame Conditions

Malawi has had a strong focus on agriculture and food security since independence, with policies and structures giving guidance to the sector. More recently specific policies on nutrition, gender and EAS have been produced.

Malawi's national development framework, Vision 2020, aims to build Malawi into "a God-fearing nation, secure, democratically mature, environmentally sustainable, self-reliant with equal opportunities for and active participation by all, having social services, vibrant cultural and religious values and being a technologically driven middle-income economy" (Malawi National Economic Council, 1998). Malawi's National Growth and Development Strategies (MGDS II) aim to create wealth and reduce poverty through economic growth and infrastructure development. Other country policies focused on agricultural development include:

- National Agricultural Policy (2011 and updated in 2016) – a clear and comprehensive policy in agriculture, which guides Malawi to achieve transformation of the agriculture sector
- Malawi Agricultural Sector Wide Approach (ASWAp, 2011 – 2015) – the priority investment program for the agricultural sector, aimed at six percent annual agricultural growth and allocating 10 percent of national budget to agriculture in line with Comprehensive Africa Agriculture Development Program (CAADP) and the Malabo Declaration¹
- Agricultural Extension in the New Millennium (2000 –) – the existing agricultural extension policy, although a new one is currently being developed
- The District Agricultural Extension Services System (DAESS, 2006 –) – a guide for implementing a demand-driven and decentralized EAS system
- Agriculture Sector Gender, HIV and AIDS Strategy (2012 – 2017) – a guide with components aiming to increase percentage of women extension workers and women who have access to extension services; and to develop specific EAS strategies targeting vulnerable households having members living with HIV

¹ https://www.au.int/web/sites/default/files/documents/31247-doc-malabo_declaration_2014_11_26.pdf

- Food Security Policy (2006 –) – indicating roles of the extension system in promoting adoption of agricultural technologies, sustainable agriculture, livestock health and other areas to ensure food security in Malawi

The two policies below recognize nutrition is a cross-cutting issue and call for joint planning for an agriculture-nutrition system and the positioning of nutrition specialists in the EAS system.

- National Nutrition Policy and Strategic Plan (2007 – 2011) – a plan addressing nutrition disorders and deficiencies among the population
- Nutrition Education and Communication Strategy (2011 – 2016) – an implementation guide of the Scaling Up Nutrition (SUN) Movement in Malawi

An important government initiative is the Farm Input Subsidy Program (FISP). Because national food self-sufficiency is a high priority of the GoM, the goal of FISP is to enhance food self-sufficiency by increasing smallholder farmers' access to and use of improved agricultural inputs, thereby boosting the incomes of resource-poor farmers (Chibwana and Fisher, 2011). FISP is administered through vouchers with which eligible households purchase inputs, such as fertilizer, hybrid seed and pesticides at reduced prices. The program targets smallholder farmers who own land and are legitimate residents of their villages. In a study on their impacts, Chibwana and Fisher (2011:1) found that poor households that received FISP vouchers were better off than non-recipients and that receipt of FISP vouchers was associated with increased fertilizer use, higher maize yields, and expansion of maize production.

A consensus of findings among existing literature indicates that most of the key elements of these policies, related strategies and approaches are not implemented or are poorly implemented due to lack of implementation documents, little or no budgets and minimal enforceability and accountability. Furthermore, most are old or ending soon, with no discrete plans to review or revise them apart from the agricultural extension policy which is current being revised (more in the next section).

In 2014, Malawi invested 0.53 percent of total agricultural GDP in agricultural research and development (R&D), despite rapid population growth, a shrinking natural resource base, climate change effects on agriculture and changing consumption patterns (Beintema, Makoko & Gao, 2016). In comparison, in 2008, the agricultural research intensity ratio² for middle-income countries was 0.6 percent and for high-income countries was three percent (Flaherty, 2011). Due the slowing economic growth, Malawi's agricultural research spending³ has fallen substantially since 2012. In 2014, over 64 percent of the agricultural R&D funding came from the government, which has steadily fallen since 2012. Donors and development banks contributed one third of the funding in the same year. In 2015, government institutions accounted for around 55 percent of the Malawian agricultural researcher hires.

² Figure calculated by a country's agricultural research spending relative to its agricultural gross domestic product

³ In inflation-adjusted terms

Higher education institutes have hired an increasing number of agricultural researchers since 2000. In 2015, around 37 percent of the Malawi researchers focusing on agricultural R&D worked in these education institutes. More than half of the agriculture research focuses on crop production; the three most studied crops include tobacco, beans and maize (Beintema, Makoko & Gao, 2016).

International and domestic public research institutes support the EAS system. For example, the International Food Policy Research Institute (IFPRI) together with the erstwhile USAID project Modernizing Extension and Advisory Services (MEAS) conducted policy reviews and impact evaluations on Malawi's EAS system. Other research centers, such as the International Potato Center (CIP) and the International Institute of Tropical Agriculture (IITA), work with EAS and NGOs to promote new crop varieties (such as pigeon peas and pro-vitamin A orange-fleshed sweet potatoes) and increase the production, consumption and marketing of these new crops.

Domestic research institutes include:

- Lilongwe University of Agriculture and Natural Resources (LUANAR)
- Natural Resource College (NRC)
- Agricultural Research & Extension Trust (ARET)
- Chitedze Research Station
- Bvumbwe Agriculture Research Station
- Centre for Tick and Tick-Borne Diseases (CTTBD)
- Fisheries Research Station (FRS)
- Department of Agricultural Research Services (DAR)
- Forestry Research Institute of Malawi (FRIM)
- Tea Research Foundation of Central Africa (TRFCA)

Only 20 percent of the agricultural researchers were female in 2014, and 13 percent of the research focused on socioeconomic-related issues in agricultural development. The main funding sources for agricultural research are the GoM and donor agencies.

The Lilongwe University of Agriculture and Natural Resources and the Natural Resource College are two main institutes providing higher education to agricultural extension workers. More details on their training is found in the next section.

Extension and Advisory Services System

Governance Structures and Policy Environment

As with general agricultural policies, Malawi has always put emphasis on funding, structures and policies for EAS. Funding from international institutions such as the World Bank contributed to the training and visit system of extension in the 1980s, which was removed along with structural adjustment programs in the 1990s. Since then a variety of donors and NGOs, along with the government, fund a variety of approaches. The first EAS policy came out in 2000 and another one is currently being developed. Items for discussion at a March 2017 strategy workshop held by the Malawi Forum for Agricultural Advisory Services (MaFAAS) included:

- Based on the current extension policy and the District Agriculture Extension Services System (documents attached), what elements should continue being implemented, and what should be improved?
- How should coordination of extension in Malawi be conducted?
- What should be done to ensure standardization and quality control? Is there a need to regulate extension services and how? What should be done to harmonize extension approaches and methods? Which extension methods and approaches should be recommended for upscaling (e.g., Farmer Field School, Farmer Business School, Lead Farmer) and why?
- What should be the functions and roles of various categories of actors in extension service provision? What should be the role of the Department of Agricultural Extension Services? What should be the role of the Malawi Forum for Agricultural Advisory Services?
- How should extension respond to current and emerging issues that affect agriculture such as climate change?⁴

The 2000 national agricultural extension policy “Agriculture Extension in the New Millennium: towards Pluralistic and Demand-Driven Services in Malawi” guides the nation’s agriculture extension activities. This EAS policy was developed by the Department of Agricultural Extension Services with financial and technical support from the GTZ⁵. The policy aims to transform the provision of EAS in Malawi. It states the EAS mission to: “provide pluralistic, demand driven extension services and to promote equalization and coordination in service provision to achieve food security at household level thereby reducing poverty” (Ministry of Agriculture and Irrigation, 2000, cited in Nankhuni 2016 p.1).

To achieve this mission, the policy emphasizes that:

1. An EAS system works toward the transformation and modernization of the agricultural sector from subsistence smallholder farming to commercial profit-oriented agribusinesses.
2. Service providers respond to and provide specialized services to fulfill farmers’ diverse demands.
3. All farmers must have access to high quality extension services, and farmers who lag behind in their agricultural production and in the welfare of their households receive support from service providers.

⁴ MaFAAS letter to stakeholders dated 21 March 2017.

⁵ Deutsche Gesellschaft für Technische Zusammenarbeit or the German Agency for Technical Cooperation, now the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); in English: German Corporation for International Cooperation

4. A pluralistic EAS system commercializes and privatizes agricultural extension services, and engages both public and private providers who can use diverse methods to provide services.
5. A decentralized EAS system supports participatory planning and the implementation of agricultural programs with a special emphasis on supporting farmer-based organizations (FBOs).
6. An EAS system supports market liberalization.
7. A clear and rigorous monitoring and evaluation system assesses the quality of the EAS and the implementation of the 2000 national agricultural extension policy.

However, 16 years after the introduction of the 2000 national agricultural extension policy, the government and other stakeholders have only implemented a minimum of its elements. Few goals envisioned by the policy have been achieved, and existing evidence suggests that extension service provision across multiple providers—including both public, private and civil society agencies—remains top-down and supply-driven. Service providers often lack knowledge of the farmers’ individual demands, and thus fail to integrate farmers’ needs into service design and implementation (Masangano & Mthinda, 2012; MEAS, 2012; Chowa Garforth & Cardey, 2013; Ragasa, Mazunda & Kadzamira, 2015). Ragasa and Niu (2017) found that only 14 percent of the farmers in their study reported that the recommendations they received from extension providers were based on their own requests, while over one-third, if not higher, of farmers said they had particular demands of extension messages, mostly related to agricultural technologies that farmers were familiar with, such as pit planting, manure making and intercropping.

Moreover, the Department of Agricultural Extension Services (DAES) remains the main provider of advisory services for farmers in Malawi. Large portions of farmers, especially disadvantaged farmers, do not have access to services. The system lacks frequent and rigorous monitoring and evaluation (M&E) protocols in terms of assessing its quality and identifying farmers’ needs and demands (Chowa Garforth & Cardey, 2013; MEAS, 2012; Kaarhus & Nyirenda, 2006). The DAES uses dual accountability structures, which separate the technical and financial lines of management. This structure threatens coherence in decision-making and budget allocations (Chinsinga & Cabral, 2010; Kaarhus & Nyirenda, 2006). The system also lacks strong coordination, which could help in reducing duplication, identifying opportunities in complementarities and synergies, and filling gaps across agricultural advisory service providers locally and nation-wide (Chowa Garforth & Cardey, 2013). A policy review document is being developed by DAES in 2017 as preparation for a new extension strategy.

In 2004, the GoM published the “Agricultural Extension Implementation Guide” to direct the implementation of the 2000 national agricultural extension policy. This guide includes an institutional framework for agricultural extension coordination and implementation of the 2000 national agricultural extension policy (Nankhuni, 2016). GoM, together with donor agencies and

NGOs, implemented projects in line with this implementation guide, such as the Agriculture Sector Wide Approach – Support Project (ASWAp-SP)⁶.

The implementation guide includes an institutional framework for DAES to operationally coordinate with district-level government, using the DAESS model. This model works through two district-level structures: District Agricultural Extension Coordination Committee (DAECC) and the District Executive Committee (DEC). The 2000 national agricultural extension policy created DAECC, a voluntary consultative body appointed by the district commissioner or, more often, his or her representative, typically the District Level Agricultural Development Officer (DADO), and is focused on coordination and coherence of extension efforts within the district. The DEC organizes an annual meeting to make a district-level development plan. Stakeholders including representatives from all government ministries and departments, NGOs represented within the district and co-opted members decide on the allocation of decentralized financial resources from the Ministry of Local Government during the meeting. The DAESS guidelines promote a decentralized financial structure in which district-level extension activities are funded by sources other than those supported by central government. These sources include the private sector and farmer-based organizations. The DEC also reviews proposals for local development initiatives from NGOs and other development efforts. The Ministry of Agriculture, Irrigation and Water Development (MoAIWD) provides funding to District Assemblies for their agricultural program. While the size of this budget has grown over the years, District Assemblies often receive a smaller amount than the budget stipulates, and the timing of disbursements remains unreliable (Kaarhus & Nyirenda, 2006). There are also DAECC and stakeholder panels at district and area level. The committee and panels aim to integrate EAS into the district assembly. The stakeholder panel represents all stakeholders in the agricultural sector including farmers, farmer organizations and NGOs. This panel offers farmers opportunities to demand service directly from both private and public service providers, and hold these providers accountable to farmers (Masangano & Mthinda, 2012). However, studies show that most of these decentralized structures and panels are basically nonfunctional due to a lack of funding (Chinsinga & Cabral, 2010; Masangano & Mthinda, 2012; MEAS, 2012).

The EAS system is underfunded in Malawi. The government has inefficiently allocated existing government budgets to underfunded areas, such as EAS. Major funding sources are the GoM, donor agencies and projects and the private sector. The GoM spent US\$ 4.2 million on agricultural extension in 2012-2013, which constituted 1.6 percent of its annual agricultural spending. This amount is much lower than the spending on the government's Farm Input Subsidy Program, which cost the GoM US\$161 million in the same year, nearly 10 percent of its national budget, and 40 times more than spending on the DAES (raw data from MoAIWD, cited in Ragasa et al., 2015). This huge spending on FISP leads to the underfunding of other public agricultural services and programs. Messina, Peter and Snapp (2017) suggested that FISP may not be a sufficient and sustainable strategy for maize production improvement in Malawi. Ricker-Gilbert and Jayne (2016) suggest that inadequate agricultural extension activities might in part explain the inconsistent impact

⁶ Under the CAADP process MoAF) developed the Agriculture Sector Wide Approach (ASWAp), which provided a framework for further investments across the agriculture sector. The ASWAp Support Project (ASWAP SP) was launched in 2008 with initial funding from Norway and the World Bank.

achieved by FISP. Most of the DAES' budget was spent on salaries⁷ (96 percent) in 2011, leaving almost no funds to implement extension activities or provide extension workers proper training and regular retraining to serve farmers' demands for extension services and to coordinate responses to their demands.

International donor agencies provide substantial resources for improving the agricultural extension system. The averaged direct investment in EAS is around US\$ 1.5 million per year (Ragasa et al., 2015). The key donors providing financial contributions to government extension services are Flanders International Cooperation Agency (FICA), Irish Aid and USAID. Together with other bilateral and multilateral donors, these three donors also financially support the private sector and NGO-based extension and advisory services. One example of collective donor support to EAS is the Multi-Donor Trust Fund (MDTF), supervised by the World Bank with additional contributions from Flanders, the European Union, Norway, Ireland and USAID. This fund provides technical and financial support to the Ministry of Agriculture for the implementation of the ASWAp (Flanders Department of Foreign Affairs, n.d.). The total budget for 2017-2018 is five million Euros. A larger umbrella group, the Donor Committee for Agriculture and Food Security (DCAFS), also aims to coordinate and harmonize efforts among the following members of the group: the six MDTF members plus World Food Program, FAO, Japan International Cooperation Agency and the African Development Bank.

Major EAS Providers⁸

Agricultural extension and advisory services in Malawi are provided by public, private, non-profit organizations and donor-funded projects. Separately and together, these key actors provide farmers technical information and supporting services geared toward improving rural livelihoods. Below, we review the main providers of EAS in Malawi.

Public Sector Actors

The DAES is the public EAS provider and the only organization working nationwide and across all agricultural value chains, as well as other service areas, such as health and nutrition (Sigman et al., 2014). As shown in Table 1, DAES is organized around a four-tier administrative hierarchy: national, agricultural development divisions (ADDs), districts and extension planning areas (EPAs). Within the public sector, research institutes offer support to the EAS system, including training extension staff, developing new technologies and offering insights toward increasing the efficiencies of the country's EAS. These institutes have limited direct contact with farmers. Some of them partner with EAS and NGOs to deliver extension information and provide technical assistance to farmers.

⁷ An EPA extension worker's monthly salary is MWK 80,000 (approximately US\$ 109), varying with years of service. A subject matter specialist with graduate degree earns MWK 150,000 (approximately US\$ 204) per month (government stakeholder personal communication May 2017)

⁸ DLEC also conducted a key stakeholder mapping exercise that identifies key EAS providers in Malawi.

Table 1. A Four-tier Administrative Hierarchy of the DAES

Administrative level	No. of offices	Leadership	Resources	Coordination
National Level	1	Led by a director assisted by five technical branches: Extension Methodology and Training Services (EMS), Agricultural Gender Roles Extension Support Services (AGRESS), and Food and Nutrition (FN), the Agricultural Communications and Agribusiness branches		
Agricultural Development Divisions (ADDs)	8	Led by program managers, chief and assistant chief agricultural extension officers, as well as principal subject matter specialists (SMS) representing each of the DAES technical branches	Office computers, printed extension resources, monthly communication allowance and shared use of a four-wheel-drive vehicle	
District Level Agricultural Development Officers (DADOs)	28	Led by DADOs, their assistants and SMS for each of the DAES branches and other MoAIWD departments	Office computers, printed extension resources, monthly communication allowance and four-wheel-drive vehicle to carry out their field activities	District Executive Committee (DEC) District Agricultural Extension Coordination Committee (DAECC)
Extension Planning Areas (EPAs)	187	Led by agricultural extension development coordinators (AEDCs) who supervise and coordinate the activities of the agricultural extension development officers (AEDOs), and the frontline extension staff	AEDOs have bicycles and monthly allowances for personal cell phones	

Source: Sigman et al., 2014

Private-Sector Actors

Private-sector EAS actors include tobacco, cotton and other agricultural commodity production and purchasing companies, as well as agricultural input companies (e.g., seeds, fertilizers, pesticides, equipment), and agricultural input retailers (referred to here as “agro-dealers”). Simpson et al. (2012) showed that private-sector actors gradually increased their investment in EAS provision mainly because of the increasing return on investments in traditional export commodities and emerging markets, as well as growing input usage among Malawian farmers. The authors divide private-sector actors into two types: pull or push business models, which determine the kinds of extension services these actors provide to farmers. Agricultural commodity production companies, such as tobacco companies, often use a pull-based business model “exhibited through outgrower schemes and contract farming” (Simpson et al., 2012, p.11). These companies commonly offer smallholder producers inputs and a full range of technical support in exchange for purchasing the farmer’s output of tobacco and maize. Simpson and colleagues (2012) found farmers can benefit from the input and services provided by these companies. On the other hand, agricultural input companies and input retailers often use a push-based business model. These actors focus on the provision of additional value-added advisory services, such as advising related to consumers’ input purchasing decisions. A comparison of the EAS provided by these two types of private actors are listed below:

Table 2. Two Types of EAS Provided by Private-Sector Actors

	Pull-based business	Push-based business
Business type	Tobacco, cotton and other agricultural commodity production and purchasing companies	Agricultural input companies (e.g., seeds, fertilizers, pesticides, equipment) and agricultural input retailers
EAS methods	A similar structure for EAS delivery as the DAES and NGOs – employing field technicians to work with farmers in groups	Demonstrates crop varieties and inputs, such as fertilizer in strategic areas of the country, field days Engage AEDOs in field organization
Motivation to provide EAS	Maintain a constant supply of a primary commodity Maintain growers’ productivity and sustainability	Sales through brand loyalty and customer satisfaction Attracting and retaining clients
Content/resources offered to farmers	Providing input and technical supports on the commodity crop and sometime on maize (the main crop of Malawi)	Varietal performance information What to purchase and how to use various products

Consumers	Commodity growers	Input purchasers
M&E	Field technicians collect production and activities data, enter on a digital tool and send to office headquarters (only tobacco companies have the M&E)	None

Source: Simpson et al., 2012

Significant private actors in the EAS system include:

- Alliance One International, operates one of the largest networks of growers, buyers, processing facilities and distribution operations in the world; <http://www.aointl.com/>
- Malawi Bio Energy Resources Ltd, establishing a national scale bio fuel business in Malawi; <https://www.growafrica.com/organizations/bio-energy-resources-limited-berl>
- PANNAR, working with seed; <http://www.pannar.com/>
- Seed Co., working with seed; <http://seeds.seedco.co/malawi>
- Farmer's World, providing inputs; <http://www.farmersworld.net/>
- The Smallholder Farmers Fertilizer Revolving Fund of Malawi, importing, distributing, retailing and wholesaling fertilizer, seed, farm implements, agrochemicals (SFFRFM); <http://www.sffrfm.org/corporate-profile.html>

Civil Society Actors and Donor Projects

Civil society actors, including NGOs, farmer-based organizations and donor agencies, are crucial players in the EAS system. A comprehensive list is included below, with more information found in the Malawi EAS stakeholder mapping matrix.⁹ International NGOs offer EAS with a large number of domestic NGOs working independently or under subcontracts with the international NGOs. The international and domestic NGOs offer broad technical, organizational and financial support to farmers. They function on external funding and usually operate within short-term project cycles; thus the sustainability of their efforts is a major issue.

Several FBOs, such as the Farmers Union of Malawi (FUM) and the National Smallholder Farmers' Association of Malawi (NASFAM), provide EAS and influence EAS-related policy issues. NASFAM runs a commercial entity managing all commercial activities, a development entity, a registered trust and a NGO implementing social and community development activities (NASFAM, n.d.). However, the division of activities between each branch is not clear. The NASFAM includes about 108,000 smallholder members organized into 43 membership associations. These farmers work in small clubs consisting of 10 to 20 farmers each. The clubs are grouped into group action committees and

⁹ The matrix will be available at <http://www.g-fras.org/en/world-wide-extension-study/africa/eastern-africa/malawi.html>.

further aggregated into associations. Despite its large reach, the 2013 Integrated Household Survey (IHS) shows that less than one percent of households receive EAS from FBOs, like NASFAM.

The MaFAAS provides a network and platform for EAS providers from different sectors to share information, collaborate and advocate for EAS nationally. It links to the African Forum for Agricultural Advisory Services and the Global Forum for Rural Advisory Services, thus providing a channel of information between the different geographic levels. MaFAAS has organized annual events and professional workshops including the consolidation of inputs to reform the 2000 national extension strategy in March 2017. Currently, MaFAAS is heavily involved in the revision of the national agricultural extension policy.

In Malawi, high concentrations of donor efforts have led to a burgeoning of separate projects implemented by NGOs and private contractors, many of which have EAS components. However, they do not necessarily emphasize the support and development of the EAS system, but rather have narrower objectives, such as promoting adoption of improved technologies. Selected civil society actors are outlined below:

The USAID-funded Strengthening Agriculture and Nutrition Extension Services Activity (SANE¹⁰) project, implemented by the University of Illinois, runs from 2015-2020 and has a budget of US\$ 15 million. SANE strengthens the capacity of the DAES to mobilize and work with service providers to deliver agricultural and nutrition extension and advisory services more effectively and in a coordinated manner in the Feed the Future Zones of Influence (target districts of Mchinji, Lilongwe Rural, Dedza, Ntcheu, Mangochi, Balaka, Machinga, Blantyre Rural, Chikwawa and Nsanje). Its reach is therefore mainly to DAES and MaFAAS.

Another USAID-funded project is the United in Building and Advancing Life Expectations (UBALE). It runs from 2015 to 2019 and has a total budget of 63 million dollars. Catholic Relief Services leads implementation of the project, which works to increase the food security of vulnerable households; improve the nutrition of children under two years, pregnant women, and lactating mothers; and strengthen the disaster risk management of communities in Malawi. The project expects to reach about 250,000 vulnerable households in three districts: Chikwawa, Tsanje and Rural Blantyre.

Also working in extension in Malawi is the Scaling Seeds and Technologies Partnership in Africa (SSTP), a US \$47 million partnership between USAID and the Alliance for a Green Revolution in Africa (AGRA) launched in 2013 and working to accelerate smallholder farmer access to transformative agricultural technologies. SSTP aims to increase the production of quality seeds by 45 percent in four years and ensure that 40 percent more farmers gain access to innovative agricultural technologies.

Palladium commenced the Feed the Future Malawi Ag Diversification Activity in 2016. It is a five-year project. The project budget is unknown; however, Feed the Future Malawi budget includes \$30 million in new agricultural loans and \$40 million in new investments. The program that will increase

¹⁰ <https://agreach.illinois.edu/sane>

incomes and food production for smallholder farmers around the country. Around 300,000 smallholder households in Mchinji, Dedza, Ntcheu, Balaka, Machinga, Mangochi, Lilongwe rural and Blantyre rural are targeted. The initiative will work to bridge the gap between buyers and producers in Malawi's agricultural sector, engaging private firms to enhance key service areas like financing, agricultural processing, and training in new technology and practices.

NGOs

Many NGOs operate in EAS in Malawi. Further details can be found in the stakeholder mapping matrix on many of these. A list follows:

- ACDI/VOCA
- ActionAid
- Africare
- Churches Action in Relief and Development
- CARE
- Catholic Development Commission
- Catholic Relief Services
- Church of Central African Presbyterian
- Christian Service Committee
- Community Youth Development Activities
- Eagles Relief and Development Program
- Emmanuel International
- Evangelical Association
- Fair – a Joint Rural Livelihood Program
- Good Samaritan
- Heifer International
- Japan Overseas Cooperative Association
- Land O'Lakes International Development
- Maranatha Ministries
- Plan International
- Project Concern International
- Salvation Army
- Save the Children
- Small Scale Livestock Production Program
- Sustainable Rural Growth and Development
- The Hunger Project
- Total Land Care
- World Vision International

Farmer-based Organizations

- National Association of Smallholder Farmers of Malawi
- Malawi Organic Growers Association

- Mpototo Dairy Farming Association
- Shire Highlands Milk Producers Association
- Mzuzu Coffee Planters Cooperative Union Ltd
- Farmers Union of Malawi

One of the major constraints in developing the EAS system is the lack of overall coordination and comprehensive planning both within organizations and between the public, private and civil society sectors. Although all EAS providers have made efforts to create structures enabling such coordination, few of these efforts have had real impacts on facilitating the coordination due to reasons such as lack of communication about program agendas and partners as well as long-term coordination plans. However, government does try to provide guidelines to EAS providers, such as the national guidelines for implementing conservation agriculture in Malawi 2016. Kundhlande and colleagues (2014) list a case where the government coordinated with NGOs to regulate NGO's compensation of lead farmers who worked with them to reach additional farmers. There has been a lack of coordination in donor support for initiatives under the mandate of the GoM, as most donor agencies follow their own program agendas and target specific programs in the appropriate Ministry.

The Civil Society Agriculture Network (CISANET) serves coordinating functions for 75 international and domestic NGOs, as well as other farmer-based organizations and individuals (Simpson et al., 2012). CISANET coordinates NGOs to facilitate their policy and program work with ministries, United Nations agencies (notably World Food Program, FAO and United Nations Children's Fund), multilateral and bilateral agencies, and academic institutions to implement EAS on the ground (Musopole, 2011). They implemented the Strengthening Pluralist and Demand Driven Agriculture Extension through the Development and Promotion of District Agriculture Sector Service Charter project, which is funded by the Tilitonse Foundation. However, there is no further information available regarding the project's impact or how it influences the EAS system in Malawi (Simpson et al., 2012).

Evidence suggests Malawi's EAS system lacks M&E at all levels. Furthermore, DAES extension workers do not have standardized practices they can follow and use to track their own performance (Chowa et al., 2013, MEAS, 2012; Kaarhus & Nyirenda, 2006). Institutional Development across the Agro-Food Sector (IDAF) conducted mapping exercises of service providers in some districts to discover overlap and gaps in the EAS in Malawi (see IDAF, 2010). However, no system is in place for regular monitoring or for examining duplication, complementarities, synergies and gaps across agricultural advisory service providers in a given district (Ragasa et al., 2012). This lack of monitoring structures further led to a lack of coordination among EAS actors (Chowa et al., 2013).

Previous evaluation studies present varied evidence in terms of EAS farm-level impact. Such studies mirror the diverse challenges and weaknesses in extension service provision and the inconsistent quality of the EAS. Ragasa, Mazunda and Kadzamura (2016) analyzed the 2013 IHS and found that receipt of agricultural advice from any source had no effect on productivity and food security across all estimated models. However, farmers who rated information from EAS as very useful had higher productivity and food security than those who rated them as less useful. Ragasa et al. (2016) highlight the need to offer high quality and relevant EAS to farmers to increase productivity and food security in Malawi.

Organizational and Management Capacity and Cultures

The DAES reported that in 2012 there were a total of 2,415 field and office staff members (Simpson et al., 2012). Kaunda (2011) states that there were about 1,900 DAES extension agents in Malawi in 2011, with 1,000 vacant positions unfilled (34 percent vacancy rate, varying by district) based on 2,900 established positions. Three EAS providers interviewed by the IDAF (2010) reported that they were unable to recruit all the qualified workers they required. Statistics show there are more male extension workers (80 percent) than there are female extension workers. This makes it harder to reach women farmers since women extensionists have been shown to be better than men at reaching women (Qusimbing & Pandofelli, 2010). These numbers imply that mechanisms are needed to recruit and retain female extensionists.

The farmers per DAES extension officer ratio in Malawi is estimated to be between 1,800 (Kaunda, 2011) and 2,514 (GoM, 2015), a number much higher than those of other countries in the region, such as Ethiopia, the Democratic Republic of Congo and Kenya. However, the number is much lower in comparison to those in Nigeria and India. There is a large imbalance worth noting in farmer-to-DAES extension officer ratio across regions of Malawi. For example, the farmer-to-DAES extension officer ratio ranges from 811 in Karonga, a district in northern Malawi, to 2,005 in Balaka, a district in southern Malawi (IDAF, 2010). If other service providers are included, the ratio ranges between 642 in Rumphi, a northern Malawi district, and 1,279 in Balaka. Other estimates show higher farmer-to-DAES extension worker ratios from 1,891 in Salima, a central region district, to 3,951 in Blantyre, a southern district (GoM 2015).

A DAES extension worker is commonly responsible for 15 villages. In some areas, no field extension staff are present due to high vacancy rates (Masangano & Mthinda, 2012; Chinsinga & Cabral, 2010). According to Simpson et al., the DAES extension workers also provide support services for other units within the Ministry of Agriculture and Food Security (MoAFS) without extra support from the Ministry (2012). Most NGOs have low staffing levels, and thus commonly depend on the DAES system to reach farmers and deliver services (Ragasa et al., 2015). They hire DAES agents on a short-term basis or provide incentives, such as lunch and per diems while in the field. NGOs tend to recruit the best and most experienced extension workers into their agricultural programs by offering better terms of service and more resources than the DAES (Simpson et al., 2012). Ragasa and Niu (2017) found that over two-thirds of farmers in a 2016 survey received extension messages from the public-sector AEDOs, and around one fourth of farmers reported that they received information from NGO staff.

Technically qualified agents are needed for an effective extension system. The Lilongwe University of Agriculture and Natural Resources and the Natural Resource College are two main institutes providing higher education for agricultural extension workers. Undergraduate education at LUANAR provides both technical courses on agriculture (45 percent of coursework) and extension courses (55 percent of coursework).

The Natural Resource College offers a certificate in extension and a diploma in agricultural extension, with around 500 students enrolled in the extension programs (Simpson et al., 2012). Extension professionals can also upgrade their certificates to diploma level at NRC by enrolling in an 18-month upgrading program. Enrollments in the extension programs are increasing in both training institutions to cater to the DAES' and NGOs' demands for higher quality human resources in extension (Sigman et al., 2014).

LUANAR offers a bachelor's and higher degrees in agricultural extension. In total, 140 students specialized in extension in 2012: 112 bachelor's degree students, 26 master's degree students and two Ph.D. students. LUANAR also participates in the Sasakawa Africa Fund for Extension (SAFE) education program. In 2012, 26 midcareer DAES professionals joined the program to receive bachelor's degree training (Simpson, Heinrich & Malindi, 2012). Faculty from both NRC and LUANAR participated in the design and support of the countrywide EAS-related planning and other activities. Most DAES extension workers (91 percent) meet the required competencies (Nankhuni, 2016).

In addition to technical skills, extension professionals need functional or “soft” skills to work effectively with clients (Davis, 2015). The extension courses in LUANAR, for example, intend to equip students with both technical knowledge of agricultural and functional skills that can be used to provide extension and advisory services, and to strategically communicate with stakeholders like farmers. These functional skills include use of ICTs in extension (tele-centers, internet and text-based messages) and production and use of extension aids (slides, videos, radio messages and agri-tips, etc.). They also provide information on analyzing markets, linking farmers to market and farmer group development. Students' knowledge of functional skills is commonly taught in a classroom setting and evaluated by exams they receive at the end of the course (Faculty of Development Studies, 2015). However, little assessment of levels of the skills are done outside of classrooms. Students also lack opportunities to implement knowledge of the skills in a real-world context during their trainings.

The Global Forum for Rural Advisory Services developed a learning kit¹¹ to improve extension workers' skillsets in the provision of extension services to diverse clientele. This kit includes 13 modules offering knowledge on different dimensions of functional skills that extension workers can use in their work with farmers. The Malawi chapter of GFRAS, the Malawi Forum for Agricultural Advisory Services, intends to promote the kit nationally (MAFAAS, personal communication, 12 October 2016).

In general, frontline extension workers lack continuing education and reskilling, as well as sufficient operational resources to offer services to communities.

As a response to GoM's public-sector reform program, which aims to downsize and streamline public agencies, DAES plans to transition its key function from service provider to facilitator and coordinator of the EAS system. The 2000 policy aims to encourage private sector and civil society, especially farmer-based organizations, to become main providers in directly administering EAS to farmers (Ragasa et al., 2015). However, the financial support for this transition is insufficient. Ragasa and colleagues (2015) listed other challenges of coordinating among actors in the EAS system:

- a. The actors offering EAS in Malawi function as independent information subnetworks and lack interaction with others in an operational and strategic sense (MEAS, 2012).
- b. Most coordination activities leave out private-sector actors.

¹¹ <http://www.g-fras.org/en/activities/the-new-extensionist.html#learning-kit>

- c. Coordination among NGOs faces the challenges of intense competition for donor funding and the burden to show instant impacts.
- d. There are no incentives for NGOs, FBOs and private-sector firms to coordinate their extension activities with the DEAS or participate in the government-led coordination initiative mentioned in the Agricultural Extension Implementation Guide (Chinsinga & Cabral, 2010; Masangano & Mthinda, 2012).

Advisory Methods

EAS providers in Malawi use many different methods, including: (1) group methods (groups/clubs), (2) demonstrations, (3) individual visits, (4) farmer field schools, (5) field days, (6) exchange visits or tours, (7) model villages, (8) farming clusters, (9) lead farmers (farmer-to-farmer), (10) agricultural shows, (11) mass media such as radio and (12) farmer participatory research (Ragasa et al., 2015; Simpson et al., 2012). Nankhuni (2016) conducted a survey and found that most farmers reported obtaining information from extension workers who commonly used methods such as training, demonstrations, community meetings and field days. In addition to extension workers, 58 percent of farmers reported they access agricultural production and nutrition information from radio and 50 percent access information through lead farmers (Nankhuni, 2016). Jafry (2014) found farmers favored group approaches as they have more opportunities to share information, experiences, resources and to speak for themselves in comparison to the approach targeting individual farmers. The farmers said they believed development organizations would allocate more resources to them if they worked in a group (Jafry, 2014). What follows is a detailed description of methods used by public and private EAS providers.

The Model Village Approach creates model villages that function as stable organized units for program delivery. This approach operates under the DAES' decentralization program and uses participatory extension methods to implement integrated interventions with actors from various sectors. The model village approach highlights a process wherein local AEDOs and experts from MoAIWD seek communities' needs and design tailored development plans and the community management structures (Simpson et al., 2012). This approach operates through four phases (Kankwambwa, 2011):

- Phase 1: Gendered Participatory Rural Appraisal (PRA) Phase, where PRAs are conducted by seven to eight person teams made up of both the DAES, SMS and those from other MoAFS (now MOAIWD) departments (e.g., crops, livestock, land resources, etc.), as well as the local AEDOs. The PRA results identify prioritized activities that constitute the model village development plans and the community management structures needed to sustain them.
- Phase 2: Livelihood Phase, where farmers' basic needs of safe food and clean drinking water are met in terms of diversified, adequate and sustainable means.
- Phase 3: Empowerment Phase, where communities are helped to maximize returns from their enterprises beyond subsistence needs.
- Phase 4: Specialization Phase, where communities form cooperatives and earn incomes from their sellable products.

Farmer Participatory Research is an educational approach and research activity, including activities such as crop residue promotion days and intergenerational discussion groups. This approach is commonly used by research institutes and involves farmers' research groups,

experimentation and exchanges, all three of which promote agricultural innovation. In one example of this approach, local communities and researchers select a farmer research team to learn more about new technologies and practices like legume intercropping. Bezner Kerr (2012) found this farmer-led approach has significant positive effects on child nutrition, food security, gender and community relations. Furthermore, this approach stimulates collaboration between research organizations, NGOs and MoAFS (now MoAIWD) (Bezner Kerr, 2012). It is challenging to scale up this approach as it requires research institutes to work with farmers intensively over a long period. Combining farmer participatory research with the farmer-to-farmer approach mentioned below can bring the innovation to farmers at a larger-scale.

The Lead Farmer or Farmer-to-Farmer Approach involves farmers helping to disseminate information that their fellow farmers can use to help increase agricultural productivity. Lead farmers are selected by local communities and organizations working in the region. Masangano and Mthinda (2012) found in a survey of 37 extension services that 78 percent used the farmer-to-farmer extension approach. The MoAIWD works with 12,000 lead farmers, and at least three NGOs and one tobacco company each work with over 1,000 lead farmers (Kundhlande, Franzel, Simpson & Gausi, 2014). Ragasa and Niu (2017) found that lead farmers' performance depends on how active and motivated the extension officers or NGO staff are.

The main benefits of the lead farmer approach include increases in the number of farmers receiving EAS, increases in adoption of new technologies and practices, reductions in costs and accessibility of EAS (Kundhlande, Franzel, Simpson & Gausi, 2014). Lead farmers commonly hold leadership positions in the community and are more educated than their counterparts. Within their respective communities, lead farmers work with farmers in groups to provide trainings, prepare and manage demonstration plots, mobilize farmers for meetings and disseminate other kinds of information to their communities, such as health and nutrition (Kundhlande, Franzel, Simpson & Gausi, 2014).

Most lead farmers offer their services with no regular salary or a periodic allowance. Only a small proportion (around 10 percent) of the lead farmers in Khaila et al.'s study received per diems or allowances, or got reimbursed for their services (2015). The proportion of women lead farmers are higher than the proportion of women extension workers in the DAES. Women made up 40 percent of lead farmers working with DAES in Malawi, whereas only 21 percent of DAES workers are women. Khaila and colleagues (2015) found that female farmer trainers trained more women than did male trainers. In training taught by female trainers, 62 percent of the trainees were women, whereas 55 percent of those trained by male trainers are women. Some organizations tried to help lead farmers build their own businesses on top of the services they offered to the community, such as selling veterinary drugs or energy-saving stoves. Catholic Relief Services trained local agribusiness service providers (ASPs) on agribusiness, collective marketing, group management and improved agronomic practices. These ASPs received certification and provided fee-based agribusiness trainings to communities (Sigman, 2014).

Khaila and colleagues (2015) also found that the main factors motivating individuals to become lead farmers included: increasing social status, increasing individual knowledge, early access to technology, opportunities to help others, job benefits, social networking and income generation. Similarly, the main factors motivating individuals to continue acting as lead farmers include: opportunities to help others, improving own knowledge, high social status and income generation. Lead farmers commonly met with the farmers they worked with on a weekly or biweekly basis

during cropping season. Around half of these lead farmers used mobile phones to connect with farmers in their groups (Khaila et al., 2015).

Khaila and colleagues (2015) suggest several approaches to sustain and improve this lead farmer approach:

- Increase training opportunities for lead farmers
- Provide incentives and reimburse lead farmers' costs of offering services
- Reinforce lead farmers' roles in gender empowerment
- Support lead farmers' extension activities by providing training materials and other supplies

The Farmer Field School (FFS) Approach organizes groups of 20-25 farmers to meet regularly in a local place like a demonstration field. This approach offers farmers a risk-free setting in which to discuss, modify and experiment with new agricultural production ideas (FAO, n.d.). Facilitators of FFSs are normally DAES extension workers, NGO staff, other EAS providers or trained farmers. Learning this way ensures farmers have opportunities to decide if what they learn will work for them through their own testing and observations (FAO, n.d.). Through a comprehensive, participatory action planning process, farmers are offered tailored learning content and a skills development program, but it is unclear how many farmers participate in FFSs and what the impacts are (Chipalasa, 2016).

One example of using FFSs in Malawi is a € 5.5 million (approximately US\$ 6.2 million) project launched in 2016 and funded by the European Union and FAO. The project is implemented by GoM and four NGOs, including Total Land Care, Evangelical Association of Malawi, Adventist Development and Relief Agency and the Catholic Development Commission in Malawi (CADECOM). Reach is unknown. This FFS project aims to teach farmers resilience practices to address issues such as climate change in four southern districts of Malawi.

A modification of FFS is the Farmer Field and Business School (FFBS) model of integrated extension and advisory services, used by CARE in Malawi in their Pathways program. Designed as a common program intervention model, the FFBS aims to go beyond demonstrating agricultural practices that can increase yields, to build capacity and essential skills around market engagement, gender equity and empowerment issues, and nutrition practices. CARE's Pathways program currently works through a network of 90 community-based trainers to reach 16,000 farmers (90 percent of whom are women), through building on existing collectives in which they are members, particularly village savings and loans associations (VSLA) and producer groups. Through these efforts:

- women's access to extension services increased from 29 percent at baseline to 82 percent;
- the number of monthly visits/contacts with extension service providers nearly doubled from 2.7 to 5.3 over the same period;
- nearly 70 percent of women adopted at least three improved agricultural practices;
- women's self-confidence as well as their decision making and control over resources in the household increased;
- control over household and agricultural assets increased by over 16 percentage points from the baseline;

- access to output markets increased from 42 percent to 63 percent;
- women engaged in collective sales worth over US\$ 62,000; and
- FFBS groups introduced “FFBS Financing” based on the VSLA model to facilitate collective marketing activities, aggregation of inputs, and purchase of products from members immediately after harvest for storage and sale at a higher price. (DLEC/CARE, 2017).

Examples of ICT-based EAS methods

MoAIWD and Airtel Malawi launched “**The Mchikumbwe 212**,” a platform for **audio agriculture content and access to market information**. This service offers information on maize, soya, groundnuts, poultry, sweet potatoes and livestock in dramatized and dialogue formats. The service also provides basic financial literacy information aimed at assisting farmers in calculating gross margins and determining the profitability of their farming as a business. The cost of this service is relatively inexpensive: the first three calls are free each month, and users thereafter pay MWK 40 (US\$ 0.05) for the fourth call; all subsequent calls made in that month are free of charge. One study found farmers can benefit considerably from specialized market information and advice on their areas of action (Arlotti-Parish, 2014). However, a market information system offering farmers information customized to a specific market and for certain crops has not yet been established in Malawi.

Human Network International (HNI) partnered with Airtel, the GoM and key development organizations to launch the **3-2-1 Service** in Malawi based on **interactive voice response (IVR)**. The price information is all in voice recordings, and is recorded by native Chichewa-speaking professional voice talents. If the caller can follow the voice prompts, such as “Press 1 for market prices in Blantyre,” he or she can listen to market prices in as few as three keystrokes. Further, they also provide information on health, agriculture and gender topics. Nearly 36,000 people have accessed information about prices of agricultural goods like maize, soya, sweet potato, chicken and groundnut since the service was launched in March, 2016. However, the service does not have price information on every market in Malawi, and its overall impact on farmers’ information access and market engagement is unknown. (Human Network International, n.d.)

Some EAS providers combine different ICTs in their approach to disseminate the information. For instance, Land O’Lakes International Development implemented the Malawi Dairy Development Alliance from 2007 to 2012. The project created 10-minute **radio** sessions on dairy production and marketing to improve milk yields, and transmitted them weekly on the Zodiak Broadcasting Station. Successful farmers from local milk bulking groups led the radio discussions on topics such as animal husbandry, business management, fodder conservation, supplementary feeding and milking techniques. The project collaborated with Esoko to send out **text messages** to inform farmers of the program’s starting time before the radio program aired, and to summarize the broadcast after the program. In total, this project helped farmers increase dairy production by 32 percent and total incomes by 67 percent in five years (Land O’Lakes International Development, 2014).

Another program working in radio is Farm Radio Trust (FRT), a non-governmental, non-profit organization that exists to foster rural and agricultural development in Malawi through radio and other ICTs. FRT provides farmer advisory services through radio programming; trains and builds

capacity of broadcasters and radio stations; and promotes participatory radio campaigns facilitated using ICTs¹².

The nongovernmental organization Access Agriculture has distributed high-quality videos free of charge to agricultural TV programs in Malawi (Times TV and Channel of All Nations)¹³.

Market Engagement

Market engagement in the context of EAS is concerned with farmers' access to credit, market-related advice, market linkages, quality inputs, group development and output markets.

Trainings are the main EAS activities used to improve farmers' market engagement and are aimed at increasing farmers' awareness of and ability to engage in both domestic and international markets. These trainings, which are commonly conducted by DAES and NGOs, offer farmers production and post-harvesting information regarding value-added food and cash crops, as well as new business concepts and ideas. The trainings also intend to increase farmers' marketing skills by teaching them ways to negotiate prices. NGOs collaborate with financial service providers and telecommunication companies to implement services that enable farmers' access to capital and information. Some EAS actors directly connect farmers with market players, such as crop buyers and processors. In some cases, farmers directly sell products as groups to save the transportation costs. Some organizations, such as CRS, organize small-scale farmers into groups like VSLAs to facilitate the development of local micro-enterprises (Verduijn et al., 2014).

The main EAS actors who provide services related to farmers' market engagement are DAES market extension officers, NGOs and consultancy firms like Abt Associates. These providers cover a wide range of areas, including production, natural resource management, post-harvesting, processing, marketing, management and business planning. Mudege and colleagues (2016) found that in central Malawi, DAES extension workers mainly offer trainings to potato farmers centered on maintaining quality produce and grading because extension workers believe these trainings help potato farmers increase their bargaining power regarding selling price. However, the potato farmers receive limited services in terms of market skills like identifying target markets to sell their product and negotiating prices. Moreover, these extension trainings involve significantly fewer women (33 percent) than men (68 percent), especially those related to market engagement. Alternatively, women actively participate in trainings related to other issues like crop production (Mudege et al., 2016).

To increase farmers' market engagement and local agribusiness development, CRS implemented a five-year USAID-funded US\$ 80 million project (2009 – 2014) called Wellness and Agriculture for Life (WALA) in southern Malawi. This project used a volunteer extension system, which involved farmers who voluntarily provided services to their own communities. WALA promoted cash crops that fit the community's socioeconomic and agroecological conditions through these community volunteers. In addition to trainings, WALA also provided hands-on experience to farmers through a Care Group model and producer groups (detailed below in the Livelihood Strategies section). The

¹² <http://www.farmradiomw.org/index.php/about-us/about-frt>.

¹³ <https://www.accessagriculture.org/african-tv-stations-move-agriculture>.

project followed an overall model of technical guidance provided by ACDI/VOCA to enhance farmers' market skills. Although the project organized successful collective marketing among farmers, collective marketing became inefficient in some situations, such as when farmers needed to sell products quickly. As a result, the farmers preferred to sell their produce on their own. This project organized small-scale farmers into VSLAs to facilitate the development of local micro-enterprises. In total, 20,600 households have engaged in the project's commercial marketing. However, it is unclear as to whether the farmers' clubs were sustained after the project end (Verduijn et al., 2014).

U.N. Women plans to implement a project (2017 – 2021) for empowering women to practice climate-resilient agriculture. The market engagement component of this project is to increase financial literacy for women farmers, including awareness and practices on micro-finance, savings and loan groups, mobile banking, agency banking, crowd funding platforms, seed capital, awareness of crop insurance and sensitization/dialogue with financial institutions. The project plans to implement five activities, such as training lead farmers to mentor other women farmers and promoting radio using yellow mobile vans to increase women's access to climate resilience agronomical practices. The total budget is US\$ 1.3 million targeting 25,000 women farmers. Project creators designed a mobile platform with Airtel called "buy from women" that links farmers' groups to seed producers, input suppliers, technology providers and reliable extension services. The platform intends to help women farmers track records of investment and digitally record land titles (UN Women, n.d.).

Agro-enterprise Africa (2009 – 2013) was a project intending to build smallholder farmers' capacity to effectively and sustainably engage in markets. The budget and reach are unknown. This project worked with farmers' groups/clubs and marketing Field Agents (mFAs) to facilitate group activities. CRS trained mFAs, and NGOs to implement the project in various districts. The project implemented two approaches: "five skills" and private service providers (PSP). The "five skills" approach aimed to increase farmers' skills in group management, financial management, market engagement, experimentation and innovation toward accessing new technology and sustainable production. The PSP approach trained facilitators to provide "fee for service" to farmers to develop the "five skills." The project mapped existing activities in villages within three impact areas to coordinate with stakeholders and eliminate conflicts between free services from other NGOs and fee-based services provided by the PSP. The project was a research collaboration between Murdoch University, LUANAR and CRS. It was funded by the Australian Development Research Awards Scheme.

Livelihood Strategies

For EAS to improve livelihoods as opposed to simply increasing agronomic knowledge, service providers must be aware of the different needs of all types of farmers (men, women, youth, elderly, laborers and pastoralists). These needs could include issues such as markets, nutrition, climate resilience, mechanization and others, and include providing complementary information (e.g., on nutrition), focusing on the agricultural activities most common for different types of farmers (e.g., poultry rearing or vegetable cultivation with women), or holding different types of events that are particularly engaging or accessible for that type of farmer (e.g., women-only events).

EAS providers in Malawi commonly have diverse focus areas, including agricultural production, nutrition education, natural resource management, climate resilience, productivity enhancing

practices and integrated services (Sigman et al., 2014). The report recommended that public sector, private sector and civil society were recommended to create an EAS system integrating components including agriculture, nutrition and health, business and other topics to improve farmers' livelihoods (Sigman et al., 2014).

The DAES is the largest provider of agriculture and nutrition extension services. However, major extension efforts remain dedicated to maize production, with limited focus on other topics. Based on the 2013 IHS, 56 percent of rural communities reported that extension services related to maize production were better or the same in comparison to those from five years ago. Meanwhile, compared with farmers who thought extension services about maize had become better, more farmers reported that the EAS related to tobacco, credit and livestock has become worse over the past five years. Moreover, less than one-third of the farmers said extension workers involved them in identifying extension messages.

The current public EAS system assumes that extension workers at the EPA level should be generalists rather than specialists. For example, nutrition specialists are scant at the EPA level. Furthermore, existing frontline extension workers often lack sufficient trainings on nutrition as well as adequate time and resources to provide nutrition-related services. Women farmers are more responsive to nutrition-related issues in households than men, but the DAES extension workers fail to engage them in nutrition-related training. This lack of engagement is mainly because most extension workers are men, but women farmers prefer to work with women extension workers.

NGOs commonly provide services integrating several areas into a community-based rural livelihoods program using the Care Group approach. The Care Group approach is used by NGOs to implement their rural livelihood programs by targeting households with pregnant/lactating women and children less than five-years of age. In the Care Group approach, NGOs organize groups of 10 to 15 households and work under the leadership of lead farmers (Care Groups Info, 2010). These programs intend to address issues including agriculture, food security, nutrition, health, agribusiness and marketing, women's empowerment, and water, sanitation and hygiene. The NGO program staff commonly provide support to these groups and visit them regularly. Some NGOs combine the Care Group approach with other activities like Community Complementary Feeding and Learning Sessions, which mainly offer information about crop diversification, homestead gardening and livestock activities. In the Feed the Future Integrating Nutrition in Value Chain (INVC) project (2012 – 2016), the Care Group is directly linked to a farmer-based agricultural organization, such as NASFAM or FUM, to connect nutrition and agricultural production. This integration enables participating households in the Care Group approach to access agricultural production-related EAS. INVC project was implemented by Development Alternatives, Inc., Michigan State University and Save the Children. It targeted 275,000 rural households with an unknown budget.

Some EAS services provided by private actors also address farmers' livelihood issues. For private-sector actors using a pull-based business model, a common concern is their producers' welfare and if economic viability can influence the productivity and sustainability. For example, the Alliance One Tobacco company offers EAS services related to tobacco production and addresses other producer livelihood issues, such as maize and legumes production and natural resource management (Simpson et al., 2012).

Community Engagement

Finally, EAS is concerned with community engagement, that is, taking into account different aspects of farmers when delivering EAS, such as land size and distribution, education levels, gender roles, demographics including age, community organizations (e.g. producer organizations) and capacity to collaborate. Here we focus particularly on how to reach women farmers with respect to EAS.

Malawi's 2000 agricultural extension policy specifically emphasizes engaging farmers and local communities in the design and implementation of EAS. The policy aims to strengthen FBOs and district or village-level agricultural extension communities. The policy also aims to engage farmers in all phases of EAS activities to provide demand-driven services. However, in reality, only a few FBOs actively provide extension services. According to the 2013 IHS, less than one percent of households access information from FBOs. The operation of these community-level committees is not efficient, as more roles and positions have been created than can be realistically filled. Farmers perceive these services as both wasteful and time consuming (Chowa, Garforth & Cardey, 2013; MEAS, 2012). Moreover, farmers—especially disadvantaged groups, such as women—are rarely included and engaged in the designing and provisioning of EAS.

A study conducted with participants of the 2015 Malawi Forum for Agricultural Advisory Services¹⁴ Extension Week showed women and youth are less likely to access EAS than adult men. Only 14 percent of women farmers had access to extension services compared to 18 percent of men in 2007 (MoAFS, 2011). Similarly, there is a low to non-existent rate of participation in decision-making processes among females. Participants of Extension Week reported that male adult farmers are more inclined to benefit from the decentralization of EAS than other marginal groups like youth and women farmers, while women and youth farmers would benefit the least from such decentralization. The members of this forum are mainly local and international experts on EAS systems.

Women farmers mainly seek information from and prefer to work with female extension workers, as they provide a more conducive setting for women to share and discuss issues that are important to them. However, nearly 80 percent of DAES agricultural extension workers are men, who normally work with male farmers. Conditions are similar in the private sector as well as in civil society organizations; female lead farmers constitute 24 percent of NASFAM lead farmers, 38 percent of CADECOM, 37 percent of FUM, 32 percent of Malawi Milk Producers and 36 percent of Care Groups (Sigman et al., 2014). Mudege et al. (2016) found that women and men farmers had different preferences regarding training modalities. Their preferences led to different attendance rates between women and men when extension workers used different training modalities. They found women preferred attending group farming activities, such as field demonstrations, while men preferred attending formal trainings. Women farmers also tended to work in groups, which enabled them to support and learn from each other. However, women's commitment to and ability to participate in groups varied. Jafry (2014) found that support from women farmers' husbands seemed important for women farmers in terms of their participation in extension activities. As such, gendered social norms impede women farmers' access to and participation in extension activities.

¹⁴ <http://www.afaas-africa.org/country-fora/malawi>

RECOMMENDATIONS

Below are some preliminary recommendations for all country actors to improve EAS. Please note this is based on a desk review and limited interaction with stakeholders. Further validation with all stakeholders would be of use before taking action. Malawi has already built the foundation and established policies for a strong and effective demand-lead and market-driven EAS system. The key now is to implement these policies and strategically take actions toward achieving the EAS system's mission.

There are a number of existing assets to leverage for improving EAS in Malawi:

1. Existing government support through policies and frameworks to guide extension implementation of EAS
2. Strong pluralism including farmer organizations, NGOs, private sector and donor support
3. Existing training programs to capacitate extension agents
4. The presence of the Malawi Forum for Agricultural Advisory Services to help coordinate and advocate

The recommendations are listed below by the six areas, including the organization(s) that should lead.

Governance structures and policy environment

1. The DAES should evaluate itself and other providers' core functions in the EAS system. ASWAp has already initiated this kind of core functions analysis, though it needs to be completed. This analysis can guide the operation of district-level DEC, DAECC and stakeholder panels, as well as the coordination between the DAES and other departments within the public, private sector and civic society.
2. The DAES, private sector and civil society need to establish formal and strategic linkages through national stakeholder panels (facilitated by the DAES), while district-level collaborations should focus more on planning and oversight of the EAS system. Donor agencies should work directly with district-level governments to achieve more tailored trainings and continued support of the area- and district-level stakeholder panels and farmer-based organizations.
3. National and district-level stakeholder panels should increase the involvement of smallholder farmers regarding planning and evaluating EAS programs and monitor the service quality to provide demand-driven EAS services and ensure the DAES' accountabilities to farmers.
4. Donors with the help of MaFAAS should coordinate efforts by identifying existing gaps and duplications in funded projects. This coordination will aid in the development of strategies that complement each other's efforts.

Organization and management capacities and cultures

5. The DAES should tackle the imbalanced extension worker vacancy rate and encourage private and civil society involvement for EAS in relatively better-off areas, prioritizing the allocation of public extension workers to poorer areas where extension worker vacancy rates are highest.

6. The DAES, private sector, civil societies and educational institutes should conduct a curriculum review and market assessment to match training with needs, and consider professionalization efforts in collaboration with MaFAAS/GFRAS to continue to educate a quality labor force that can serve the EAS system and that includes functional capacities and special skills, such as nutrition and agribusiness.
7. Educational institutions should create opportunities, such as internships at NGOs, for students to practice functional skills they could use in EAS activities during their studies.
8. EAS employers should work with educational institutions and provide opportunities for extension workers to receive regular retraining and reskilling for EAS staff in all sectors.

EAS methods

9. EAS providers, especially NGOs and projects, should develop special training programs and provide low-cost incentives (e.g., social recognition) to lead farmers. More women and youth should be trained as lead farmers to reach diverse groups.
10. EAS providers should integrate new approaches, including those centered on ICTs, into existing EAS methods like group trainings, while being sensitive to farmers' needs and abilities, such as mobile phone literacy.

Market engagement, livelihood strategies and community engagement

11. The DAES should emphasize the agribusiness sector in the new extension policy and rebuild it as a core, crosscutting function of the Extension Methodologies and Training branch.
12. EAS providers at the district-level should build in farmers' needs as early as possible into planning processes, and district-level stakeholder panels should review implementation of the plans in making midcourse corrections.
13. EAS providers, especially the DAES, should create a strategy for content design and delivery. This strategy will enable customization in regards to farmers' demands and will make content delivery more appealing to target audiences.
14. Educational institutes should increase the proportion of women students in the EAS-related programs through programs to attract them and special training opportunities (e.g., online, block week courses, etc.).
15. GoM and other EAS providers should encourage more women to pursue EAS careers after graduation by providing them special facilities where needed and recognizing their need to be close to home.
16. EAS providers should ensure that content goes beyond purely technical aspects of agricultural practices and integrates modules that address social issues, such as gender inequality, by examining programs that use this, such as CARE's Pathways approach.
17. EAS providers should include men in processes of gender transformative approaches. To this end, EAS providers should design gender-specific modes of service and strategies for targeting and supporting women farmers.

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