IFPRI Discussion Paper 01673

August 2017

Capacity and Accountability in the Agricultural Extension System in Malawi

Insights from a Survey of Service Providers in 15 Districts

Catherine Ragasa

Diston Mzungu

Eric Kaima

Cynthia Kazembe

Kenan Kalagho

Development Strategy and Governance Division

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

The International Food Policy Research Institute (IFPRI), established in 1975, provides evidence-based policy solutions to sustainably end hunger and malnutrition and reduce poverty. The Institute conducts research, communicates results, optimizes partnerships, and builds capacity to ensure sustainable food production, promote healthy food systems, improve markets and trade, transform agriculture, build resilience, and strengthen institutions and governance. Gender is considered in all of the Institute's work. IFPRI collaborates with partners around the world, including development implementers, public institutions, the private sector, and farmers' organizations, to ensure that local, national, regional, and global food policies are based on evidence.

AUTHORS

Catherine Ragasa (c.ragasa@cgiar.org) is a senior research fellow in the Development Strategy and Governance Division of the International Food Policy Research Institute (IFPRI), Washington, DC.

Diston Mzungu (mzungudiston@gmail.com) is a consultant, IFPRI-Lilongwe Office; and a Master's student at LUANAR, Lilongwe, Malawi.

Eric Kaima (ekaima2006@yahoo.co.uk) is a consultant, IFPRI-Lilongwe Office.

Cynthia Kazembe (c.kazembe@cgiar.org) is a research assistant in the Development Strategy and Governance Division of IFPRI, Lilongwe, Malawi.

Kenan Kalagho (ndaghamesho@yahoo.co.uk) is a consultant, IFPRI-Lilongwe Office; and principal women programme officer, Ministry of Agriculture, Irrigation and Water Development (MoAIWD), Kasungu District, Malawi.

Contents

Tables

Figures

Box

ABSTRACT

This report summarizes the data collected from a survey of government and nongovernment extension service providers (GSPs and non-GSPs, respectively) in 15 sample districts in Malawi. Together with the recently published report that looks at farmers' perspective (Ragasa and Niu 2017), this report is aimed for use by various stakeholders in Malawi, especially in the review of the national extension policy and development of an extension strategy, and in the implementation and monitoring of extension activities under the National Agriculture Policy.

Using a systems approach, this assessment reveals some surprising results and confirms many of the commonly known issues and challenges at various levels of the agricultural extension system in Malawi. First, the magnitude of nongovernment extension service provision (in terms of both the number of organizations and the number of their staff) is much larger than earlier portrayed and increasing. There are about 120 nonstate extension service providers in the 15 sample districts covered, in addition to the government extension system. In a district, the average number of non-GSPs is 13, ranging from 6 in Chiradzulu to 25 in Balaka and 35 in Lilongwe. The total number of technical staff or subject matter specialists (SMSs) employed by non-GSPs in a district is, on average, similar to the number employed by the government (that is, there is a 1:1 ratio), and the total number of frontline workers employed by non-GSPs per district is half that of the government (for a 2:1 government-to-nongovernment ratio). Moreover, we find more linkages between the two in the joint implementation of planned activities, especially at the field level. Non-GSPs work with the majority of government frontline workers on their projects: non-GSPs work with roughly 90 percent of all agricultural extension development officers (AEDOs) and agricultural extension development coordinators (AEDCs) to implement their project activities.

Second, the operating funds for extension services are extremely limited. Government funds cover mainly personnel compensation (roughly 80%), with operating funds to do actual extension work (known as *other recurrent transactions*) being small (20%). Most operating funds come from donor-funded development projects, mainly through the Agriculture Sector Wide Approach Support Project (ASWAp-SP) and the Sustainable Agricultural Production Programme (SAPP), and numerous NGO-funded and implemented projects that do not enter the public budget system. The estimated public funds for extension services are roughly 740,000 Malawian kwachas (MK) per AEDO per year (US$1,000), or MK 250 per farmer per year (US$0.33), which is very little.

Third, the ratio of farmers to government agents is, roughly, either 2,352 or 3,274, depending on whether one is using the agricultural census or Agricultural Production Estimates Survey (APES). The same ratio including nongovernment agents is, roughly, either 1,568 or 2,232, again depending on one's source for the number of farming households. These are much higher (worse) than those of some other SSA countries, but much lower (better) than those in Nigeria or India. Moreover, retraining of extension workers and upgrading of training materials are limited. Although the farmer-to-agent ratio gets a lot of attention, without funds for operating costs, additional people on the payroll will not make any impact.

Fourth, government extension workers face poor working conditions at the same time there seems to be a lot of expectations from them both from the government's and farmers' sides. The average monthly salary is MK 79,440 (US$110) for an AEDO, MK 113,739 (US$160) for a local nongovernment frontline worker, 40 percent higher than the former. Mobility is a major issue, with a bicycle as the main transportation for most frontline government workers. Only 32 percent of AEDOs reported having access to a motorcycle, with the rest relying on bicycles, posing an obstacle to covering and visiting a worker's entire operational area. The situation is even worse where an AEDO must cover two sections due to shortage of staff. In addition, mobility is worse in hilly areas. AEDOs are provided with housing, but conditions are poor and there is no allowance for repairs or improvements. Some AEDOs are even renting alternative housing because government-provided housing is in such poor condition. Workload seems for AEDOs seems quite hectic, from implementing model village concept, disseminating technologies, and training lead farmers, to supporting the Farm Input Subsidy Programme (FISP) and collecting data

through the APES. These two activities account for 38 percent of work load of AEDOs, higher than the proportion of AEDO's time in assisting and advising farmers.

Fifth, monitoring of performance and evaluation of outcomes and impacts are poor, and even more so in the government system. Under both systems, targets being monitored usually stop at inputs and outputs (such as the number of households trained) and do not reach the level of outcomes or impacts. Very few (13 percent of frontline workers and 10 percent of all service providers) reported having outcome indicators, such as crop yield performance or number of households that are food secure, as their performance targets. Plenty of reports are being prepared weekly, monthly, quarterly, and annually, and submitted to one of the country's eight agricultural development divisions and the central Ministry of Agriculture, Irrigation, and Water Development (MoAIWD). Yet according to key informant interviews, most are produced routinely and mechanically, and they are rarely utilized for planning purposes or for making improvements at the district level.

Our assessment highlights the need for more funding from the government for extension services (with a better balance between operating and salary costs), especially to fulfill its coordination function and address gaps in service provision that non-GSPs are not filling, such as services related to sustainable production systems, natural resources management, and disadvantaged groups. Using the dataset generated from this study as a baseline, a regular monitoring system can be set-up to trace the various extension service providers, monitor the quality and relevance of extension messages and technologies being promoted, harmonize these messages, map complementarities across these service providers, and address gaps in service provision at the district and national levels over time.

Keywords: extension services; service providers; organizational management; institutional analysis; systems approach; Malawi
JEL code: Q16, Q12

ACKNOWLEDGMENTS

We would like to thank numerous people for making this project and study possible.
We thank the Department of Agricultural Extension Services of the Malawi Ministry of Agriculture, Irrigation, and Water Development, and especially Frieda Kayuni and Jerome Nkhoma, for their support and invaluable inputs and guidance, starting with the questionnaire and research design.
For funding support for the overall project from the government of Flanders and from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the development agency of the German government, we are thankful. Specifically, we thank Nikolas Bosscher of the government of Flanders and Florian Bernhardt and Elena Zanardi of GIZ for their guidance.

We acknowledge the support provided by the Malawi Country Strategy Support Program (MaSSP) of the International Food Policy Research Institute (IFPRI). MaSSP receives support from the United States Agency for International Development (USAID) Malawi and is undertaken as part of the CGIAR Research Program on Policies, Institutions, and Markets (PIM), led by IFPRI. In addition, PIM graciously provided funds to write a precedent paper and a policy note that paved the way to securing funds for the larger project under which this paper was written.

Within IFPRI, we are grateful for the support of Todd Benson, who has been instrumental since day one of writing the project proposal and continues to guide us in the project. We are thankful to Noora Lisa Aberman for support in the training and day-to-day management of the field teams, as well as focus group discussions. We acknowledge Bob Baulch and Chance Mwabutwa for their support in management as well as linking us to policy makers and key stakeholders in Malawi. We are also grateful for field and data entry assistance by Judith Chilowera, Dhumisani Msowoya, Hawa Munganya, and Stiveria Ndala.

We owe thanks and acknowledgments for their detailed suggestions on the questionnaires to Tewodaj Mogues and Naureen Karachiwalla (IFPRI), Chiyu Niu (University of Illinois), Marie Cadrin and Clodina Chowa (Strengthening Agriculture and Nutrition Extension Services Activity), Flora Nankhuni (New Alliance Policy Acceleration Support: Malawi), and Rex Chapota and Charles Masangano (Malawi Forum for Agricultural Advisory Services). We also thank Dr. Catherine Mthinda for her review of and inputs into the earlier draft.

Finally, and most important, we are indebted to the key informants we interviewed, who shared their valuable time to talk to us and gave us a glimpse into the complexities of their work. This project and study would not be possible without their willingness to engage with us.

This publication has not been independently peer reviewed. Any opinions expressed here belong to the authors and do not necessarily reflect those of IFPRI, PIM, CGIAR, or any other person or organization listed here.

ACRONYMS

ACE	Agricultural Commodity Exchange
ADD	agricultural development division
ADMARC	Agricultural Development and Marketing Corporation
AEDC	agricultural extension development coordinator
AEDO	agricultural extension development officer
APES	Agricultural Production Estimates Survey
ARET	Agricultural Research and Extension Trust
ASTI	Agricultural Science and Technology Indicators
ASWAp	Agriculture Sector Wide Approach
ASWAp-SP	Agriculture Sector Wide Approach Support Project
CAADP	Comprehensive Africa Agriculture Development Program
CAEO	chief agricultural extension officer
CAETS	controller of agricultural extension and training services
CISANET	Civil Society Agriculture Network
COOPI	International Cooperation Foundation
DADO	district agriculture development officer
DAECC	district agricultural extension coordination committee
DAES	Department of Agricultural Extension Services
DAESS	District Agricultural Extension Service System
EPA	extension planning area
FAAP	Framework for African Agricultural Productivity
FINCA	Foundation for International Community Assistance
FIS	Farmer's Information System
FISP	Farm Input Subsidy Programme
FSCD	Foundation for Sustainable Community Development
FVR	Farmer Voice Radio
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (the development agency of the German government)
GPS	Global Positioning System
GSP	government service providers
ICT	information and communication technologies
IFPRI	International Food Policy Research Institute
LUANAR	Lilongwe University of Agriculture and Natural Resources
M&E	monitoring and evaluation
MaFAAS	Malawi Forum for Agricultural Advisory Services
MaSSP	Malawi Country Strategy Support Program
MGDS II	Malawi Growth and Development Strategy II
MIP	market information point
MoAIWD	Ministry of Agriculture, Irrigation, and Water Development (Malawi)

MK	Malawian kwachas
NACDC	National Agricultural Content Development Committee
NAP	National Agriculture Policy
NASFAM	National Smallholder Farmers' Association of Malawi
NAIP	National Agricultural Investment Plan
NGO	nongovernmental organization
non-GSP	nongovernment service provider
ORT	other recurrent transactions
PIM	CGIAR Research Program on Policies, Institutions, and Markets
SANE	Strengthening Agriculture and Nutrition Extension
SAPP	Sustainable Agricultural Production Programme
SMS	subject matter specialist
SSA	Africa south of the Sahara
USAID	United States Agency for International Development

1. INTRODUCTION

This report summarizes key findings from a recent survey of service providers engaged in agricultural and nutrition extension, in-depth interviews of selected service providers and frontline workers, and focus group discussions in 22 rural communities across Malawi. Together with the recently published report that looks at farmers' perspective (Ragasa and Niu 2017), this report is aimed for use by various stakeholders in Malawi, especially in the review of the national extension policy and development of an extension strategy, and in the implementation and monitoring of extension activities under the National Agriculture Policy (NAP).

In this study, we define *extension service providers* to include all organizations that have among their main activities the provision to farmers and farm households of information on agriculture (including crops, livestock, fisheries, postharvest concerns, markets, and natural resources), rural livelihoods, or food security and nutrition. This is a broad definition, which implies a broad set of actors including the government, nongovernmental organizations (NGOs), nonprofit organizations, community-based organizations, farmer-based organizations, cooperatives, private companies, input dealers, banks, local radio stations, mobile telephone / text messaging operators, training institutes or centers, and universities or colleges.

This report is the second in an ongoing series of studies under a three-year project titled Assessing and Enhancing the Capacity, Performance and Impact of the Pluralistic Agricultural Extension System in Malawi (see Ragasa and Niu 2017 for more details on the motivation for the project). Additional research reports and papers that look at both the demand for and the supply of agricultural extension services in Malawi are underway. The project is being led by the International Food Policy Research Institute (IFPRI) with the financial support of the government of Flanders and the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), the German agency for international development, and funding support for the complementary household and community surveys from the

Strengthening Agriculture and Nutrition Extension (SANE) project of the United States Agency for International Development (USAID).

This report is structured as follows. The following section describes the methods and data sources. Section 3 presents results based on specific indicators viewed through the lens of a systems approach and a hierarchy of needs for developing the capacity of organizations (Potter and Brough 2004), using a best-fit framework for understanding local and policy contexts (Birner et al. 2009). Conclusions, policy recommendations, and suggestions for further research are highlighted in the last section.

2. METHODS

This study focuses on 15 districts (the shaded districts in Figure 2.1), representing all regions, agricultural development divisions, agroecological zones, and farming systems. More details on the selection criteria for the districts can be found in Appendix A. National-level agencies that may not be working in specific districts, such as mass media operators, are also included. Three data collection methods were adopted:

- A short-form survey, administered to all extension service providers with the support of the respective district agricultural extension coordination committees, district commissioners, directors of planning and development, and district agriculture development officers (DADOs). Of 208 service providers in the 15 sample districts, 151 completed a survey form.
- In-depth semi-structured interviews with heads of selected extension organizations and a random selection of their frontline workers. The selection was purposeful to represent the diversity of types of service providers but also relied on their willingness to be interviewed. Beyond these criteria, the selection was as random as possible. The interviews lasted two to three hours each. In-depth interviews were conducted with 30 service providers—10 government service providers (GSPs)—the DADOs—and 20 nongovernment service providers (non-GSPs). We also interviewed 71 frontline or extension workers from within and outside the government, with an age range from 21 to 64 and an average age of 39. The majority of frontline workers interviewed (80 percent) were male (20 percent were female).
- Focus group discussions and their locations are marked with dots in Figure 2.1. A total of 22 gender-disaggregated focus group discussions were undertaken, with a total of 113 male and 141 female participants, sampled from 11 communities in 8 districts from the same geographic areas. Our sampling approach purposefully targeted a mix of very remote and more central communities in order to compare their experiences. The group discussions were completed in January and February 2017. The groups were led by local enumerators fluent in the local languages Chichewa, Chibandya, and Chinyika. Discussions were recorded, translated, and transcribed, and then thematically coded according to a set of predetermined and empirically driven themes, using Nvivo 11. The focus group discussions included modules on gendered access to extension and training on agriculture, markets and nutrition, information sharing among household members, and gendered barriers to the application of extension information.

There are completed by key informant interviews and review of related literature. Whenever relevant, discussions and comparisons from farmers' perspectives are cited from the recently published report by Ragasa and Niu (2017) based on the survey of 3001 randomly-selected households and 299 randomly-selected communities.

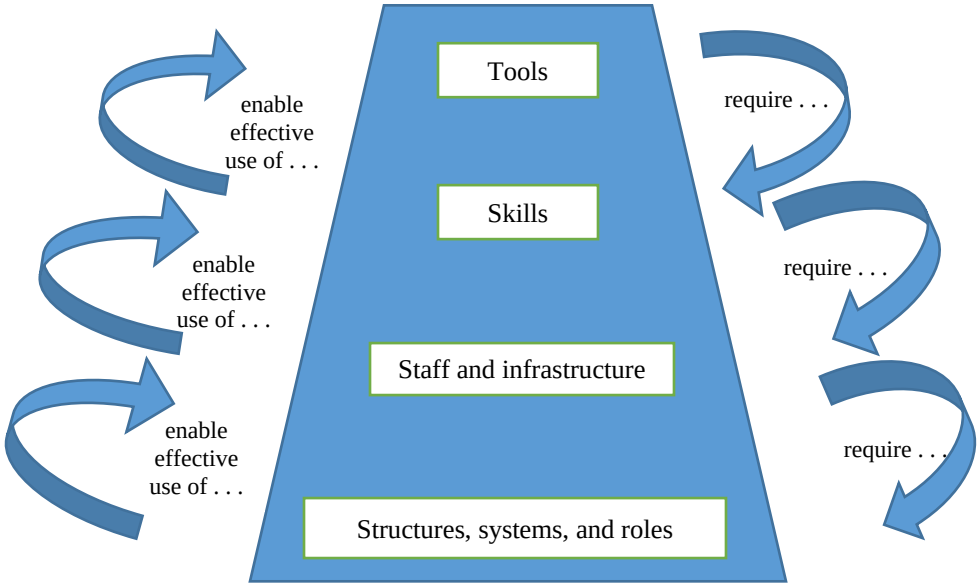
Figure 2.1 Map of Malawi and focus districts for the study of extension service providers and focus group discussions

Source: Raw data from authors' interviews (December 2016 to March 2017). All districts are covered in the household and community surveys; those shaded with gray are the 15 focus districts of the census of service providers; those with dots are the locations on the focus group discussions.

The analysis is mainly descriptive, using the frameworks of Potter and Brough (2004) and of Birner and colleagues (2009) to organize and analyze the data. Commonalities between the two frameworks include a systems approach as well as analysis of different dimensions, including context, structure, organizational management, organizational capacity, skills, and tools and approaches. The

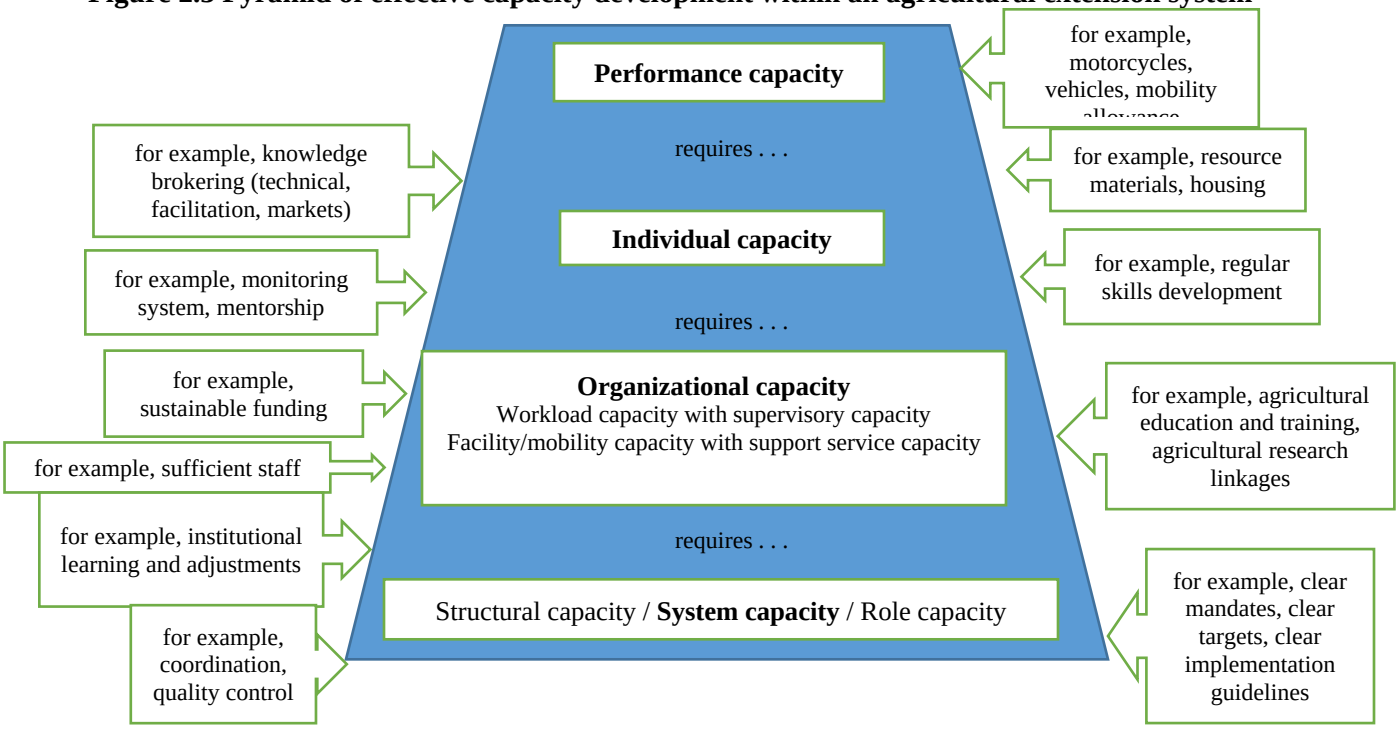
added feature of the Potter and Brough (2004) framework is its explicit discussion and framing of the hierarchy of needs and its implications for the pyramid of capacity strengthening. Birner and colleagues (2009) added an emphasis on coordination among different actors, especially in the innovation system. Figures 2.2 and 2.3 show the hierarchy of needs and its implications for the pyramid of capacity strengthening, adapted from Potter and Brough (2004). This model borrows from the health system, but its messages resonate well with agricultural extension systems. Capacity is considered in terms of system capacity, organizational capacity, and individual capacity. *System capacity* includes structure, coordination, and clear roles and mandates. *Organizational capacity* refers to the programs and services; staff; facilities; and processes of supervision, decision making, information flows, financial flows, and so forth within organizations or networks. *Individual capacity* involves skills, expertise, tools, and methods for knowledge sharing and learning, as well as the available resources to implement extension work. Table 2.1 illustrates some of the questions that institutions or external evaluators can ask when analyzing these different capacities.

Figure 2.2 Capacity pyramid for assessing extension systems



Source: Potter and Brough (2004).

Figure 2.3 Pyramid of effective capacity development within an agricultural extension system



Source: Modified from Potter and Brough (2004).

Table 2.1 Key issues and core elements of capacity relevant to an extension system

Individual capacity: Methods and skills • Performance capacity: Are the tools and methods, resources, and equipment available to do the job? • Personal capacity: Are staff sufficiently knowledgeable, skilled, and confident to perform properly? Do they need training, experience, or motivation? Are they deficient in technical, managerial, interpersonal, or specific role-related skills?
Organizational capacity: Staff and infrastructure • Workload capacity: Do enough staff have broad enough skills to cope with the workload? Are job descriptions practicable? Is the skill mix appropriate? • Supervisory capacity: Are reporting and monitoring systems in place? Are lines of accountability clear? Can supervisors physically monitor all staff? Are effective incentives and sanctions available? • Facility capacity: Are training centers, offices, and workshops big enough, with the right staff in sufficient numbers, to support the workload? • Support services capacity: Are there training institutions, supply organizations, building services, administrative staff, research facilities, and quality control services?
Systemic capacity: Structure, systems, and roles • Structural capacity: Are there decision-making forums or multistakeholder platforms at which intersectoral discussion of extension could take place, consensus could be generated, collective decisions made and recorded, and individuals called to account for nonperformance? • System capacity: Do flows of information, money, and managerial decisions happen in a timely and effective manner? Are proper filing and information systems in use? Can private-sector services be contracted as needed? Is there good communication with the community? Are links with nongovernmental organizations sufficient? • Role capacity: Are functions, mandates, and roles clearly communicated? Have individuals, teams, and committees been empowered to make decisions to ensure effective performance—for example, regarding activities, programs, money, and rewards and sanctions?

Source: Modified from Potter and Brough (2004).

These capacities can be organized in a logical hierarchy (as in Figures 2.2 and 2.3) to show how the effectiveness of one form of capacity depends and builds on the effectiveness of other forms. Systematically applying the pyramid to the system and asking what the capacity shortfalls are in terms of each component can afford a better understanding of organizational shortfalls and a more logical approach to ascertaining where action is needed most. Without adherence to a rational structure, interventions aimed at developing capacity are likely to achieve (all-too-common) suboptimal results. That is to say, there may be a lack of capacity in terms of skills, but training alone will be largely a waste of effort and resources if there is a more serious lack of systemic capacity to address the real problems.

The other guiding principle used in this paper is a framework developed by Birner and colleagues (2009), presented in Figure 2.4. In this framework, the ultimate goals of strengthening agricultural extension organizations are to improve their performance and effectiveness (labeled I in Figure 2.4), and to contribute to the ultimate goals of the country toward technology adoption, agricultural productivity growth, improved incomes, and food and nutrition security (J and K). The boxes toward the left in the

framework diagram indicate how different factors that can be influenced by reform efforts, and vice versa, act together in influencing organizational performance and effectiveness. These factors include the following:

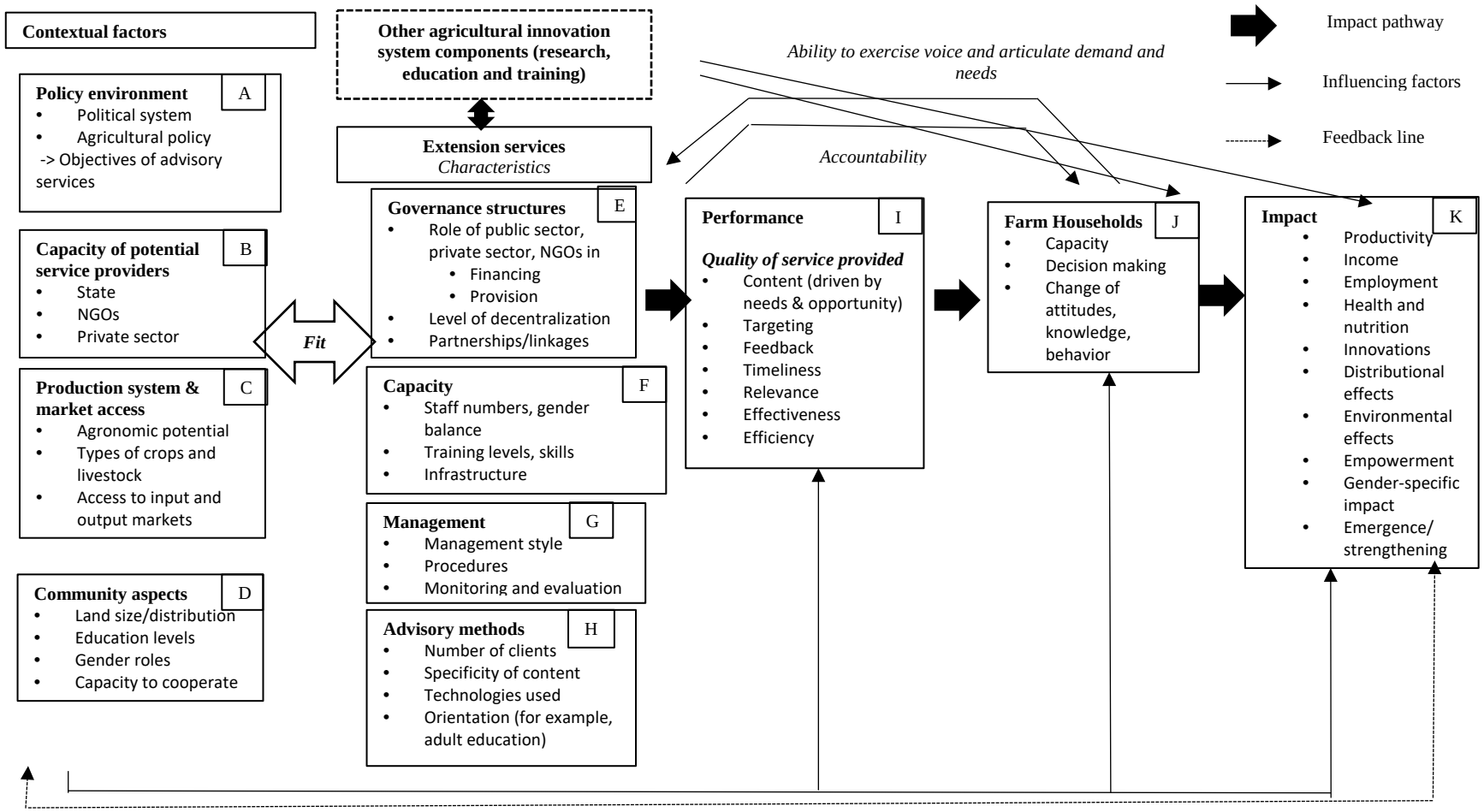
- **Context and enabling environment (A–D in Figure 2.4):** Contextual factors, frame conditions, or the enabling environment is a critical starting point in assessing a national or subnational extension system and benchmarking it against other countries' systems. In particular, the development status and priorities of a country and its agricultural development strategy have major implications for the appropriateness of different models of or approaches to providing and financing agricultural advisory services, as well as for explaining why the extension system is structured as it is and performs as it does. The proportion of the budget that a government is able and willing to spend on its agricultural sector determines the scope for publicly funded advisory services. The types of farming systems and the degree of market access are also important frame conditions for the design of an agricultural advisory service. The opportunities and needs for agricultural advice differ considerably depending on the type, intensity, and diversity of the crops and livestock farmers produce, and on farmers' access to input and output markets and other services. Farming households in a context that is largely underdeveloped, heavily dependent on staple and subsistence agriculture, and with limited commercialization would not have the capacity and incentive to demand extension services, nor would they know what to demand. The capacity of potential service providers is also an important frame condition. If the country under consideration has a relatively effective public administration system, the public sector may have a comparative advantage in providing services, as opposed to a situation in which public administration is generally weak but NGOs are strong. Finally, the characteristics of local communities and their levels of social capital play an important role in the design of an agricultural advisory service. Communities with a limited history of organizing and collective action cannot be expected to master demand-driven and bottom-up approaches in extension service provision. Pamuk, Bulte, and Adekunle (2014) indicated that the level of initial social capital in a village is positively associated with the success of innovation platforms supporting agriculture. Likewise, the prevalence of social hierarchies and social exclusion influences the strategies required to reach disadvantaged groups.
- **Policy, mandate, and structure of the extension system (E in Figure 2.4):** Any organization or system starts with a clearly defined and shared mission, objectives, roles, and responsibilities, made explicit in a policy or strategy. Successful organizations have clearly defined and measurable targets to monitor and evaluate their progress and areas in need of improvement. National extension policies or strategies, which have been developed for several countries, are implemented through an institutional design that defines the level of decentralization and deconcentration, the degree of autonomy and flexibility, and other characteristics that describe the internal structure and interconnectivity of various organizations involved in the national extension system. A national extension system can comprise alternative options for service providers, and the competition and coordination in such a pluralistic system are expected to bring forth greater effectiveness and a better quality of services. In a pluralistic system with many service providers, institutional coordination, management, and regulation are also important to ensure an effective extension system that delivers on its mandate.
- **Organizational capacity and incentives (F–G in Figure 2.4):** These involve (1) available resources in terms of human capital, gender balance, financial resources, and infrastructure;

(2) management, which includes leadership style, procedures for planning, monitoring and evaluation (M&E), human resource management, financial management, and the role that coordination plays in managing the organization; and (3) organizational culture, which can be a result of the effectiveness of management systems or an organic accumulation of experiences, interactions, and dynamics within the organization. Relevant organizations are those involved in any stage of agricultural extension service provision (extension service delivery, training of service providers, and so on). An important aspect of organizational capacity and incentives is the staff, especially the frontline extension agents who work directly with farmers. Their skills, motivation, sense of accountability, and work environment are key to their effective functioning and work with rural producers.

- **Extension delivery methods (H in Figure 2.4):** Methods and technologies are the primary ways in which the organization chooses to deliver services. For extension agents, these include how they interact with farmers, conduct demonstrations, and generally spend their time.

These factors are in turn influenced by the country context, social and political processes, the international and national policy environment, and the characteristics and potential of the country's agriculture sector.

Figure 2.4 Conceptual framework for the design and analysis of agricultural advisory services



Source: Modified from Birner et al. (2009).
Note: NGO = nongovernmental organization.

3. RESULTS

Policy Environment

The provision of agricultural extension services in Malawi has been guided by the national Agricultural Extension Policy, put in place in 2000. The stated vision of this policy is that "all farmers [will be] able to demand and have access to high-quality extension services from those best able to deliver them" (Malawi, Ministry of Agriculture and Irrigation 2000, 16). The policy promotes the provision of decentralized, demand-driven services and encourages the participation of many service providers in agricultural extension. The policy set out nine guiding principles to help extension actors operationalize its aims, including demand-driven extension services, accountability, equalization, and decentralized coordination, among others.

The implementation of this policy has been linked to other subsectoral policies and strategies whose effectiveness depends on the sound provision of agricultural extension services and thus on the implementation of the extension policy. These include the Food Security Policy; the Crop Production Policy; the National Livestock Development Policy; the Agricultural Research Master Plan; the National HIV and AIDS Strategic Plan; the Agriculture Sector Gender, HIV and AIDS Strategy; the National Fertilizer Strategy; the National Irrigation Policy and Development Strategy; and the Land Resource Conservation Policy, among others.

In 2016, the Malawi government launched its National Agriculture Policy (NAP), which has become the mother policy for the agricultural sector. The main agenda for the NAP is the transformation of the agricultural sector, which is expected to lead to significant growth in agricultural production, productivity, and real farm incomes (Malawi, MoAIWD 2016a). The NAP set out nine priority areas for realizing this transformation, one of which is sustainable agricultural production and productivity. The document clearly cites weak agricultural extension service delivery as a key constraint in this priority area. Moreover, extension and advisory services are relevant to all the NAP priority areas. The NAP therefore promotes innovative, demand-driven, and pluralistic agricultural extension and advisory services, which are considered critical to the achievement of its goals. One key issue for the attention of

agricultural extension and advisory actors is the transition of individual farm households from a profound subsistence orientation toward more specialized and market-oriented production, which will in turn influence how extension and advisory services will be financed and implemented. For example, the policy clearly cites the need for crop diversification, away from the dominant maize and tobacco and toward other high-value agricultural commodities and products, including other crops, livestock, and fish, to increase household incomes, expand agricultural exports, and improve food security and nutrition status. It also mentions expanding the focus of public investments from exclusively smallholder farmers to include medium- and large-scale commercially oriented farmers. Other key issues worth noting in the NAP are market-oriented extension services, value chain approaches, and sustainability of natural resources. Apart from increased agricultural production and productivity, other projected policy outcomes include the following (Malawi, MoAIWD 2016a, 8):

1. Increased diversification of agricultural production and marketed surpluses
2. Increased use of irrigation in crop production
3. Increased mechanization of farming and agroprocessing activities
4. Increased agroprocessing of and value addition to agricultural products, particularly by women and youth
5. Increased access by producers and consumers to well-functioning agricultural markets—including input, output, and consumer retail markets
6. Increased engagement by women, youth, and vulnerable groups in agriculture policy processes and programs

The NAP was necessitated by the existence of many incoherent policies and strategies that limited the ability of the agricultural sector to respond to changing economic opportunities and challenges. The government is hopeful that the NAP will provide a comprehensive policy framework for each subsector to positively contribute to agricultural development and the economy in a coherent manner. Subsectors are therefore expected to respond with relevant strategies in line with the new agricultural policy. Thus, the national Agricultural Extension Policy is under review and will be replaced with a national agricultural extension strategy.

At the national level, the NAP is linked to other sectoral and cross-cutting policies such as the Market Liberalization Policy, the Decentralization Policy, the National Gender Policy, the National

Nutrition Policy and Strategic Plan, and the Malawi Growth and Development Strategy II (MGDS II). MGDS II is the overall medium-term strategy aimed at reducing poverty in Malawi through sustainable economic growth. Enhancing the provision of effective extension services is one of its core strategies for addressing the challenges facing the agriculture sector. At the international level, the NAP is linked to the Comprehensive Africa Agriculture Development Program (CAADP), which commits all partners to supporting the Agriculture Sector Wide Approach (ASWAp) within the CAADP framework. ASWAp is a harmonized approach to program implementation in the sector that is aligned to CAADP pillars. In Malawi, this approach functioned as the country's National Agricultural Investment Plan (NAIP) during the period 2011–2015. Technology generation and dissemination was one of the two key support services under ASWAp. A new NAIP (being formulated) will provide an implementation framework for the NAP.

Experts agree that Malawi has an appropriate policy environment for implementing agricultural extension and advisory services, although the policies are not fully operationalized due to a number of factors including inadequate government funding and unclear implementation guidelines (MEAS 2012; Ragasa, Mazunda, and Kadzamira 2015; Masangano 2016; 2017).

Extension Service Providers

There is a broad set of different service providers for agricultural extension in Malawi, indicating quite a strong degree of pluralism. Table 3.1 shows the range of service providers identified by key informants in the focus districts, including those from the government; trusts; international NGOs; local church-based, farmer-based, and community or youth organizations; private companies including banks, agrodealers, traders, and commodity exchanges; and mass media operators, including radio, mobile phone service providers, and call centers.

Table 3.1 Distribution of extension service providers in 15 districts in Malawi, 2017

Organization type	Number of organizations (national)		Average number of organizations per district[a]
	Number	%	
Government (district agriculture development office)	1	1	1
Trusts and semigovernment (ADMARC, Forestry Dept., ARET, community development offices)	6	5	3
International NGOs	39	31	2
Local NGOs or community programs	39	31	1
Church-based organizations	14	11	2
Farmer-based organizations	7	6	2
Private companies (Dumisani, Toleza, FINCA, NBS Bank)[b]	14	11	1
Media (community radio stations, Farm Radio Trust, Capital FM radio, Access Agriculture, ACE, Geek Bit, FIS Work Group)	7	6	1
Total	**127**	**100**	**13**

Source: Raw data from authors' survey of service providers (December 2016 to March 2017).

Note: [a] Some of the organizations work in multiple districts. [b] Figures do not include agrodealers and input suppliers because the district agricultural extension coordination committees and other key informants did not consider them to be extension service providers in the district. ADMARC = Agricultural Development and Marketing Corporation; ARET = Agricultural Research and Extension Trust; NGO = nongovernmental organization; FINCA = Foundation for International Community Assistance; ACE = Agricultural Commodity Exchange; FIS = Farmer's Information System.

The Public Extension System

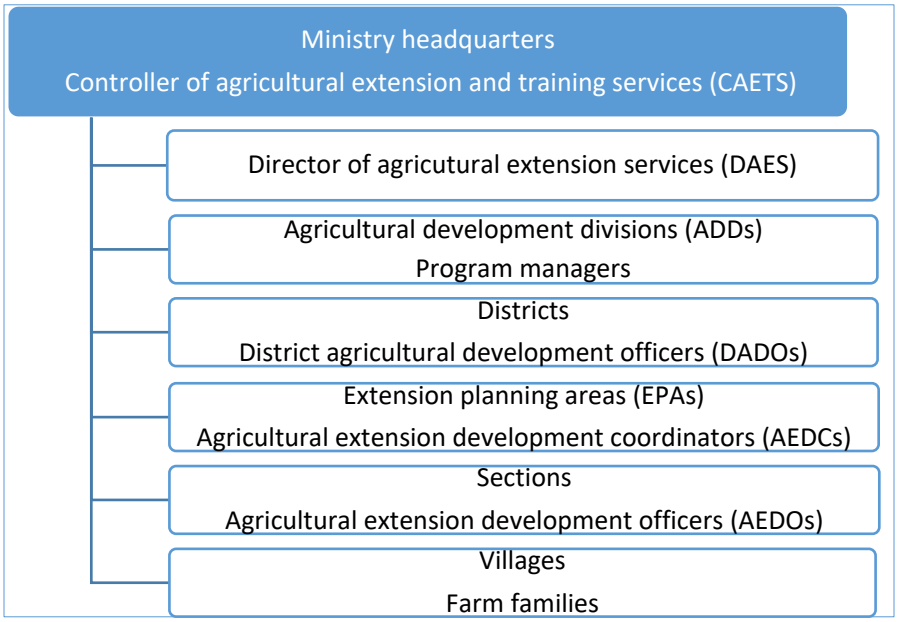
Although the Malawi extension system has become increasingly pluralistic, the public part of it is still the largest extension service provider in Malawi. In any given district, there are roughly 86 GSP frontline workers and, on average, 47 frontline workers from all non-GSPs combined (a 2:1 government-to-nongovernment ratio).[1] Moreover, almost all non-GSPs work with an agricultural extension development officer (AEDO) to implement their activities, compensating the AEDOs with fuel allowances and training opportunities (see details below). In addition, the community survey shows that 99 percent of group villages had been visited by government agents; in contrast, Ragasa and Niu (2017) reported that only 15 percent of group villages had been visited by nongovernment agents. Thus, in national terms, spatial coverage by non-GSPs remains limited.

According to the 2000 National Agricultural Extension Policy (Malawi, Ministry of Agriculture and Irrigation 2000), the public-sector extension service is expected to develop and provide policy

[1]There is also a possible overlap of subject matter specialists and frontline workers within the non-GSPs, so the figures are our best interpretation of the data available.

guidelines for extension; coordinate stakeholders; build the capacity of extension staff; provide information, education, and materials; strengthen farmers' organizations; and provide a conducive environment for private-sector development. The public extension system is implemented through the Ministry of Agriculture, Irrigation, and Water Development (MoAIWD), through its own structure as well as the decentralized local government structure. The ministry headquarters is in Lilongwe, the capital city. Technical services such as extension, crops, research, and land resources in the ministry are headed by the controller of agricultural extension and training services (CAETS), who supervises the directors. For agricultural planning and implementation purposes, the country is divided into eight agricultural development divisions (ADDs). The ADDs are further divided into districts and extension planning areas (EPAs), as illustrated in Figure 3.1. The EPAs, which are the basic agricultural operational units, are divided into sections and then villages. There are a total of 28 districts, 185 EPAs, and 2,880 sections in Malawi (Kamkwamba 2015).

Figure 3.1 Organizational structure of the Malawi Ministry of Agriculture, Irrigation, and Water Development

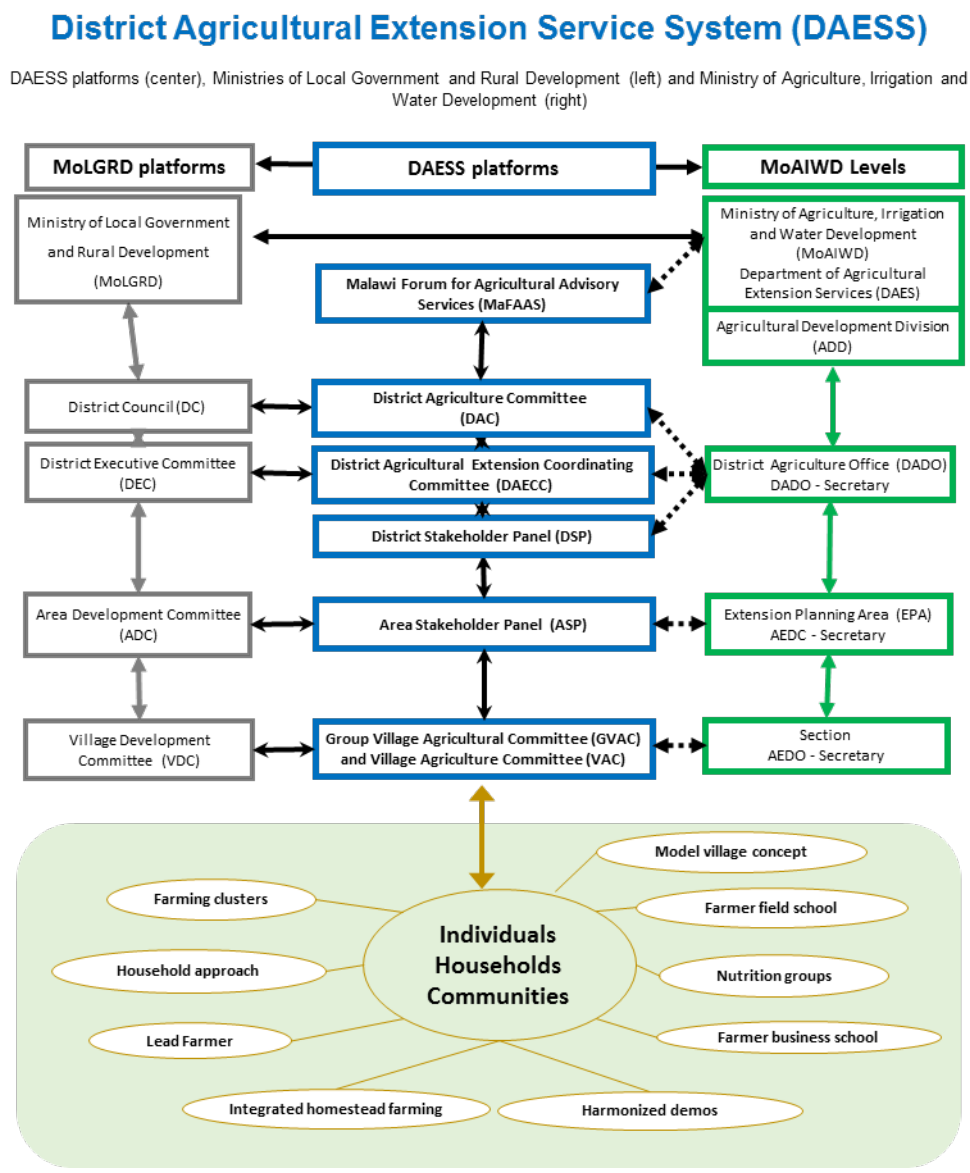


Source: Authors' interviews.

The ADDs are headed by a program manager and cover two to five districts. Program managers coordinate all agricultural activities from the ministry's technical departments, dedicated to matters such as crops, land resources, conservation, livestock, fisheries, irrigation, research, and extension. Under decentralization, MoAIWD works through the district assemblies, each headed by a district commissioner. In each assembly, agricultural services are the responsibility of a DADO, supported by a team of subject matter specialists (SMSs) from various technical departments backstopping the frontline extension workers, the AEDOs. The DADO is responsible for all agricultural programs in the district, including extension services. Similarly, the agricultural extension development coordinators (AEDCs) head the EPAs and coordinate all agricultural activities within them. However, the AEDOs manage the sections and are responsible for implementing all agricultural activities in them. Ideally, there should be one AEDO per section, but due to inadequate staff, some sections have no AEDO.

In MoAIWD, public extension is provided and coordinated through the Department of Agricultural Extension Services (DAES) structure, in close partnership with the other technical departments of MoAIWD and the District Agricultural Extension Service System (DAESS) (Figure 3.2). At the national level, DAES has five technical branches with SMSs: Extension Methodologies and Systems, Food and Nutrition, Agricultural Communication, Agribusiness, and Gender and Extension Support, the latter headed by the director of agricultural extension services. These branches are represented at both the ADD and district levels by one or two SMSs. The chief agricultural extension officer (CAEO) heads the extension team at the ADD level and supervises all extension activities at the ADD and district levels. However, all the technical branches of DAES work through the AEDC and AEDO at the EPA and section levels, respectively, for their extension activities.

Figure 3.2 Agricultural extension governance structures in Malawi



Source: Adapted from Malawi, MoAFS (2004).

Note: Solid lines reflect reporting lines from the DAESS platforms to the MoLGRD. For instance, the area stakeholder panels report to the area development committees on agricultural development at the area level and on the functioning of the panels themselves. A similar pattern applies to the other levels (village, district). On the other hand, the dashed lines connect MoAIWD with the DAESS platforms by facilitating the existence of these platforms, being part of them (for example, the district agriculture development officer is chair of the district agricultural extension coordination committee), and building their capacity so that the platforms can perform their key functions. MoAIWD is also an advocate for the role of MaFAAS at the national level. The Department of Agriculture and Extension Services is part of MoAIWD, together with the other technical departments dedicated to fisheries, livestock, crop development, land resources, and agricultural development. The DAESS structures encompasses all of these technical departments, and therefore the heads of these departments are represented on the district stakeholder panel and the district agricultural extension coordinating committee. AEDC=Agricultural Extension Development Coordinator; AEDO=Agricultural Extension Development Officer.

As seen earlier, in Figure 3.1, the line of authority moves from the CAETS down to the AEDO. Sometimes information may flow from the DAES directly to SMSs at each level, down to the AEDC and AEDO. In terms of reporting, the AEDO reports to the AEDC and the DADO, also sharing information with the SMSs of the relevant technical branch(es), and the DADO provides the district assembly with copies. The DADO reports to the program manager, who ultimately reports to the CAETS. At the same time, SMSs at the district level report to the DADO, with a copy to the CAEO at the ADD level, whereas the CAEO reports to the program manager, with a copy to the national DAES. As this section will show, this double accountability poses a challenge.

At the district level, pluralistic and demand-driven extension is provided through the DAESS, which mirrors the decentralized local government structure (Malawi, Ministry of Agriculture and Food Security 2004) (Figure 3.2). The national extension policy passed in Malawi in 2000 relies heavily on various interlinked structures—from the village to the district and national levels—in order to (1) reduce information asymmetry between users and service providers, (2) have platforms for demand articulation and aggregation, (3) coordinate and harmonize the activities and messages of extension service providers, and (4) improve accountability among various service providers in order to provide better-quality extension services. Put differently, with an emphasis on improving coordination and making agricultural extension services more demand driven, the government of Malawi promoted the creation of various connected structures at various levels, starting with farmers' involvement at the village level. These different structures are model villages and village agriculture committees at the village or group village level; area stakeholder panels at the EPA level; district stakeholder panels, district agricultural extension coordination committees (DAECCs), and district agriculture committees at the district level; and a national stakeholder panel—the Malawi Forum for Agriculture Advisory Services (MaFAAS)—at the national level.

In the DAESS, each structure performs key functions. The model villages are the entry point for agricultural development programs and use participatory approaches to plan, implement, monitor, and evaluate the progress of those programs at the village level. Also at this level, the village agriculture

committee, which is a subcommittee under the village development committee, serves as a forum for farmers and other relevant stakeholders such as NGOs and agribusinesses to express their needs and agree on common issues that require action. Area stakeholder panels perform a similar function at the EPA level by serving as a discussion space to identify agricultural priorities, ensure representation of various stakeholders, and aggregate villages' agricultural needs in order to provide quality responses. At the district level, the district stakeholder panels collect the agricultural demands expressed at the area stakeholder panels and coordinate with extension service providers to respond to prioritized agricultural needs. The DAECC is responsible not only for ensuring that quality extension services are provided throughout the district but also for advising the district agriculture committees on agricultural development issues and for mobilizing resources in support of agricultural extension services. The district agriculture committees, composed of elected members of the district council, also connect the multilevel extension structure with other institutions of the local government.[2] Finally, district stakeholder panels and DAECCs are linked to the national stakeholder panel (MaFAAS) at the top, which at the same time connects to the higher levels of MoAIWD.[3] Altogether, this system aims to create pluralistic, demand-driven, and decentralized extension services that assist farmers in a more efficient and effective way.

In general, however, these decentralized structures are not seen favorably (MEAS 2012; Masangano and Mthinda 2012; Chowa, Garforth, and Cardey 2013). Since the implemented guide of the NAEP was published in 2004, these structures had not been operational. Among the reasons being reported by key informants are lack of specific guidelines in implementing these structures, lack of awareness campaign and clearly-communicated roles and functions, and lack of government funding to support the activities of these structures. With recent funding through ASWAp and SAPP starting in 2014, these structures have been supported and somehow strengthened. Our preliminary fieldwork

[2]The district agriculture committees work with the district council on such tasks as making recommendations on extension service policies, supporting local agricultural institutions and development, assisting in resource acquisition, and encouraging community participation.

[3]MaFAAS is also linked to the National Agricultural Content Development Committee to ensure a harmonized approach to the development of agricultural nutrition and extension messages at all levels and to address inconsistencies and conflicting messaging. The SANE project is also working on implementing this harmonized messaging at the district level via the DAECC, so that content is harmonized all the way down to the village level.

revealed substantial variation and diverse experiences throughout Malawi in their activity levels. These are also confirmed by surveys conducted by the team of the USAID-funded SANE project (MaFAAS 2017). An ongoing research by Ragasa, Alvarez-Mingote and McNamara (2017) assess the effectiveness of these structures in terms of their roles in (1) providing a platform for discussions; (2) providing a feedback system on the quality of service providers and messages provided; and (3) responding to farmers' demands and issues. Contrary to earlier reported, most of these structures are active, except for district stakeholder panels (DSPs), where only about a quarter are active (Ragasa, Alvarez-Mingote and Mcnamara 2017) (Table 3.2). Similarly, most of them provide a platform for discussion and feedback on service providers and quality of their advice, except for DSPs. Most of GSPs and non-GSPs (61 percent) reported using VACs/GACs to get feedback on farmers' demand and issues. Nevertheless, many areas remain weak despite recent investment and support by the donor community:

- Only half of the randomly-selected Village Agricultural Committees (VAC) or Group Villages Agricultural Committees (GAC) are set-up and implemented;
- The participation by farming households in these village-level committees is very low (only 35 percent of those reporting that these committees exist in their villages);
- There is low awareness on these committees and confusion on their roles and functions implied by the inconsistent responses provided by village opinion leaders and sample household members;
- Most structures were given poor ratings in terms of their responsiveness to the concerns and issues raised;
- Only 20 percent of the randomly selected communities have implemented the model village concept, which focuses on an integrated approach to solving communities' challenges; and
- This model village concept is not associated with improved community outcome indicators; and its implementation should be reviewed and improved in order to contribute to development outcomes.

Ongoing economic research by Ragasa, Alvarez-Mingote, and McNamara (2017) suggests that household participation in village agricultural or development committees is strongly associated with better household outcomes, and active and responsive village committees and stakeholder panels are strongly associated with better access to extension services and improved technology awareness and

adoption at the community level. These results show that these structures matter and strengthening them is key to address their long-term functionality.

These results also show that it is not the presence of these structures that matters, but rather their quality and how they bring concrete benefits to participants what makes the difference. These structures should, therefore, be further strengthened as long as the benefits exceed the costs of establishment, implementation and monitoring. Current capacity strengthening of these structures seems to be done mechanically, focusing on their set-up but without providing adequate support for their long-term functionality such as designing monitoring practices and tracking of key objectives. It is paramount that strengthening interventions target these much-needed operational areas.

Table 3.2 Performance indicators of the various decentralized extension structures.

Indicators	VAC/VDC (*n*=299)	ASP (*n* =84)	DSP (*n* =10)	DAECC (*n* =10)	DAC (*n* =10)
1. How active the structure is in terms of frequency of meetings and links to higher level structures					
Active (meets at least once per year)	0.84	0.90	0.20	0.60	1.00
Not active (almost never meets)	0.16	0.10	0.80	0.40	0.00
2. Degree of functionality and responsiveness to needs and concerns raised (conditional on being active)					
Active, but not responsive (meets at least once per year)	0.85	0.89	1.00	0.56	0.64
Active and responsive (based on average ratings of the sample members)	0.15	0.11	0.00	0.44	0.36
3. Farmers have the opportunity to provide feedback on the quality of governmental extension services		0.79	0.40	0.82	

Source: Adopted from Ragasa, Alvarez-Mingote and McNamara (2017).

Nongovernment Service Providers

In addition to the government extension system, non-GSPs are plentiful. The total number of service providers (both GSPs and non-GSPs) per district averages 13 (Table 3.1) and ranges from 6 in Chiradzulu to 25 in Balaka and 35 in Lilongwe. International NGOs constitute 31 percent of all extension service providers across the districts, ranging from 17 percent in Ntcheu to 83 percent in Chiradzulu and painting a picture different from the reported heavy presence of international NGOs in earlier studies (IDAF 2010; Masangano et al. 2012; Ragasa, Mazunda, and Kadzamira 2015). The results also show many local organizations that are active extension service providers, accounting for 48 percent. Another 22 percent of service providers are private companies, mass media operators, trusts, and the Agricultural Development

and Marketing Corporation (ADMARC). Based on our data collection, there are more local organizations involved in extension service provision than previously thought. Understanding their history, characteristics, and activities may help inform how to better support them as well as form new ones that will become effective extension service providers, as envisioned in the National Extension Policy.

Farmers' organizations are also active as extension service providers to their members. According to the extension policy, the role of farmers' organizations includes provision of extension services to their members, adequately representing farmers' interests, contributing to policy formulation, and capacity building of members. The Farmers Union of Malawi was established in 2003 as the umbrella body for farmers' organizations in the country. Its objectives are to build the capacity of farmer organizations, promote the interests of farmers by lobbying government, source private and public funding to develop entrepreneurship skills, and help farmers establish national and international links. It aims at safeguarding the interests of its members through policy and advocacy, institutional development and capacity building, promotion of good governance, and supporting the agribusiness and marketing initiatives of its membership. In 2016, the union had 256 member organizations representing about 1,024,193 smallholder farmers. The member organizations include commodity associations and cooperatives, associate members, and individual medium- and large-scale farmers. Examples of member organizations include the National Smallholder Farmers' Association of Malawi (NASFAM), the Poultry Industry Association of Malawi, the Malawi Milk Producers Association, Mzuzu Coffee Planters Cooperative Union Ltd., the Cotton Farmers Association of Malawi, the Association of Smallholder Seed Multiplication Action Group, the Grain and Legumes Association, and the Tobacco Association of Malawi. The Farmers Union of Malawi is an apex body representing farmers' work with associations and cooperatives. The union convenes its members annually through a general assembly where farmers discuss policy issues. As of 2015, it had 28 extension workers distributed in 12 districts, providing limited extension service to the member organizations. The union's vision is to have district-level farmers' unions to facilitate support and respond to members' individual needs.

NASFAM is the largest independent, smallholder-owned membership organization in Malawi. It is founded on the principles of collective action and democratically governed by its members. NASFAM aims at improving the livelihoods of smallholder farmers by enhancing their ability to generate their own income. A typical NASFAM member cultivates less than 1 hectare of land to support a family of 6.0, larger than the national average household size of 4.6. Members produce 60 percent cash crops and 40 percent food crops. NASFAM admits both men and women, who pay a small membership fee to support the association and commit to putting in practice what they learn. Membership is more than 100,000 in 43 associations spread across the country (Kumwenda 2013). NASFAM is considered one of the most successful farmers' organizations in the region.

Unlike other farmers' organizations, NASFAM has a fully fledged extension system. The extension service is headed by the farm services manager. As of 2013, there were 1,571 farmer trainers, who worked under 62 association field officers to facilitate the delivery of extension services (Kumwenda 2013). In addition, it has three farm services specialists and 14 association business managers, and it also uses lead farmers. It commissions its own research, which is carried out through government research stations, universities, and international research centers. It has a business entity that facilitates marketing of produce for its associations. However, it works in partnership with the government extension system because its field staff are located at the EPA level. Hence, NASFAM staff work with government AEDOs and with lead farmers in the villages. NASFAM reaches its farmers through radio and television programs as well as newsletters and leaflets. It also conducts its own demonstrations and field days. It supports its staff with trainings and necessary working materials such as stationery, transportation, and communication.

Media-based service providers largely focus on providing market information. Most commonly, they collect and disseminate information on prices for key agricultural commodities in rural and national markets, and on technologies that would best suit farmers' local conditions, disseminating it online, by text message, and through radio programs. In particular, the Agricultural Commodity Exchange (ACE) collects information weekly on prices of key agricultural commodities from 25 markets in Malawi

through its rural marketing advisers. It displays information on price trends, trade opportunities, and volumes traded on large screens in five rural market information points (MIPs). Farmers are also able to put up bids and offers through these MIPs. Just like many others, ACE most commonly uses text messages to send trade alerts, best price alerts, and rural market price alerts in English or Chichewa, based on the client's preference. Although rural market price alerts cost users 150 Malawian kwachas (MK) per month (roughly US$0.20), the other types of alerts are free of charge (ACE Africa 2017).

ACE also offers a warehouse receipt system as well as a contract farming system. Under the warehouse receipt system, clients (farmers) can deposit and safely store their commodities at ACE warehouses. Once deposited at the warehouse, the commodity is cleaned, graded, rebagged, and stacked. The warehouse operator issues a receipt to the client stating the commodity volume and quality grade. Farmers are not guaranteed a market or price, but ACE helps them access higher-value markets and more affordable credit than they otherwise could because the compliance with quality standards is high and the stored commodity is used as collateral (ACE Africa 2017). On the other hand, ACE's "Chithumba model" contract farming approach is slightly different from the traditional contract system in that there is no known buyer. ACE provides farmers with inputs on credit, and farmers repay this loan with their commodity after harvest. After the loan is repaid, producers are free to choose how to market their remaining commodity, either through the warehouse receipt system or the ACE trade facilitation service (ACE Africa 2017).

Some service providers (for example, Geek Bit) have gone a step further by developing and rolling out a mobile application with information on farming practices, comparative market prices for seeds, farm products, and farming resources. According to a key informant from Geek Bit, most information displayed on the application is collected from seed manufacturing companies, agrodealers, and research stations. On the other hand, other service providers such as Human Network International in partnership with mobile phone operators, government of Malawi and some key development organizations launched 3-2-1 and 7-1-1-1 service to increase access to information for farmers. Farmers

on the Airtel or TNM mobile network can access the application through 3-2-1 or 7-1-1-1 service, respectively, by dialing and following prompts to listen to information of interest.

Radio operators including Farm Radio Trust design radio programs to spread messages or technologies to wider audiences in farming communities. Such programs are often 30-minute broadcasts repeated weekly over some defined period of time and cover a wide range of topics of interest to farmers, such as soil fertility improvement, the effects of climate change on the community, climate change solutions, nutrition, and accessing market information. Formats include studio interviews, minidramas, testimonials, phone interviews, panel discussions, text messages, live phone-ins, on-farm recordings, and feedback from listeners through discussions recorded in community listeners' groups (Chapota, Mthinda, and Fatch 2014).

In December 2014, MoAIWD established the National Agricultural Content Development Committee (NACDC), whose purpose is to improve the quality of agriculture extension messages by using information and communication technologies (ICT)–based platforms. The main objectives of this committee are as follows:

- Manage the content development process to assure quality
- Coordinate interested actors to raise the profile of ICT for extension
- Coordinate resource mobilization for the development and dissemination of content
- Monitor and evaluate content and platforms impacted by ICT
- Develop a mechanism to sustain ICT platforms
- Develop ICT platform visibility strategies to promote access to extension and advisory messages

Membership in NACDC is open to public- and private-sector actors in the agriculture sector who are interested in using ICT in extension and are conscious of the quality of messages disseminated. In January 2015, NACDC comprised the following members, with Farm Radio Trust as chair and DAES as secretariat:

- Catholic Relief Services

- Civil Society Agriculture Network (CISANET)
- DAES
- Farm Radio Trust
- Farmers Union of Malawi
- Lilongwe University of Agriculture and Natural Resources (LUANAR)
- MaFAAS
- Self Help Africa
- Technical departments of MoAIWD

However, at its meeting on January 30, 2015, members agreed to broaden the mandate of NACDC from ICT to all agriculture extension messages in order to ensure that messages to farmers are validated and of good quality. The committee was expected to help DAES develop national standards for both government and nongovernment extension services, rendering the country's pluralistic extension system more credible. No standards have been finalized or implemented yet (personal communication with Catherine Mthinda of LUANAR, July 27, 2017), and the capacity and workings of this committee will need to be strengthened to help it harmonize and coordinate the many different providers of agricultural extension in Malawi.

Activities and Focus Areas

Government and nongovernment extension is broad, including such services as agricultural technical training, technology transfer, group dynamics, food and nutrition education and extension, agribusiness skills training, income-generating activities, and market information. In addition, extension workers participate in the identification and distribution of inputs to farmers (mostly chemical fertilizers and seeds). This is a more diverse and well-rounded set of activities than often reported.

Table 3.3 shows that the majority of service providers (58–72 percent) provide a wide range of services, such as leadership training, food and nutrition education and extension, capacity building for associations or cooperatives, income-generating activities, market information or access, and provision of inputs (mostly chemical fertilizers and seeds). A few providers offer food aid distribution, credit provision, training on democracy and governance, and infrastructure investments. Service providers

across all types (that is, GSPs, local non-GSPs, and international non-GSPs) share a similar pattern of activities except the distribution of FISP coupons, which are provided only by the government.

Table 3.3 Proportion of service providers by activity, percentages

Type of service	Total (*n* = 151)	Government (*n* = 22)	International NGO (*n* = 48)	Local NGO (*n* = 60)	Private company (*n* = 14)	Media (*n* = 7)
Agricultural extension services / technical training	81	91	88	83	43	57
Leadership training	72	73	88	73	29	29
Food and nutrition education and extension	70	73	77	78	21	43
Capacity building for associations or cooperatives	66	77	71	67	43	43
Income-generating activities	64	73	67	68	36	29
Market information/access	60	77	54	55	57	86
Input provision	58	59	65	65	29	14
Food aid distribution	24	18	31	27	0	14
Credit provision	21	18	19	18	50	14
Democracy and governance	19	18	17	25	7	14
Infrastructure (roads, water, storage, and so on)	17	18	19	17	7	14
FISP voucher/coupon distribution	9	64	0	0	0	0

Source: Raw data from authors' survey of service providers (December 2016 to March 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization; FISP = Farm Input Subsidy Programme.

The results in Table 3.4 show that all service providers (government, international NGO, local NGO, private company, and media) share certain agricultural technologies: crop diversification, improved varieties, soil and water management, conservation agriculture, and organic fertilizer use or manure making. Other commonly promoted technologies are crop residue or soil cover for mulching, crop rotation, intercropping with legumes, agroforestry, and postharvest technologies. Among GSPs, there is also heavy promotion of pit planting, indigenous and local varieties, composting, chemical fertilizers, herbicides, and inoculants, whereas relatively fewer non-GSPs promote these technologies. GSPs also promote plant clinic consultations, soil testing, and permaculture more than non-GSPs do.

Table 3.4 Proportion of service providers by technology, percentages

Technology	Total (*n* = 149)	Government (*n* = 22)	International NGO (*n* = 48)	Local NGO (*n* = 60)	Private company (*n* = 13)	Media (*n* = 6)
Crop diversification	72	86	73	75	46	50
Improved varieties	72	82	67	78	54	67
Soil and water management	72	82	75	73	38	67
Conservation agriculture	70	77	65	82	38	50
Organic fertilizer / manure	66	68	65	73	38	50
Crop residue mulching	60	77	56	63	31	50
Crop rotation	60	77	52	65	38	50
Agroforestry	58	86	48	65	23	33
Intercropping with legumes	57	55	54	68	23	50
Postharvest techniques	49	59	52	45	38	50
Pit planting	40	68	29	43	8	50
Composting	36	55	27	42	8	50
Indigenous and local varieties	36	59	33	33	15	50
Chemical fertilizers	36	68	29	23	54	50
Herbicides	27	64	17	17	46	33
Inoculants	24	64	15	13	31	50
Soil testing	18	32	15	10	23	67
Permaculture	14	32	10	12	8	17
Plant clinic consultation	13	41	10	3	8	33
Composting toilets	9	14	8	8	8	17
Sustainable rice intensification	8	5	6	8	15	17

Source: Raw data from authors' survey of service providers (December 2016 to March 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

GSPs usually cover a wider range of crops or commodities, including maize, legumes, other staple crops, horticulture, tobacco, other cash crops, livestock, and aquaculture. Non-GSPs concentrate more on a smaller set of commodities, with a focus on maize and legumes, and to some extent, horticulture and livestock (Table 3.5).

Table 3.5 Proportion of service providers by focus commodity or enterprise, percentages

Commodity or enterprise	Total (*n* = 149)	Government (*n* = 21)	International NGO (*n* = 48)	Local NGO (*n* = 60)	Private company (*n* = 13)	Media (*n* = 7)
Legumes	70	67	63	75	69	86
Maize	66	67	69	63	62	71
Livestock	54	62	56	57	23	57
Vegetables/horticulture	52	62	58	47	38	43
Staple crops	41	67	31	45	15	43
Cash crops	38	71	29	33	38	43
Aquaculture	23	57	13	18	15	43
No particular commodity	21	24	27	17	8	43
Tobacco	17	62	0	13	8	57

Source: Raw data from authors' survey of service providers (December 2016 to March 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

All service providers were asked to name their two main target groups. Results, in Table 3.6, generally show that the most common target groups are subsistence and smallholder farmers. However, most service providers seemed to select broad categories to characterize their two main target groups. GSPs, local non-GSPs, and international non-GSPs share a similar pattern. Other than subsistence and smallholder farmers, different service providers describe their target groups differently. For GSPs, food-insecure households, producer groups, medium and large farmers, and female-headed households are the next set of target groups most commonly reported. For non-GSPs, the second set of target groups are female-headed, food-insecure, and ultra-poor households; producer groups; children younger than five years; and youth. What we notice is that different projects usually have a different focus or objectives and therefore slightly different reported target groups.

Table 3.6 Proportion of service providers by their two main target groups, percentages

Target group	Total (*n* = 143)	Government (*n* = 21)	International NGO (*n* = 46)	Local NGO (*n* = 60)	Private company (*n* = 11)	Media (*n* = 5)
Subsistence farmers	54	62	48	55	64	40
Smallholder farmers	46	43	41	47	55	80
Food-insecure households	26	29	33	25	9	0
Female-headed households	25	10	26	32	27	0
Producer groups/associations	17	14	13	15	55	20
Children younger than five	14	10	20	12	9	20
Ultra-poor households	12	0	7	23	0	0
Pregnant women	9	5	13	8	9	0
Youth	10	5	7	13	0	40
Male-headed households	8	5	11	7	9	0
Landless households	7	5	7	8	9	0
Female producers	7	0	15	3	0	20
Medium or large commercial farmers	4	19	2	2	0	0
Mothers	3	0	2	7	0	0
Male producers	1	0	2	2	0	0

Source: Raw data from authors' survey of service providers (December 2016 to March 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

Extension Methods and Approaches

Most of the service providers use community meetings, face-to-face visits, farm demonstrations, association or producer groups, farmer field days or agricultural fairs, and short-term training courses as extension methods or approaches (Table 3.7). This pattern holds for both local and international non-GSPs. However, GSPs also make use of radio, farmer field schools, text messages, and farmer business schools. What we notice from the datasets is that GSPs use more diversified methods and approaches than non-GSPs, without any clear concentration. Overall, there is heavy use of community meetings, face-to-face visits, farm demonstrations, short-term training courses, producer group meetings, and farmer field days or agricultural fairs, whereas radio, text messages, and farmer field and business schools are not very commonly used.

Table 3.7 Proportion of service providers by extension method or approach, percentages

Extension method/approach	Total (*n* = 149)	Government (*n* = 22)	International NGO (*n* = 48)	Local NGO (*n* = 60)	Private company (*n* = 13)	Media (*n* = 6)
Community meetings	85	82	94	90	69	17
Face-to-face visits at farm or home	79	82	83	87	54	0
Farm demonstrations	73	82	75	80	46	17
Association or producer group meetings	64	82	65	67	46	17
Farmer field days or agricultural fairs	64	77	58	72	62	0
Short-term training courses	60	41	79	65	23	0
Radio	35	59	29	30	15	83
Farmer field schools	33	64	21	37	23	0
Text messages	26	45	23	13	23	100
Farmer business schools	21	68	13	13	23	0

Source: Raw data from authors' survey of service providers (December 2016 to March 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

These results are consistent with the nationally representative household survey implemented in 2016 by IFPRI (Ragasa and Niu 2017). Those data show that government extension visits (mainly by AEDOs, but sometimes by AEDCs) are still the most common source of information received by farmers, especially on crop production, livestock, forestry, and postharvest management (mainly the application of storage chemicals) over the last two years. Of those with access to advice on crop production, 68 percent reported obtaining that advice from GSPs, whereas 24 percent said they received it from non-GSPs. NGOs and GSPs are the major sources of advice on aquaculture production, markets, and other livelihoods, according to farming households interviewed. More details are provided in Ragasa and Niu (2017).

However, it is possible that some GSPs are working with NGO projects and thus some of the farmers who reported getting advice from NGO agents might actually have received it from government agents hired by NGOs. Although it may not be clear whether farmers are getting advice from government or NGO staff, what we can say is that government agents are the dominant source of farmer information (more than 66 percent if we assume that some of the reported NGO agents were actually AEDOs hired to work on NGO projects), and the reach of NGO projects is substantial (reaching more than 25 percent of

households if we assume that some of the reported government agents are actually working for an NGO) (Ragasa and Niu 2017).

Health workers, hospitals, and clinics are households' main sources of health and nutrition advice. Government and NGO extension staff also help in the dissemination of food-, nutrition-, and health-related practices, in addition to agricultural practices (Ragasa and Niu 2017).

In terms of method or approach, community or group meetings are the most common forms of receiving advice, followed by face-to-face contacts (one-on-one visits), according to farmers interviewed (Ragasa and Niu 2017). The latter often happen after community meetings and are generally at the request of interested farmers who want to learn more about the technologies being promoted. The third-most-common method of receiving advice is through radio. The fourth is through short-term trainings, usually involving a group of farmers. The fifth main method of receiving advice is through farm demonstrations, facilitated by government or NGO workers, often with the help of lead farmers (Ragasa and Niu 2017).

Very few farmers interviewed in the 2016 IFPRI household survey (1–2 percent) reported accessing information from other sources or through other approaches, such as farmer field schools, farmer field days, mobile phone or text messages, mobile vans, listening clubs, television, and the Internet (Ragasa and Niu 2017). Only 7 percent of those receiving some agricultural advice reported accessing information from lead farmers. However, when asked about the source of their knowledge about or awareness of a specific agricultural technology, 36 to 63 percent of respondents reported being aware of many of the promoted technologies through other farmers (only 10 percent reported sourcing their knowledge from lead farmers) (Ragasa and Niu 2017). This is an important finding, indicating the role of peer effects and social networks in the spread of information on improved technologies, and at the same time pointing to a need to rethink how to strengthen support to and the capacity of lead farmers to help them be better partners in extension service provision.

Moreover, the present study highlights a variety of channels for providing extension services to the rural population that can be further explored. Our dataset shows that a large majority of survey households are well connected to other farmers and potential sources of information: 81 percent go to the

market at least once a week; 64 percent use a mobile phone at least once a week; 60 percent listen to the radio at least once a week; 59 percent go to town at least once a month; and 42 percent participate in village agricultural or development committees. We looked at the correlation of these measures of connectivity with the likelihood of an individual's receiving agricultural advice. Those using a radio or mobile phone every day are more likely to receive advice on various topics. Participation in associations or cooperatives is also linked to greater access to some agricultural and nutrition advice. Those who go to the market at least once a week are more likely to get advice only on marketing and agroprocessing. These figures indicate the importance of exploring these channels for disseminating information.

Evidence of the effectiveness of these extension approaches is scanty. One relevant assessment of successful approaches is the effort made by MaFAAS to document innovative extension and advisory services in Malawi, selected based on principles of the Framework for African Agricultural Productivity (FAAP) (Box 3.1). These criteria provide a useful framework, presently lacking, for service providers to assess the effectiveness and innovation of their extension approaches and methods. Mthinda (2015) summarized the eight selected and documented innovative approaches: farmer-to-farmer extension, host farmer demonstrations, clusters, radio-based extension delivery, long-term extension programs for significant poverty alleviation, Farmers Clubs, Farmer Voice Radio, and the lead farmer approach (Appendix B).

Box 3.1 Framework for African Agricultural Productivity principles

1. Empowerment of end users
2. Planned subsidiarity
3. Pluralism in the delivery of agricultural advisory services
4. Evidence-based approaches to agricultural advisory services
5. Integration of agricultural advisory services with research, the private sector, training, capacity building, and education programs
6. Explicit incorporation of sustainability criteria
7. Systematic utilization of improved management information systems
8. Introduction of cost sharing with end users
9. Integration of gender considerations at all levels

Source: FARA (2006)

The eight approaches were assessed using a tool developed based on the FAAP principles. The tool consists of a spreadsheet for rating extension approaches based on agreed weights for the criteria. Thus, each approach was rated individually based on the criteria listed in the tool, and an overall score was calculated. Then the overall scores for each extension approach were compared on a master spreadsheet. Based on the overall scores, only three, which scored 60 percent or greater, were selected as innovative:

- Farmers Clubs by Development Aid from People to People
- *Liwu la Mlimi Pa Wayilesi* (Famer Voice Radio) by Malawi Broadcasting Corporation
- The lead farmer approach by the Development Fund of Norway

Overall, combining approaches has worked better than relying on a single delivery tool. One of the successes of Farm Radio Trust is its ability to combine radio programs with call-in features and text messaging. Ragasa and Niu (2017) highlighted the huge potential of radio and other mass media in technology awareness campaigns. Niu and Ragasa (2017) also stressed the importance of more intensive training and face-to-face interactions (personal visits and group or village meetings) for more intensive and complex conservation farming and climate-smart agricultural management practices. A low-cost, one-page handout or a short video for farmers with a checklist of important details of the technology might be useful in reducing the loss of information along the knowledge chain (Niu and Ragasa 2017). In the case of these complex technologies, follow-up and continued mentoring from extension agents is necessary for both lead farmers and other farmers. Extension agents interviewed for this study reported that it takes, on average, two to three years of continuous teaching and follow-up on their part and intensive learning on farmers' part for farmers to master and adopt an intensive, multidimensional agricultural practice such as conservation agriculture or pit planting.

Organizational Management Systems

All sampled service providers reported that they have performance targets and that they monitor their progress. This finding is also consistent with in-depth interviews we conducted with 71 frontline workers

from within and outside of government, in which all but 2 providers (1 GSP and 1 non-GSP) reported having work targets and work plans. However, most of the performance targets or indicators are at the level of activity completion, for example, number of meetings, farm demonstrations, trainings, or farmer field days conducted, or number of households or individuals trained or reached with extension messages (Tables 3.8 and 3.9). This is the case for GSPs, international NGOs, local NGOs, private companies, and media. A few targets are in the form of input or output indicators, such as number of trees planted or amount of manure made, control of a particular pest or disease, number of households with toilets, number of improved technologies adopted, or amount of land planted and harvested, depending on the specific objective of the project.[4] These indicators are more common for non-GSPs than GSPs. Very few respondents (13 percent of frontline workers and 10 percent of service providers) reported having outcome indicators as their performance targets, such as crop yield performance or number of households that are food secure. Only very few providers (4 percent of frontline workers and 10 percent of service providers) reported even just tracking and reporting on how many households have adopted the improved technologies being promoted as their performance indicators.

[4] One key informant said that the small number of such targets could be because some of the outputs are reported elsewhere. For example, yield data, including hectarage by crop and variety, is handled by the Crops Department through the Agricultural Production Estimates Survey. Information about conservation agriculture technologies would be reported by the Land Resources Department, and for livestock, by the Animal Health Department. The DAES would report about methodologies, training, and the like, which are similar to process indicators. Nonetheless, the scattered nature of reporting indicates lack of coordination even within government departments at the district level.

Table 3.8 Proportion of frontline workers by indicator or performance target, percentages

Indicator	Total (*n* = 69)	Government (*n* = 32)	International NGO (*n* = 9)	Local NGO (*n* = 26)	Private company (*n* = 2)
Activity completion indicator					
Number of farmers/beneficiaries trained or reached	61	50	56	73	100
Number of groups established	29	28	22	35	0
Number of meetings held	17	25	0	15	0
Number of demonstrations organized	12	19	11	4	0
Amount of cropland supervised	4	6	0	4	0
Input/output indicator					
Number of trees (seedlings) planted	16	6	33	23	0
Quantity of manure made	13	25	0	4	0
Number of technologies adopted	4	9	0	0	0
Outcome indicator					
Crop yield	13	13	11	12	50

Source: Raw data from authors' in-depth interviews (December 2016 to March 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

Table 3.9 Proportion of service providers by performance indicator or target, number and percentage of organizations

	Total		Government		Nongovernment	
Indicator	***N***	**%**	***N***	**%**	***N***	**%**
Activity completion indicators						
Reports completed	14	47	10	100	4	20
Activity completed (for example, number of trainings, meetings, farm demos, or clusters conducted, or model villages formed)	20	67	10	100	10	50
Number of trainees	25	83	10	100	15	75
Input/output indicators						
Livestock provided	2	7	1	10	1	5
FISP implemented	1	3	1	10		
Number of households with toilets	1	3	n.a.	n.a.	1	5
Number of boreholes constructed or rehabilitated	1	3	n.a.	n.a.	1	5
Number of trees planted; number of nurseries	2	7	n.a.	n.a.	2	10
Number of livestock vaccinated	1	3	1	10	n.a.	n.a.
Amount of land cultivated and harvested	2	7	2	20	n.a.	n.a.
Number of households repaying loans	1	3	n.a.	n.a.	1	5
Number of technologies adopted	3	10	1	10	2	10
Outcome indicators						
Crop performance/yield	2	7	1	10	1	5
Number of households that are food secure	1	3	n.a.	n.a.	1	5

Source: Raw data from authors' in-depth interviews (December 2016 to February 2017).
Note: Multiple responses were allowed. FISP = Farm Input Subsidy Programme; n.a. = not applicable.

Staff self-report on these performance indicators and targets through submitting various reports, but data are verified through supervision visits. In GSPs, AEDOs are supervised by AEDCs, whereas in non-GSPs, agents are supervised by project managers or project coordinators. In GSPs, in addition to AEDCs, the DADO or ADD project managers also come to supervise sometimes. In non-GSPs, project team members, donors, and M&E officers usually supervise. Almost all service providers and frontline workers reported such supervision visits. Only two service providers (one GSP and one non-GSP) reported no supervision visits. In GSPs, frontline workers usually visit farmers weekly or every two weeks; in non-GSPs, frontline workers' visits to farmers vary from daily to monthly, depending on the activity. Supervisors' visits to frontline workers are usually monthly or every two weeks for both GSPs and non-GSPs.

Supervisors collect mainly information on activities and outputs achieved by the frontline or field officers or the challenges farmers face (Table 3.10), often by means of a checklist. This procedure is consistent with the focus on activity completion indicators mentioned above, rather than on progress in technology adoption or outcome indicators. Other types of information collected include farmers' technology adoption levels as well as the ability of field officers to coordinate with stakeholders in various project activities, but these indicators are more commonly collected among non-GSPs than among GSPs. Supervisors reported using the information collected during field visits to provide solutions to the challenges encountered by field officers, to assess the progress of the activities being implemented toward achieving the planned objectives, and to incorporate into various reports being prepared.

Table 3.10 Type of information recorded by supervisors during field visits, number and percentage of organizations

Type of Information	Government		International NGO		Local NGO	
	N	%	*N*	%	*N*	%
Activities completed and outputs achieved (for example, number of trainings, meetings, farm demos, or clusters conducted, or model village formed)	9	90	4	40	8	62
Challenges (such as crop diseases)	1	10	4	40	2	16
Adoption of technologies	0	0	0	0	3	23
Stakeholder coordination	0	0	2	20	0	0

Source: Raw data from authors' in-depth interviews (December 2016 to February 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

Almost all service providers reported having a staff performance evaluation system. Good performance by staff (in our case, frontline workers) is usually defined as achieving or exceeding a certain percentage or score based on the indicators or targets set in the work plan. However, the cutoff score varies a bit across providers; for example, some providers consider achievement of more than 60 percent of targets in the work plan to be good performance, whereas for others the cutoff is 70, 75, or even 85 percent. Example targets for GSPs include two model villages set up, a demo for at least one technology, or at least one farmer cluster set up. Others use the number of households reached as their target (for example, more than 90 percent of households reached with extension messages).

For evaluating nonquantitative aspects of staff performance, most agencies adopt a scale of 1–4 or 1–5 (for example, *poor/fail, fair/average, good, very good, excellent*). The scale is used for any rewards or sanctions available and also in considering promotions of staff members. One exception is the International Cooperation Foundation (COOPI), whose scale starts at *fair* (not *poor*):

> Here, there are no sanctions; what we normally do is to identify gaps in our officers and then expose them to in-service training because we believe that there is no way one can perform badly; everyone has some potential, that's [all] the more reason our evaluation scale starts from *fair*. (Key informant from COOPI)

Most organizations also reported giving incentives based on performance (Table 3.11). In GSPs, the most common of these among AEDOs are materials or in-kind rewards (protective gear, mattress,

mobile phone, radio, or bag), motorcycles (or at least high-performing staff have priority whenever there are new ones available from the national government), and study tours or trainings (again, at least these employees are prioritized whenever there are opportunities).[5] Sometimes, depending on district funds, cash prizes are also given to high-performing AEDOs. Cash rewards range from MK 15,000 to MK 45,000 (US$20 to US$60). If a district cannot afford cash prizes, it just considers the high-performing AEDOs for trainings so that they can get a cash travel allowance. Excellent frontline staff may be considered for an international training if there is an opportunity, or for a scholarship so that they can go back to school and apply for an upgrade or promotion later on. In non-GSPs, the most common rewards for good performance are salary increases or bonuses; others are materials or in-kind rewards, certificates of appreciation, or opportunities for promotion or contract renewal.

Table 3.11 Incentive systems used by extension service providers, percentages

Incentive system	Total	Government	Nongovernment
Provides rewards for good performance	**70**	**90**	**60**
Types of rewards			
Promotion (when available)	14	11	17
Motorcycle (when available)	19	**44**	0
Bicycle	5	0	8
Farm inputs (fertilizer, seeds)	5	11	0
Salary increase	24	0	**42**
Cash prize/bonus	19	11	**25**
Study tour or training opportunity	10	22	0
Other materials (protective gear, mobile phone, bag, mattress)	38	**67**	17
Certificate of recognition	14	11	17
Party/celebration	5	11	0
Provides sanctions for bad performance	**53**	**80**	**40**
Types of sanctions			
Warning	65	**88**	**33**
Dismissal	35	13	**56**
Salary reduction	38	0	**44**
Suspension	18	25	11
Transfer to a more challenging work assignment	11	25	0
Nonrenewal of contract	15	0	22

Source: Raw data from authors' in-depth interviews (December 2016 to March 2017).
Note: Multiple responses were allowed.

[5] In-depth interviews indicated that the main motivation for training is usually not the skills or knowledge gained per se, but the per diem (cash) received during these study tours or trainings.

In non-GSPs, bonuses are usually given to everyone. For example, Total Land Care gives employees a 13th-month paycheck, Concern Universal offers 50 percent of salary, Nkhadze Alive Youth Organization gives a bonus of MK 50,000 (US$70), and the Farmers Union of Malawi gives MK 30,000 (US$40) as a Christmas bonus. Because everyone gets a bonus, employees may have an incentive to encourage each other to perform well as an organization (a peer effect). The only non-GSPs with individual performance-based bonuses are the Foundation for Sustainable Community Development, which gives MK 30,000 for a rating greater than 85 percent, MK 40,000 (US$55) for greater than 87 percent, and MK 60,000 (US$80) for greater than 91 percent; and NASFAM, which gives between MK 50,000 and MK 100,000 (US$70-140) for individual good performance ratings.

Frontline staff can also experience sanctions for bad performance. From the point of view of organizations, 80 percent of GSPs reported using sanctions, and the mere nonrenewal of a contract is a significant deterrent to nonperformance (Table 3.11). When frontline workers were asked, however, the responses were much different: there seem to be generally no rewards or consequences for what most frontline workers do or how they perform, especially in GSPs. Almost all (94 percent) of GSP frontline workers said they did not receive any reward for surpassing targets, and 88 percent said they did not face consequences for not meeting targets. Among non-GSPs, 84 percent did not receive rewards and 57 percent did not face consequences. Rewards and sanctions based on performance are more common among international NGOs than local NGOs.

Bad performance (Table 3.11) is usually defined as poor performance based on the work plan (for example, a score of less than 60–75 percent based on targets set, fewer than 80 percent of households reached with extension messages, and so on), unauthorized absence from work, excessive alcohol use, or irresponsible driving. In GSPs, sanctions are usually in the form of warnings, and in a few cases, suspensions, dismissals, or transfers to a more challenging work assignment. In non-GSPs, the most common forms of sanctions are dismissal, salary reduction or no salary increase, warning, and nonrenewal of contract. There is greater job security in GSPs because it is very rare to get fired or receive

heavy punishment for nonperformance, whereas there is weaker job security in the non-GSPs. The far greater financial incentives in the non-GSPs help explain why nonperformance is so costly.

In GSPs, salary increases are based on the civil service rules, which mainly consider the number of years in service, not performance. Civil servants, including AEDOs, are entitled to receive an incremental raise after one year of employment. The different stages in a civil servant's position, such as that of AEDO, and are called *spines*. The salary increase is small (roughly MK 6,000) (US$8) from one spine to another. AEDOs have roughly 4 to 5 spines within their salary scale, after which the salary ceases to increase because they have reached the bar. At this point, there are no more increments and the salary stays the same unless there is a promotion.

On the other hand, in non-GSPs, salary increases or bonuses are common, based on performance of the organization as a whole (so that everyone gets a bonus or salary increase) or based on individual performance as rated on a scale with a corresponding incentive.

Almost all respondents reported opportunities for promotion in the same career (for example, from frontline worker to supervisor, or in the case of GSPs, from AEDO to AEDC). The exceptions were seven non-GSPs that said positions were on a contract basis, so that if the contract expires it is the end of the assignment. Promotions in these agencies happen not within contracts but by entering into a different contract with a higher position and salary:

> It is not possible for one to get promoted because there is no position for [a] senior [worker]; that is, the positions are project based, [and] once they are filled, you cannot think of rising to [a] higher position in that project. (Key informant from Total Land Care)

In GSPs, promotions are handled through an independent civil service commission (mostly composed of representatives from central MoAIWD technical staff). The DADO can recommend a promotion, but the decision is up to this commission. For GSPs, promotions are based mainly on an interview, as well as work performance (gleaned from past performance evaluations) and education level. GSPs promote personnel every four years or whenever there is a vacancy and funding. Promotions are open to all—for example, if there is opening for an AEDC, all AEDOs can apply.

In the non-GSPs, promotions are largely based on good performance, but other factors are also considered, such as education, number of years of work experience, skill set, and other qualifications. Project managers usually decide on promotions based on need and budget, with recommendations and evaluations by supervisors. Key informants reported that in non-GSPs, because many employees work on a contract basis, a promotion is often interpreted as entailing greater responsibilities and a higher salary within the same position.

All GSPs and non-GSPs submit many reports—fortnightly, monthly, quarterly, semi-annual, and annual reports on activities measured against certain indicators, as well as financial reports. In the GSPs, these reports are submitted to ADD program managers. In the non-GSPs, they are submitted to the project manager and, in most cases, also used internally to improve operations or shared with stakeholders (DADOs, directors of planning and development, or donors). Agricultural Production Estimates Survey (APES) reports are also a major task in GSPs.

Both GSPs and non-GSPs cited proper completion of reports as an important performance indicator and often as a criterion for evaluating staff. Still, according to key informant interviews, most reports are prepared routinely and mechanically. Except for the APES reports, they are rarely utilized for planning or institutional learning purposes, or for making improvements at the district level.

A few GSPs indicated that AEDOs who are unmotivated and demoralized by a lack of support, in terms of funds for extension services and mobility, often fail to fill out reports properly. Most important, the filing system and organization of these reports is said to be a major challenge, making them hard to analyze at the district, ADD, and national level.

One could say, then, that the various reports submitted to ADD and MoAIWD contain valuable data that could be further analyzed and used to monitor the provision of extension services and the performance of the agricultural sector. They could also be utilized more at the district and MoAIWD levels for institutional learning. MoAIWD is making ongoing efforts to improve the filing system and the M&E system for agricultural activities, and these efforts should be intensified. With all of these data collected and reports filed on regular basis, if this internal M&E system were conducted properly, one

would not need special external data collection for institutional learning. One could just standardize the existing data collection and indicators, and devise a system and a team of researchers (perhaps from MaFAAS, LUANAR, or both) to help in analyzing the data.

Human Capacity

Quantity Indicators

In general, it was very difficult to get reliable data on staff from the DADOs and their representatives. Figures were inconsistent across questionnaires, indicating low quality in the data, the filing system, and the monitoring system at the district level, especially among GSPs. Another difficulty is the definitions of *technical staff, frontline workers*, and *other field staff,* which seem to vary across GSPs and non-GSPs.

Nonetheless, some patterns emerge from the data collected. In a given district, there are roughly 18 technical staff or SMSs from non-GSPs and 16 SMSs from GSPs (a 1:1 ratio) (Table 3.12). Districts average roughly 86 government frontline workers and a total of 47 frontline workers from all non-GSPs (a 2:1 government-to-nongovernment ratio).[6] In addition, the average district has roughly 1,520 lead farmers (based on summing the lead farmers of all GSPs and non-GSPs, for a figure that may be overestimated if some of the same lead farmers work in both systems). These data highlight the substantial number and size of non-GSPs, showing that the need for coordination and harmonization in this pluralistic system has never been more important and urgent.

[6] There is a possible overlap of SMSs and frontline workers in the non-GSPs, so these figures are our best interpretation of the data available.

Table 3.12 Number of technical staff and frontline workers in government and nongovernment service providers

District	Technical staff (SMSs)			Frontline agents			Ag. census[d]		APES[e]		Number of lead farmers[f]	Number of govt agents whom nongovt agents work with
	Govt	Nongovt[a]	Ratio of nongovt to govt	Govt[b]	Nongovt[c]	Ratio of nongovt to govt	Farmer-to-agent ratio (govt)	Farmer-to-agent ratio (total)	Farmer-to-agent ratio (govt)	Farmer-to-agent ratio (total)		
Balaka	15	30	2.0	115	76	0.7	1,231	741	2,182	1,314	2,074	65
Chikwawa	17	7	0.4	95	23	0.2	2,028	1,633	2,523	2,032	3,246	26
Chiradzulu	11	3	0.3	76	10	0.1	1,894	1,674	2,794	2,469	323	60
Chitipa	14	9	0.6	56	88	1.6	1,362	530	2,311	899	1,629	103
Kasungu	23	21	0.9	87	24	0.3	2,923	2,291	5,196	4,072	1,280	56
Mangochi	12	18	1.5	122	66	0.5	2,997	1,945	4,394	2,852	2,261	118
Mchinji	20	12	0.6	99	38	0.4	1,876	1,355	3,416	2,621	2,612	77
Mzimba	15	19	1.3	70	47	0.7	4,065	2,432	4,431	2,651	1,015	154
Nkhatabay	17	7	0.4	51	7	0.1	1,516	1,333	2,335	2,053	69	9
Nkhotakota	11	13	1.2	87	53	0.6	1,453	903	2,142	1,331	2,334	10
Ntcheu	14	16	1.1	77	42	0.5	2,901	1,877	4,112	2,661	1,169	79
Phalombe	13	19	1.5	46	21	0.5	3,294	2,262	4,625	3,175	1,664	75
Rumphi	19	14	0.7	48	25	0.5	1,532	1,007	2,183	1,436	613	54
Zomba	18	26	1.4	123	59	0.5	2,289	1,547	3,780	2,555	986	162
Lilongwe	14	58	0.2	133	128	1.0	3,916	1,995	2,680	1,366	1,527	256
Average	**16**	**18**	**1.0**	**86**	**47**	**0.5**	**2,352**	**1,568**	**3,274**	**2,232**	**1,520**	**87**

Source: Raw data from authors' survey of extension service providers (December 2016 to February 2017). More details can be found in Appendixes B and C.

Note: Figures highlighted in yellow may be too low, and those highlighted in green are reported by nongovernment service providers and are higher than totals reported by district agricultural development officers. These figures are being verified. a Figures in this column are the lower bound and represent the maximum number of SMSs hired for a project. If we assume that separate SMSs work for each project that an NGO implements, the average becomes 27. There is also a possible overlap of SMSs and frontline workers in the nongovernment agencies, so the figures are our best interpretation of the data available. b These figures include AEDO trainees assigned to the different sections. There are roughly 14 AEDO trainees per district, ranging from 0 (Kasungu) to 35 (Balaka). c Similar to the figures for nongovernment technical staff, these are the lower bound and represent the maximum number of frontline workers hired for a project. If we assume that separate frontline workers work for each project an NGO implements, the average becomes 65, and the farmer-to-agent ratios are 1,469 (based on the number of farmers reported in the agricultural census) and 2,082 (based on the number of farmers reported in APES), or a decrease of 6–7 percent. d Figures in this column are based on the number of farming households reported in the National Census of Agriculture and Livestock 2006/2007. e Figures in this column are based on the number of farming households reported in the 2015APES. f Total number of lead farmers that both government and nongovernment agents work with, computed by simply adding all the lead farmers for each organization. This can be considered as the upper bound or even as overestimated, considering that the same lead farmers are likely to be used by different service providers. SMS = subject matter specialist; APES = Agricultural Production Estimates Survey; NGO = nongovernmental organization; AEDO = agricultural extension development officer.

Even the number of farming households is not consistently reported in Malawi, with the 2015APES giving a much higher number of households than the National Census of Agriculture and Livestock 2006/2007 (agricultural census). The farmer-to-GSP ratio is roughly either 2,352 or 3,274, depending on whether calculations are based on the agricultural census or APES. The farmer-to-GSP-and-non-GSP ratio is roughly either 1,568 or 2,232, depending on which source is used for the number of farming households. Because there are no good data for benchmarking, it is hard to tell where Malawi is in terms of farmer-to-staff ratio. Based on available data from other countries, Malawi's ratios are much higher (worse) than those in some countries of Africa south of the Sahara (SSA), including Ethiopia and Kenya, and comparable to those of Tanzania, but much lower (better) than those of Nigeria or India (Table 3.13). Although the farmer-to-agent ratio receives a lot of attention, without funds for operating costs, additional people on the payroll will not make any impact. So there should be a balance and prioritization of any additional funding in order to make a positive impact on coverage and agricultural outcomes.

Table 3.13 Ratio of farmers to government agents in selected countries

Country	No. of govt agents, '000s	Ratio of farmers to govt agents
Malawi	2	1,800 to 2,514 (based on previous studies); 2,240 or 3,316 (from this paper) [1,568 or 2,232 (all agents, from this paper)]
Ethiopia	60	480
DRC	11	540
China	800	620
Kenya	6	950
Indonesia	30	1,670
Tanzania	7	2,500
Nigeria	5	3,330
India	60	5,000

Source: Ragasa, Mazunda, and Kadzamira (2015) for Malawi, DRC, and Kenya; Davis et al. (2009) for all other countries.
Note: DRC = Democratic Republic of the Congo.

These district-level figures mask the specifics in each organization. Let us discuss them here in detail. In GSPs, based on our survey, there are 14 SMSs or technical officers in each district. The range is from 11 SMSs (in Chiradzulu and Phalombe) to 18 (in Zomba). SMSs specialize in crops, livestock, fisheries, irrigation, extension, or land resource conservation. These results are a bit different from those of the in-depth interviews, which showed an average of 13 SMSs, ranging from 6 (Chiradzulu) to 23 (Zomba), and reported a vacancy of 5 SMSs on average (in a range from 0 to 10 [Phalombe] and 13 [Zomba]). It is safe to say that the actual number of SMSs in GSPs is roughly 13 or 14, but the number of vacancies varies widely by district.

Some local NGOs are very small and rely heavily on government agents. On average, a non-GSP has 2–3 technical staff (SMSs) and 4–5 frontline workers per district, and it relies on and works with government workers to implement its activities. However, these numbers vary widely across non-GSPs, with several large NGOs having as many as 20-plus SMSs and 70-plus frontline workers in a district.

In non-GSPs, of the 20 service providers interviewed in depth, 45 percent did not have their own SMSs. The average number of SMSs hired is 3 per district overall based on the in-depth interviews, and 2 per district based on the survey forms. For those that reported any SMSs hired by the organization, the average is 6, with high numbers (8–12 SMSs) employed by Lusubiro Orphan Care, the Catholic Development Commission in Malawi, Total Land Care, and COOPI. Most SMSs specialize in general agriculture, with some working on nutrition, community development, or development studies, and only Total Land Care reported having SMSs with varying skill sets such as Global Positioning System (GPS) mapping and water engineering. Many non-GSPs rely on government SMSs, as reported in both the in-depth interviews and the datasets. On average, non-GSPs hire or work with an average of 5 government SMSs to train their frontline workers. These SMSs concentrate mainly on crop production, irrigation, livestock production, and nutrition. Other specializations cited include veterinary services, agriculture extension, agribusiness, and forestry.

In terms of frontline workers, there are variations across districts and also due to how organizations define field staff versus frontline workers (versus SMSs). In the GSPs, frontline workers are

the AEDCs, who are supervisors at the EPA level, as well as the AEDOs. In addition, some field assistants (livestock assistants) may or not be included in this category. According to our survey, there are roughly 67 AEDCs and AEDOs combined, on average, per district. The number of AEDCs per district averages 5–6, ranging from 2 (Chiradzulu) to 8 (Mangochi) and 9 (Zomba). Reported vacancies in AEDCs average 2 and range from 0 to 4 (with 3 or 4 AEDC vacancies in Mangochi, Mzimba, Nkhatabay, and Rumphi). The number of AEDOs ranges from 29 (Chitipa) to 97 (Mangochi) and 109 (Lilongwe), and averages 62 per district. Reported vacancies average 36 and range from 9 (Mchinji) to 90 (Mangochi). AEDO trainees are also commonly used, except in Kasungu, where no AEDO trainees were reported. There are 14 AEDO trainees per district on average, but as many as 30 or 35, in Balaka and Chiradzulu, respectively. When all the field assistants are included, the number of GSP field staff is around 85 per district, ranging from 45 (Phalombe) to 123 (Zomba) and 133 (Lilongwe); reported frontline vacancies average 38 and range from 9 (Mchinji) to 93 (Mangochi).

In non-GSPs, in-depth interviews revealed that the number of frontline workers averages 8 per district. The smallest number is 2, in the Foundation for Sustainable Community Development (FSCD), and the largest is 31, in the Nkhotakota AIDS Support Organization. Reported frontline vacancies average 2 and can go as high as 18 (FSCD), reportedly due to inadequate funding. Data from the surveys give the average number of non-GSP frontline workers per district as 4–5, with as many as 20–49 employed by such providers as Malawi Union of Savings and Credit Cooperatives–Mzimba South, We Effect, Total Land Care, World Vision, among others. These workers are employed by project and by contract. Almost all non-GSPs provide their frontline workers with a motorcycle[7] (only 7 of the non-GSPs provided only bicycles to their field staff).

Almost all non-GSPs use government frontline workers. On average, a non-GSP works with 10 AEDOs per district, but this figure can go as high as 63, as with CARE. The most common form of incentive or compensation for these workers is a cash allowance (a lunch and facilitation allowance),

[7]A key informant said the provision of motorcycles is likely because non-GSP extension workers cover quite a wide area, comparable to the territory of an AEDC or even larger.

reported by 36 percent of non-GSPs. Most non-GSPs reported giving MK 2,500 (US$3.50) per day as a lunch and facilitation allowance. Only a few (5 percent) said they add a fuel or transportation allowance. The next most commonly provided incentive is training (reported by 34 percent of non-GSPs). After that are a fuel allowance for the worker's motorcycle (16 percent); a reference or recommendation for an upgrade, promotion, or new job (18 percent); and farm demo inputs (8 percent). Other incentives, such as bicycles and other materials, are not common (3 percent of non-GSPs reported providing bicycles and 2 percent reported offering other materials).

All GSPs use lead farmers, who are trained by extension agents from GSPs and non-GSPs to train other farmers on certain agricultural technologies and to help in organizing farm demonstrations and supporting extension agents in their activities (Ragasa and Niu 2017). The main technologies lead farmers promote are conservation agriculture, pit planting, composting, and manure making and application (Ragasa and Niu 2017). An average of 860 lead farmers per district are trained and utilized in district agricultural office activities. All GSPs reported giving chemical fertilizers to lead farmers for farm demos (and 33 percent said they also give chemical fertilizers for lead farmers' own farms). Almost all GSPs (92 percent) said they provide improved seeds for lead farmers' demos (42 percent said they also provide improved seeds for lead farmers' own farms) as well as bicycles for the lead farmers. A total of 42 percent gave livestock to the lead farmers. About 17 percent of GSPs gave lead farmers other materials such as protective gear and resource materials. No GSPs provided financial allowances to lead farmers.

The majority of non-GSPs (70 percent) use lead farmers (30 percent do not). On average, a non-GSP uses 79 lead farmers, but some use as many as 800-plus (Adventist Development and Relief Agency Malawi); 200-plus to 300-plus lead farmers work for CARE, Concern Universal, Find Your Feet, Heifer International, Millennium Promise, We Effect, NASFAM, and Save the Children International. According to field visits, many of the lead farmers trained by the government are also the same lead farmers used by non-GSPs. The most common incentives given by non-GSPs to lead farmers are planting materials (seeds) used for farm demos or for their own farms (56 percent for farm demos, 43 percent for their own farms). Next most common is a bicycle (36 percent), chemical fertilizer for demos (30 percent), and

chemical fertilizer for their own farms (20 percent). Other materials (protective gear, resource materials) are given by 28 percent of non-GSPs and livestock by 18 percent; the least common incentive is a cash allowance.

Quality Indicators

The majority (64 percent) of frontline workers have at least a two-year diploma, the most common education level for both GSPs and non-GSPs (Table 3.14). One-fifth have a one-year certificate or diploma, with these dominated by government workers. Interestingly, 16 percent of all frontline workers have only a primary or high school education (19 percent in non-GSPs), with no certificate or diploma. In the case of AEDOs, we further investigated because there seems to be an error, given the requirement of a two-year diploma to be an AEDO. The one-year certificate course was phased out in the 1980s, becoming a diploma course. At one point, the government recruited candidates with a high school education to be trained on the job and later enrolled part time in a diploma program at the Natural Resources College. The AEDOs with no certificate or diploma could be the remnants who did not make it to the Natural Resources College.[8]

Table 3.14 Proportion of frontline workers by education level, percentages

Education level	Total (*n* = 70)	Government (*n* = 33)	International NGO (*n* = 9)	Local NGO (*n* = 26)	Private company (*n* = 2)
Primary school	3	3	0	4	0
Secondary/high school	13	9	11	19	0
1-year certificate/diploma	20	27	0	15	50
2-year diploma	54	58	67	46	50
4-year college/university	10	3	22	15	0

Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to February 2017).
Note: NGO = nongovernmental organization.

[8] The AEDOs who reported secondary (high school) as their highest level of education were from Balaka, Chikwawa, Kasungu, and Nkhotakota. Some older AEDOs may have been left out by chance when the government was recruiting candidates with a secondary education to be trained on the job. Seven non-GSP frontline workers reported only a secondary or high school education: two at the Tubepoka Development Initiative in Chitipa, one at the Nkhadze Alive Youth Organization in Balaka, one at the Lipangwe Organic Manure Demonstration Farm in Ntcheu, one at the Nkhotakota AIDS Support Organization in Nkhotakota, one at Better Life for All in Mzimba South, and one at the Stephanos Foundation in Chikwawa.

Toward the end of 2016, the government recruited AEDO trainees under its Sustainable Agricultural Promotion Programme (SAPP). In general, these individuals have completed secondary education; they are expected to go to the Natural Resources College periodically for short trainings and come back to their designated EPAs for fieldwork. Once they complete the required training, they will become full AEDOs. The recruitment focus was on individuals living in the rural area in hopes that they would stay and work in the same area upon becoming AEDOs.

In terms of specialization, the majority of frontline workers, both government and nongovernment, reported specializing in crop production, general agriculture or extension, or extension methods (Table 3.15). About 10 percent of frontline workers did not report any particular specialization because their highest level of education was secondary/high school, where, at least in Malawi, students do not specialize.

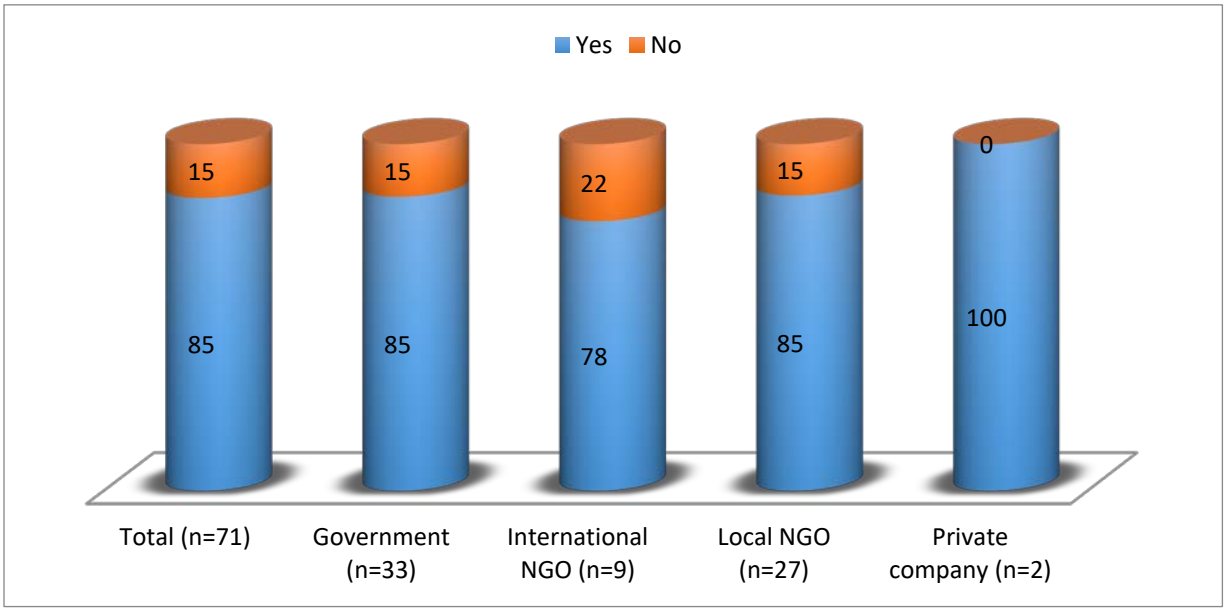
Table 3.15 Proportion of frontline workers by specialization, percentages

Specialization	Total (*n* = 71)	Government (*n* = 33)	International NGO (*n* = 9)	Local NGO (*n* = 27)	Private company (*n* = 2)
Crop production	23	27	22	15	50
Agriculture	18	15	33	19	0
Extension	18	24	11	15	0
Natural resources management	6	3	0	11	0
Community development	6	0	0	11	50
Social science	3	0	11	4	0
Environment	3	0	0	7	0
Nutrition	3	3	11	0	0
Horticulture	3	6	0	0	0
Livestock/veterinary	1	3	0	0	0
Education and communication	1	0	0	4	0
Land administration	1	0	0	4	0
Rural development	1	3	0	0	0
Irrigation	1	3	0	0	0
Accounting	1	0	0	4	0
No specific specialization	10	12	11	7	0

Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to February 2017).
Note: NGO = nongovernmental organization.

Besides formal education, the majority of frontline workers (85 percent) reported that they had received professional training, with this figure similar for both government and nongovernment workers (Figure 3.3). This means that 15 percent have not ever received training or retraining.

Figure 3.3 Proportion of frontline workers who have ever received professional training, percentages



Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to March 2017).
Note: NGO = nongovernmental organization.

About half of the frontline workers for both GSPs and non-GSPs reported having received some training in 2016 (Table 3.16). Moreover, roughly 50–60 percent had received training in the last 3 years, which means that roughly 40–50 percent had not received any training or retraining in at least 3 years. These results have serious implications for the skills upgrading among frontline workers, both in the government and outside it, as well as for the quality of advice and extension services being provided to farmers.

Table 3.16 Last time frontline workers received professional training, percentages

Latest year of training	Total (*n* = 60)	Government (*n* = 28)	International NGO (*n* = 7)	Local NGO (*n* = 23)	Private company (*n* = 2)
2016	47	50	57	43	0
2015	7	4	0	13	0
2014	7	0	14	9	50
2013	7	7	0	9	0
2012	5	4	0	9	0
2011	2	0	14	0	0
2010	8	11	0	9	0

Source: Raw data from authors' in-depth interviews with frontline workers (December 2016 to February 2017).
Note: NGO = nongovernmental organization.

On average, a frontline worker from the government receives two to three trainings over a career, and those in non-GSPs receive three to four. The topics of training vary. Among GSPs, the most common are (in order of frequency) business management and marketing, good agricultural practices, soil and water conservation, farmer field and business schools, nutrition, conservation agriculture, livestock management, integrated pest management, and participatory rural appraisal (Table 3.17). Among non-GSPs, the most common trainings (in order of frequency) are conservation agriculture, business management and marketing, nutrition, livestock management, HIV and AIDS, postharvest practices, M&E, good agricultural practices, and gender. There seem to be some differences in the focus of trainings between GSPs and non-GSPs, with a heavier focus on conservation agriculture, HIV and AIDS, postharvest practices, M&E, and gender in non-GSPs and a heavier focus on production practices, soil and water conservation, and farmer field and business schools in GSPs.

Table 3.17 Frontline workers by professional training, percentages

Professional training	Total (*n* = 60)	Government (*n* = 33)	International NGO (*n* = 7)	Local NGO (*n* = 23)	Private company (*n* = 2)
Business management and marketing	23	29	14	17	50
Conservation agriculture	22	18	29	26	0
Good agricultural practices	20	29	0	17	0
Nutrition	18	21	14	13	50
Soil and water conservation	17	29	0	4	50
Livestock management	15	14	0	22	0
HIV/AIDS	12	7	0	22	0
Farmer field/business schools	12	25	0	0	0
Postharvest handling and storage	10	4	14	13	50
Monitoring and evaluation	8	0	14	17	0
Small-scale irrigation	8	7	14	4	50
Food security	7	4	0	13	0
ICT, including computer and camera use	7	4	0	13	0
Extension	7	7	14	4	0
Integrated pest management	7	14	0	0	0
Energy-saving stoves	7	4	14	9	0
Participatory rural appraisal	7	11	0	4	0
Gender	7	0	29	9	0
Data collection and quality management	5	0	0	13	0
Vegetable production	5	7	0	4	0
Training of trainers	5	0	14	9	0
Food processing and utilization	5	4	14	4	0
Leadership skills	5	7	0	4	0
Counseling	3	0	0	4	50
Child protection	3	0	0	9	0
Afforestation	3	4	0	4	0
Fruit propagation	3	4	14	0	0
Permaculture	3	4	0	4	0
Sanitation and hygiene	3	0	0	9	0
Beekeeping	3	4	14	0	0
Disaster risk management	3	4	0	4	0

Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to March 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization; ICT = information and communication technologies.

Respondents' suggestions on how to improve training sessions for frontline workers, shown in Table 3.18, include allocating more time to trainings so that topics are fully covered (35 percent); incorporating cross-cutting issues such as gender, HIV/AIDS, and climate change mitigation (11 percent); and following up with refresher sessions or courses (11 percent). More government than nongovernment frontline workers (56 percent versus 17 percent) thought training duration was an issue; on the other hand, more nongovernment than government frontline workers (14 percent versus 8 percent) thought cross-

cutting issues and follow-ups with refresher courses were important. Other nongovernment frontline workers also thought that including more practical work (17 percent), periodically reviewing training materials (7 percent), getting training topics from the targeted participants (7 percent), teaching at a pace that everyone can follow (2 percent), and providing the trainings at low cost (2 percent) would help improve the design of future trainings. Some government frontline workers suggested that no sort of improvement was required (8 percent), and 4 percent of government frontline workers said they would appreciate training materials already translated into the local language. Other suggestions from both government and nongovernment frontline workers included letting all stakeholders take part in the trainings (9 percent) and providing trainings that are site specific (7 percent).

Table 3.18 Frontline workers' suggestions for improving future professional trainings, percentages

Suggestion for improvement of training	Total (*n* = 54)	Government (*n* = 25)	International NGO (*n* = 6)	Local NGO (*n* = 22)	Private company (*n* = 1)
Allocate more time to the trainings so that topics are fully covered	35	56	0	23	0
Incorporate cross-cutting issues, such as gender, HIV/AIDS, and climate change mitigation	11	8	0	18	0
Follow up with refresher sessions or courses	11	8	17	14	0
Include more practical sessions than theory	9	0	33	14	0
Include all stakeholders involved rather than being exclusive	9	8	0	9	100
Offer site-specific trainings suitable to local conditions	7	8	17	5	0
Review training materials periodically	4	0	17	5	0
No improvement is required	4	8	0	0	0
Solicit training topics from targeted participants	4	0	17	5	0
Teach at a pace that everyone can follow	2	0	0	5	0
Provide trainings at low cost	2	0	0	5	0
Provide training materials already translated into the local language	2	4	0	0	0

Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to March 2017).
Note: NGO = nongovernmental organization.

Gender Composition

Roughly 12 percent of government SMSs are female (Table 3.19), but the proportion of female frontline workers is greater (22 percent in GSPs and 33 percent in non-GSPs), as is the proportion of female lead farmers to total lead farmers (20 percent). These figures are higher (better) than in some countries (for example, only 5 percent of extension agents are female in the Democratic Republic of Congo), but considering the more balanced proportion of female and male farmers to the farming population in Malawi, the proportion of female technical staff and extension workers may still be low.

Table 3.19 Number and proportion of female technical staff, frontline workers, and lead farmers, by district

District	Technical staff (govt)		Frontline workers (govt)		Frontline workers (nongovt)		Frontline workers (total)		Lead farmers		Govt agents working with nongovt projects	
	Female (*N*)	Female (%)	Female (*N*)	Female (%)	Female (*N*)	Female (%)	Female (*N*)	Female (%)	Female (*N*)	Female (%)	Female (*N*)	Female (%)
Balaka	—	—	23	20	24	32	47	25	435	46	11	17
Chikwawa	6	35	31	33	13	57	44	37	68	28	10	38
Chiradzulu	1	9	27	36	2	20	29	34	77	31	34	57
Chitipa	0	0	7	13	31	35	38	26	34	10	13	13
Kasungu	5	22	38	44	6	25	44	40	168	51	24	43
Mangochi	2	17	—	—	27	41	27	14	262	34	36	31
Mchinji	—	—	18	18	14	47	32	25	44	22	13	17
Mzimba	—	—	12	17	10	21	22	19	479	47	52	34
Nkhatabay	3	18	17	33	4	57	21	36	26	38	4	44
Nkhotakota	2	18	20	23	8	15	28	20	12	1	0	0
Ntcheu	—	—	24	31	7	17	31	26	118	39	15	19
Phalombe	3	23	10	22	8	38	18	27	773	62	18	24
Rumphi	3	16	6	13	4	16	10	14	47	42	17	31
Zomba	5	28	27	22	20	34	47	26	394	40	41	25
Lilongwe	—	—	—	—	57	45	57	22	603	39	156	61
Average	**3**	**12**	**20**	**22**	**16**	**33**	**55**	**47**	**236**	**20**	**30**	**30**

Source: Raw data from authors' in-depth interviews (December 2016 to February 2017).
Note: — = data not available.

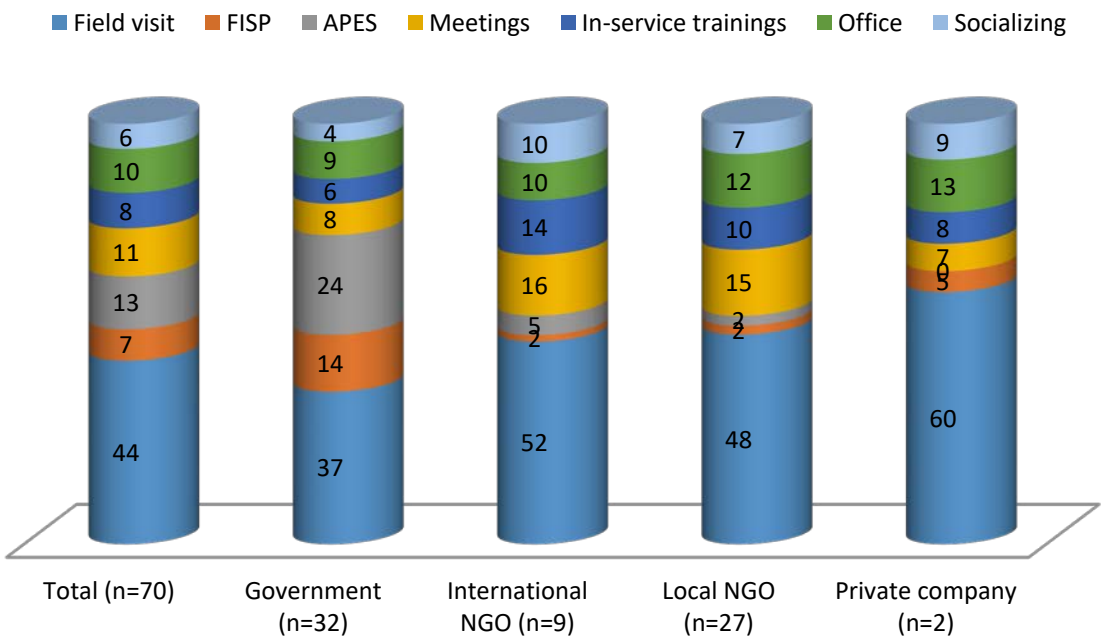
There is evidence that gender equality at the levels of policy and of service providers affects gender equality in access to services, and that extension services from female extension agents may be better targeted to female farmers. For example, the World Bank and IFPRI (2009) found that female extension workers serve a higher proportion of female farmers than do male agents (the average ratio of female farmers to male farmers who received extension services was 1.30 for female agents and 0.53 for male agents). These figures suggest that female agents are more likely to work with a greater proportion of female farmers, whereas male agents are more likely to work with a greater proportion of male farmers. If the aim is to ensure that female and male farmers have equal access to extension services, addressing the earlier reported bias in their access to these services (see Ragasa and Niu 2017), then efforts will have to be exerted to achieve greater gender balance at the level of service providers and frontline workers. Obstacles to overcome include gender-based constraints such as social norms that limit women's school attendance or mobility, thereby limiting their opportunities and willingness to work as agricultural extension agents. At a practical level, a married woman may find it difficult to work in a rural area away from her husband and family or to find appropriate housing and schooling for her children.

Time Allocation

We are also interested in understanding the workload of frontline workers. Some interviewees report they may be simply lazy, unmotivated, or demoralized by the lack of support to the extension system. Others see them as overworked and expected to do too much with too few resources. In addition, some critics question the added responsibilities of government extension workers in relation to FISP or APES, which, these critics point out, are not really part of training and supporting farmers with knowledge and skills and may crowd out functions such as knowledge brokering and technical assistance given workers' scarce time and energies.

Our data show that AEDOs spend only 37 percent of their time working with farmers, with 38 percent spent on FISP- and APES-related activities (Figure 3.4). The situation is much better for nongovernment frontline workers, who spend half their time helping and supporting farmers.

Figure 3.4 Frontline workers' time allocation during planting season, percentages



Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to February 2017).
Note: FISP = Farm Input Subsidy Programme; APES = Agricultural Production Estimates Survey; NGO = nongovernmental organization.

Incentives

The average monthly salary of an AEDO is MK 79,440 (US$110); it is MK 113,739 (US$160) for a local NGO frontline worker and MK 107,000 (US$150) for a private company worker (Table 3.20). The monthly salaries of non-GSP extension workers are 40 percent higher than those of the GSP workers. Field allowances are minimal (MK 24,440 to MK 48,667 per year, or about US$6 per month) and similar for both government and nongovernment workers.

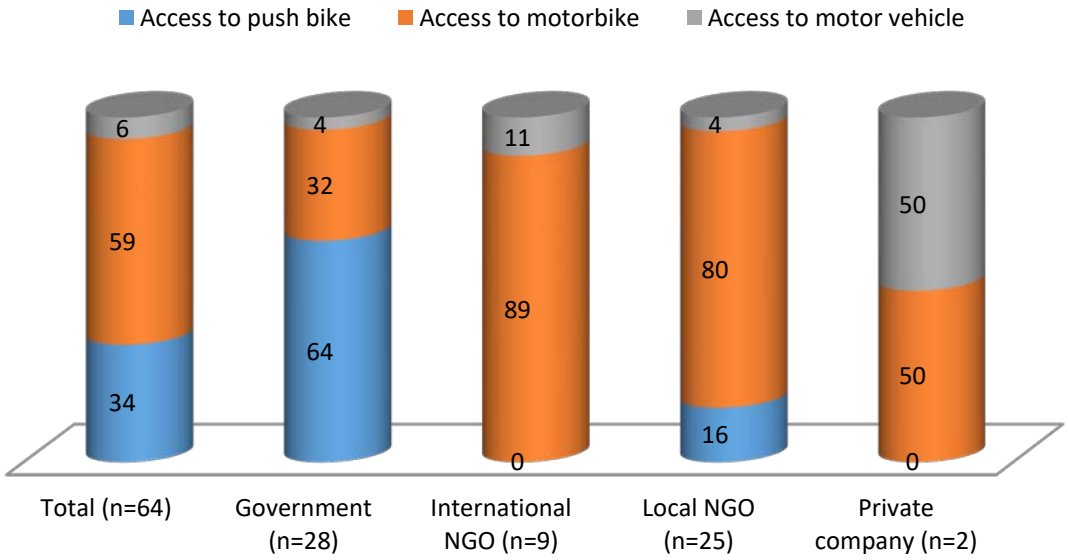
Table 3.20 Monthly salary and field allowance received by frontline workers, in Malawian kwachas

Remuneration	Total	Government	International NGO	Local NGO	Private company
Average net salary for frontline workers, per month	**89,513**	**79,440**	*	**113,739**	**107,000**
standard deviation	34,265	11,853	*	56,444	n.a.
minimum	51,000	51,000	*	53,500	107,000
maximum	192,000	90,000	*	192,000	107,000
n	47	33	0	13	1
Average field allowance for frontline workers, per year	**34,256**	**34,500**	**48,667**	**24,440**	**n.a.**
standard deviation	21,388	21,847	30,616	7,454	n.a.
minimum	20,000	25,000	30,000	20,000	n.a.
maximum	110,000	110,000	84,000	37,200	n.a.
n	32	24	3	5	0

Source: Raw data from authors' in-depth interviews (December 2016 to March 2017).
Note: The exchange rate as of April 18, 2017, is 726 Malawian kwachas = US$1. * Reported net salaries for frontline workers in international NGOs are at least MK 300,000 and are therefore excluded as outliers in the analysis. NGO = nongovernmental organization; n.a. = not applicable.

Despite the similarities in monthly salary and yearly allowance between GSPs and non-GSPs, one major difference is in their mobility. Almost all frontline workers from outside the government are provided with a motorcycle and a fuel allowance, whereas most frontline workers in the government are provided with only a bicycle (Figure 3.5). Clearly, it is very constraining to cover and visit a whole section on a bicycle, especially in a hilly area, and it is even worse when an AEDO is requested to cover two sections due to a shortage of staff. Only 32 percent of AEDOs reported having access to a motorcycle. The fuel and maintenance allowance per month for non-GSP frontline workers averages MK 40,000 (US$55), compared with MK 1,900 (US$1.50) for AEDOs (Table 3.21).

Figure 3.5 Frontline workers' main access to mobility, percentages



Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to February 2017).
Note: NGO = nongovernmental organization.

Table 3.21 Amount of travel allowance (T and T) for frontline workers per month, Malawian kwachas

Type of worker	Mean	Std. dev.	Min.	Max.
Government frontline workers (*n* = 14)	1,891	780	180	2,800
Nongovernment frontline workers (*n* = 10)	40,000	28,087	5,000	100,000

Source: Raw data from authors' in-depth interviews (December 2016 to February 2017).
Note: The exchange rate as of April 18, 2017, is 726 Malawian kwachas = US$1.

This poor mobility, especially among government extension workers, is clearly seen in the responses of frontline workers when asked about their motivations and constraints (Tables 3.22 and 3.23). The overwhelming majority of AEDOs (85 percent) reported better mobility as their top motivating factor. Others cited a good remuneration package; enough support for activities (funding, protective gear, and quick responses to issues raised by communities); more, and more frequent, refresher courses; provision and maintenance of good housing for organization staff; and provision and timely payment of field allowances. Among nongovernment frontline workers, responses were more diverse and less concentrated, but the most common were reliable means of mobility; a good remuneration package; enough support for activities (funding, protective gear, and quick responses to issues raised by communities); and more, and more frequent, refresher courses. Though very few frontline workers cited

the last five factors listed in Table 3.22, it does seem that some nongovernment frontline workers are motivated by such things as working relationships, collaboration, and the sort of feedback they get from the communities they serve.

Table 3.22 Proportion of frontline workers by what would most motivate them, percentages

Motivation	Total (*n* = 71)	Government (*n* = 33)	International NGO (*n* = 9)	Local NGO (*n* = 27)	Private company (*n* = 2)
Reliable means of mobility, such as a motorcycle or car in good condition plus enough fuel	62	85	56	41	0
Good remuneration package	32	24	22	44	50
Enough support for activities, such as funding for extension work, protective gear, quick responses to issues raised by communities	32	36	33	26	50
More, and more frequent, refresher training courses	31	36	33	22	50
Willingness and active participation of communities in activities	13	6	0	26	0
Going back to school to upgrade skills	11	15	11	4	50
Provision and timely payment of field allowances	11	18	0	7	0
Provision and maintenance of good housing for organization staff	11	21	0	4	0
Recognition of good performance through rewards and promotions	10	12	11	7	0
Good relationships with supervisors and farmers/communities	4	0	11	7	0
Good collaboration among stakeholders, for example extension workers, chiefs, and NGOs	4	0	0	11	0
Positive feedback on services from the communities served	1	0	11	0	0
Tours to other countries	1	0	0	4	0
More, and more frequent, field visits	1	0	0	4	0

Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to February 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

Table 3.23 Proportion of frontline workers by constraints to their performing better, percentages

Constraint	Total (*n* = 71)	Government (*n* = 33)	International NGO (*n* = 9)	Local NGO (*n* = 27)	Private company (*n* = 2)
Poor mobility, including inadequate fuel allocation	58	82	22	41	50
Inadequate or lack of resources for activities, including funds and materials	34	30	11	41	100
Too low a salary to meet basic needs	15	21	0	15	0
No recognition in terms of promotions, rewards, or hardship allowance	14	21	11	7	0
Lack of interest/cooperation/commitment by farmers/communities	13	12	22	11	0
Inadequate or lack of capacity building or trainings	12	18	0	11	0
Poor housing conditions	11	24	0	0	0
Large operation area with many distant sites to work in	8	6	11	11	0
Floods or droughts due to climate variations	7	6	0	11	0
Low levels of literacy among farmers	6	3	0	11	0
Poor road network, making it hard to reach some sites	4	0	0	11	0
Lack of protective gear	4	6	0	4	0
Lack of coordination between NGOs and government when implementing activities	4	0	11	7	0
Conflicting messages from different stakeholders	3	0	11	4	0
Short-term projects for which workers cannot claim impact	3	0	11	4	0
Theft of working equipment/tools	1	0	0	4	0
Farmers' dependency syndrome, for example on subsidies	1	3	0	0	0
No allocation of airtime for communication	1	0	0	4	0

Source: Raw data from authors' in-depth interviews of frontline workers (December 2016 to February 2017).
Note: Multiple responses were allowed. NGO = nongovernmental organization.

Similarly, the most pressing general constraint for frontline workers is poor mobility, which is more pronounced for GSPs (Table 3.23). The next most commonly cited major constraint, for both government and nongovernment frontline workers, is inadequate or lack of resources for activities, including funds and materials. Other constraints for AEDOs are poor housing conditions; low salary; limited recognition in terms of promotions, rewards, or allowances; and lack of opportunities for skills upgrading and retraining. In-depth interviews pointed to poor housing conditions as a major constraint that hinders AEDOs from performing better. Among both GSPs and non-GSPs, some also cited a lack of interest, cooperation, and commitment from farming communities as a constraint.

Financial Capacity

This section assesses the financial capacity of 14 of the 15 sampled government district agriculture offices (the figures for Lilongwe are still being collected). Aside from data collected through the survey of service providers, official data on funding for these offices come from two different institutions, the Ministry of Finance, which approves expenditures for salaries and development projects, and the National Local Government Finance Committee, which provides funding for daily operations, known as *other recurrent transactions* (ORT).

In general, it was very difficult to get reliable data on government-approved budgets for the district agriculture offices, let alone budgets for extension services. The total budget figures that DADOs and their representatives reported for the district agriculture offices appeared to be very small. After cross-checking the budget figures reported by DADOs with those approved by Ministry of Finance and the National Local Government Finance Committee, we discovered that some DADOs and representatives were reporting only the ORT and development budget as the total budget of the district agriculture office. On the other hand, some DADOs reported the district's planned budget, which appeared to be slightly higher than what had been actually approved by the Ministry of Finance, implying that some DADOs do not have access to the final approved budget from the Ministry of Finance. Hence, for this study we relied on approved budget figures from the Ministry of Finance and the National Local

Government Finance Committee. The budget for the district agricultural development office has three components: (1) salaries and allowances; (2) ORT for daily operations of the office; and (3) a budget for development programs and projects, mostly made up of donor funds (part 1) with government fund counterparts (part 2), such as the Agriculture Sector Wide Approach Support Project (ASWAp-SP) and SAPP.[9] Table 3.24 shows the district agricultural budget allocations for each district agricultural development office in the 2016/2017 financial year, and estimated funds going to agricultural extension services.

[9] Only development projects in the Public Investment Programme (PSIP) are included in the Budget. Not all foreign funded projects are eligible for reporting in the budget. Only projects that fulfil **both** of the following criteria should be reported: (1) The project is managed by a Government agency, not by a donor or NGO; and (2) The funds for the project are handled by a Government agency, i.e. they are disbursed to Government and then spent according to the project objectives. Certain donors may not have any projects that fit the criteria, such as USAID and JICA, except if they provide pooled funding.

Table 3.24 Estimated funds for agricultural extension services, 2016/2017

District	Total District budget 2016/2017 (million MK)	% Salary	% ORT	% De-velop-ment	Devt funding for extension services (2015/2016) (million MK)	Devt funding for extension services (2015/2016) (%)	ORT & devt funds for extension services (million MK)[a]	% of ORT & devt funds for extension in total extension funds (all dist. ag. devel. office salaries)	% of ORT & devt funds for extension in total extension funds (50% of dist. ag. devel. office salaries)	Number of govt agents	Exten-sion operat-ing funds per agent (million MK)	Extension operating funds per farmer (APES) (MK)[b]	Exten-sion operating funds per farmer (ag. census) (MK)[c]
Balaka	211	68	24	9	139	37	145	50	67	103	1.41	577	1,023
Chikwawa	291	63	21	17	6	12	13	7	12	87	0.15	53	66
Chiradzulu	228	76	18	6	15	20	20	10	19	76	0.27	95	140
Chitipa	245	73	19	8	84	23	90	33	50	56	1.60	692	1175
Kasungu	300	69	19	12	22	50	29	12	22	77	0.38	65	115
Lilongwe	900	87	9	4	97	13	106	6	12	300	0.35	118	204
Mangochi	351	71	19	10	14	32	22	8	15	122	0.18	42	61
Mchinji	285	68	21	11	22	55	29	13	23	91	0.32	86	157
Mzimba	312	76	15	9	20	56	26	10	18	70	0.37	83	90
Nkhatabay	230	66	20	14	8	20	14	8	15	51	0.27	114	175
Nkhotakota	290	58	18	24	87	19	94	36	53	25	3.75	503	741
Ntcheu	259	67	20	13	42	100	48	22	36	77	0.63	153	217
Phalombe	249	70	18	12	21	54	27	13	23	45	0.59	125	176
Rumphi	232	66	21	14	6	15	12	7	14	47	0.25	114	162
Zomba	323	74	16	11	14	31	20	8	14	123	0.16	42	70
Average	**314**	**70**	**18**	**12**	**40**	**36**	**46**	**16**	**26**	**90**	**0.71**	**191**	**305**

Source: Salary and development funds estimates are from the Ministry of Finance, and ORT figures are from the National Local Government Finance Committee. Development funds are those from development projects, mainly donor funded (part 1) with some government counterpart (part 2).

Note: The exchange rate as of April 18, 2017, is MK 726 = US$1. a Assuming that the percentage of ORT that goes to extension services is 12 percent, the average reported by district agriculture development officers. b Figures in this column are based on the number of farming households reported in the 2015APES. c Figures in this column are based on the number of farming households reported in the National Census of Agriculture and Livestock 2006/2007. MK = Malawian kwachas; ORT = other recurrent transactions; APES = Agricultural Production Estimates Survey.

Overall, the average district agricultural budget is MK 272 million (US$0.375 million) (Table 3.24), with an average 1 percent increase in the total budget from 2015/2016 to 2016/2017 (ranging from a decrease of 2 percent in Rumphi to an increase of 6 percent in Chikwawa). The personnel emoluments budget (salaries and allowances) has been increasing at 7 percent for almost all districts (although one district, Rumphi, reported an increase of only 2 percent), and the operating budget, popularly known as ORT, has been increasing at 2 percent for all districts. In 2016/2017, the average district personnel emoluments budget was 69 percent, whereas the average operating budget, or ORT, was 19 percent, and development funds made up an average of 12 percent. Development funding adds between MK 14 million and MK 45 million yearly, averaging MK 33 million, and it added MK 45 million in 2015/2016.

Of the average district agricultural budget, 69 percent goes toward salaries and 31 percent toward ORT and development (Table 3.24). Within this latter pool, a rough estimation of the development funds going to extension services is 37 percent (but it varies widely, from 12 percent in Chikwawa to 100 percent in Ntcheu). A rough estimate of the ORT going to extension services is 12 percent, but it can range from 5 to 15 percent. Depending on attrition and on whether staff—including technical, management, and frontline workers—have all or only a portion of their time dedicated to extension-related activities, salary costs are roughly 73–83 percent of total public funds for extension services, whereas operating funds for extension services are 17–27 percent of the budget (Table 3.24). To put these figures into context, salary funds for agricultural research are roughly 40–60 percent of the agricultural budget in most SSA countries, and situations like the one in Ghana, where more than 80 percent of the total research budget goes toward personnel salaries, are considered alarming (ASTI documents; Flaherty, Essegbey, and Asara 2010; Ragasa 2016). One would think that the operating fund requirements for extension services would be similar at least to research, given that technologies and knowledge are disseminated to widely spread rural communities. However, the estimated public funds for extension services are roughly MK 740,000 per AEDO per year (US$1,000), or MK 250 per farmer per year

(US$0.33), which is very little. These figures include development projects such as ASWAp-SP and SAPP that enter the government accounting system, but they do not include agriculture-sector or extension-related funding given to NGOs.

4. SUMMARY OF MAIN RESULTS

This report summarizes the data collected from a survey of government and nongovernment extension service providers (GSPs and non-GSPs, respectively) in 15 sample districts in Malawi. Together with the recently published report that looks at farmers' perspective (Ragasa and Niu 2017), this report is aimed for use by various stakeholders in Malawi, especially in the review of the national extension policy and development of an extension strategy, and in the implementation and monitoring of extension activities under the National Agriculture Policy.

Using a systems approach, this assessment reveals some surprising results and confirms many of the commonly known issues and challenges at various levels of the agricultural extension system in Malawi:

- **Characteristics of service providers:** In addition to the government extension system, there are about 120 nonstate extension service providers in the 15 sample districts covered. Two-thirds are local nongovernmental organizations (NGOs), farmer-based organizations, or private companies, and one-third are international NGOs. The average number of non-GSPs in a district is 13, ranging from 6 in Chiradzulu to 25 in Balaka and 35 in Lilongwe. The total number of technical staff or subject matter specialists (SMSs) employed by non-GSPs in a district is, on average, similar to the number employed by the government (that is, there is a 1:1 ratio), and the total number of frontline workers employed by non-GSPs per district is half that of the government (for a 2:1 government-to-nongovernment ratio). Moreover, non-GSPs work with the majority of government frontline workers on their projects: non-GSPs work with roughly 90 percent of all agricultural extension development officers (AEDOs) and agricultural extension development coordinators (AEDCs) to implement their project activities.
- Some of the results of this analysis are surprising in several ways. First, the magnitude of nongovernment extension service provision (in terms of both the number of organizations and the number of their staff) is much larger than earlier portrayed and increasing. Second, the results show that many local organizations are active extension service providers, contrary to the heavy presence of international NGOs reported in earlier studies (IDAF 2010; Masangano and Mthinda 2012; Ragasa, Mazunda, and Kadzamira 2015). Based on the data we collected, there are more local organizations involved in extension service provision than previously thought. Understanding their history, characteristics, and activities may help inform how better to support them to become effective extension service providers, as envisioned in the National Extension Policy. Third, in contrast with earlier observations of a dichotomy between GSPs and non-GSPs, we find more linkages between the two in the joint implementation of planned activities, especially at the field level, where AEDOs and AEDCs operate.
- **Provision of extension services:** Both government and nongovernment services are broad, including, for example, group dynamics, food and nutrition education and extension, agribusiness skills, income-generating activities, and market information. In addition,

extension workers also help identify beneficiaries and distribute inputs to farmers (mostly chemical fertilizers and seeds). This is a more diverse and well-rounded set of activities than what has often been reported.

- Apart from these broader activities, extension workers from GSPs and non-GSPs also provide messages and demonstrations on modern technologies, including crop diversification, improved varieties, soil and water management, conservation agriculture, and organic fertilizer use or manure making. Other commonly promoted technologies are crop residue or soil cover use for mulching, crop rotation, intercropping with legumes, agroforestry, and postharvest technologies. Among GSPs, there is heavier promotion of pit planting, indigenous and local varieties, composting, chemical fertilizers, herbicides, and inoculants, whereas relatively fewer non-GSPs promote these practices and inputs.
- GSPs usually cater to farmers producing a wider range of crops or commodities, including maize, legumes, other staple crops, horticulture, tobacco, other cash crops, livestock, and aquaculture. Non-GSPs concentrate on a smaller set of commodities, with a focus on maize and legumes, and to some extent, horticulture and livestock. These findings differ from the much-reported heavy focus on maize.
- Community meetings, face-to-face visits, farm demonstrations, association or producer groups, farmer field days or agricultural fairs, and short-term training courses are the most common extension methods or approaches used by both GSPs and non-GSPs.
- **Financial capacity:** Data on funding for extension services are very difficult to collect, and the data reported are largely inconsistent and incomplete. Even if the public agriculture budget at the district level can be obtained from official sources, it is hard to estimate and apportion exactly how much goes to extension services. To summarize some patterns in the data that we collected, most of the public operating funds for agricultural extension services (also called *development funds*) are from donors, mainly through the Agriculture Sector Wide Approach Support Project (ASWAp-SP) and the Sustainable Agricultural Production Programme (SAPP), whereas government funds cover mainly personnel compensation, with operating funds to do actual extension work (known as *other recurrent transactions*) being extremely limited. Our best estimate is that about 73–83 percent of extension monies go toward salaries and roughly 17–27 percent support operations. To put this into context, most countries of Africa south of the Sahara (SSA) spend 40–60 percent of their agricultural research funds on salaries, and situations like Ghana's, with more than 80 percent of the total research budget going to personnel salaries, are considered quite alarming. One would think that the operating fund requirements for extension services provision would be similar at least to the salary requirements, given that technologies and knowledge are disseminated to widely spread rural communities. The estimated public funds for extension services are roughly 740,000 Malawian kwachas (MK) (US$1,000) per AEDO per year, or MK 250 (US$0.33) per farmer per year, which is very little. These figures include development projects, such as ASWAp-SP and SAPP, that enter the government accounting system, but they do not include any agriculture-sector funds given to NGOs.
- **Human capacity:** It was very difficult to get reliable data on staff from the district agriculture development officers and their representatives. Figures and responses were inconsistent across questionnaires, indicating low quality in the data, filing, and monitoring systems at the district level, especially in the government system. Another difficulty is the definition of who constitutes technical staff, frontline workers, and other field staff, which seems to vary between the government and NGOs. Each district has roughly 18 nongovernment technical staff or SMSs and 16 SMSs from the government (a 1:1 ratio), as well as roughly 86 government and 47 nongovernment frontline workers (a 2:1 government-

to-nongovernment ratio). Even the number of farming households is not reported consistently in Malawi, with the 2015 Agricultural Production Estimates Survey (APES) giving a much higher number of households than the National Census of Agriculture and Livestock 2006/2007 (agricultural census). Thus the ratio of farmers to government agents is, roughly, either 2,352 or 3,274, depending on whether one is using the agricultural census or APES. The same ratio including nongovernment agents is, roughly, either 1,568 or 2,232, again depending on one's source for the number of farming households. Because there are no good data for benchmarking, it is hard to tell where Malawi is in terms of its ratio of farmers to extension staff. Given the available data, however, Malawi's ratios are much higher (worse) than those of some other SSA countries, but much lower (better) than those in Nigeria or India. Although the farmer-to-agent ratio gets a lot of attention, without funds for operating costs, additional people on the payroll will not make any impact. Therefore any additional funding needs to be balanced and prioritized in order to make a positive impact on both coverage and agricultural outcomes.

- **Gender composition:** Women make up roughly 12 percent of all government SMSs, but the proportion of female frontline workers is greater (22 percent in the government and 33 percent in NGOs), as is the proportion of female lead farmers to total lead farmers (20 percent). These figures are higher (better) than those for some African countries, but considering the more balanced proportion of female and male farmers to the farming population in Malawi, the proportion of female technical staff and extension workers may still be low.
- **Skills and training:** Roughly 16 percent of frontline workers sampled had only a secondary education (as opposed to a two-year diploma). Most do not receive yearly trainings: 15 percent have never received training or retraining since becoming an extension agent, only half received training in 2016, and roughly 40–50 percent had not received any training or retraining in at least 3 years. Moreover, most of the training materials and guides are outdated (as observed by the research team that went to the 15 districts), except for a few that have been updated with NGO project funds. This situation has serious implications for skills upgrading among frontline workers in both the government and NGOs.
- **Work incentives:** The average monthly salary is MK 79,440 (US$110) for an AEDO, MK 113,739 (US$160) for a local nongovernment frontline worker, which is 40 percent higher than that of a government extension worker (AEDO). The field allowance per year is minimal (MK 24,440 to MK 48,667 per year, or about US$6 per month) and similar for both GSPs and non-GSPs. However, non-GSPs give substantially more generous travel allowance to their extension agents than GSPs.
- Mobility is a major issue, with a bicycle as the main transportation for most frontline government workers. Only 32 percent of AEDOs reported having access to a motorcycle, with the rest relying on bicycles, posing an obstacle to covering and visiting a worker's entire operational area. The situation is even worse where an AEDO must cover two sections due to shortage of staff. In addition, mobility is worse in hilly areas.
- AEDOs are provided with housing, but conditions are poor and there is no allowance for repairs or improvements. Some AEDOs are even renting alternative housing because government-provided housing is in such poor condition.
- Poor mobility, especially among government extension workers, is clearly seen in the responses of frontline workers when asked about their constraints and motivations. The overwhelming majority of AEDOs (85 percent) reported better mobility as their top motivating factor. Several government frontline workers mentioned poor housing conditions as a constraint that hinders them from performing better. The other major constraints for

AEDOs are low salary; limited recognition in terms of promotions, rewards, or allowances; and lack of skills upgrading and retraining.

- Another major constraint, common among both GSP and non-GSP frontline workers, is inadequate or nonexistent resources for their activities, including funds and materials. Some workers, both government and nongovernment, also cited a lack of interest, cooperation, and commitment from farming communities as a constraint.
- **Time allocation:** Only 37 percent of AEDOs' time is spent working with farmers, and 38 percent is spent on activities related to the Farm Input Subsidy Programme and APES. These proportions are much better for nongovernment frontline workers, who spend half their time helping and supporting farmers. Still, it seems that expectations are too high for frontline workers, who are not guided and not supported enough, especially government frontline workers.
- **Monitoring and accountability:** Monitoring of performance and evaluation of outcomes and impacts are poor, and even more so in the government system. Under both systems, targets being monitored usually stop at inputs and outputs (such as the number of households trained) and do not reach the level of outcomes or impacts. Only very few respondents reported that they target yield increases or technology adopted. Very few (13 percent of frontline workers and 10 percent of all service providers) reported having outcome indicators, such as crop yield performance or number of households that are food secure, as their performance targets. Another small minority (4 percent of frontline workers and 10 percent of all service providers) cited tracking and reporting on the level of adoption of improved technologies promoted by extension as their performance indicator.
- Plenty of reports are being prepared weekly, monthly, quarterly, and annually, and submitted to one of the country's eight agricultural development divisions and the central Ministry of Agriculture, Irrigation, and Water Development (MoAIWD). Yet according to key informant interviews, most are produced routinely and mechanically, and they are rarely utilized for planning purposes or for making improvements at the district level. These reports contain valuable data that could be further analyzed and used to monitor extension provision and agricultural-sector performance. If all of these data were standardized, regularly collected, properly coordinated, and analyzed through a single system or team—perhaps from the Malawi Forum for Agricultural Advisory Services (MaFAAS) or the Lilongwe University of Agriculture and Natural Resources—there might not be a need for special external data collection.
- Because the government offers few incentives (rewards or sanctions for good or bad performance) of its service providers, it does not really matter much whether frontline workers perform well or poorly. Salary increases for government service providers are based on civil service rules, which focus mainly on the number of years of service, not performance. On the other hand, outside the government, salary increases or bonuses based on the performance of the organization as a whole (so that everyone gets a bonus or salary increase when organizational targets are met) or on individual performance (computed by scale and corresponding incentive) are common.

5. CONCLUDING REMARKS

To conclude, we take you back to Table 2.1 to review the issues and challenges that our assessment found in the agricultural extension system in Malawi. Table 4.1 summarizes the issues and challenges in relation to individual capacity, organizational capacity, and system capacity in the agricultural extension system in Malawi that will need to be addressed in order to contribute to agricultural and development outcomes.

Table 4.1 Key issues and core elements of extension system–relevant capacity

Questions and indicators	Results from the assessment
Individual capacity: Methods and skills • Performance capacity: Are there tools and methods, resources, and equipment available to do the job? • Personal capacity: Are staff sufficiently knowledgeable, skilled, and confident to perform properly? Do they need training, experience, or motivation? Are they deficient in technical, managerial, interpersonal, or specific role-related skills?	• Varied tools and methods used (perhaps too many or too varied), but limited mobility and resources, especially for government extension workers. Resource materials mostly outdated. • Limited regular training and retraining; lack of the required two-year diploma course for some frontline workers; need for more practical and hands-on courses; need to strengthen both technical and facilitation skills. • Limited operating funds for extension services (salaries make up roughly 73–83 percent of budget; operating funds 17–27 percent). Very little public funding for extension services, at roughly MK 740,000 per AEDO per year (USD1,000) or MK 250 (USD0.33) per farmer per year.
Organizational capacity: Staff and infrastructure • Workload capacity: Do enough staff have broad enough skills to cope with the workload? Are job descriptions practicable? Is the skill mix appropriate? • Supervisory capacity: Are reporting and monitoring systems in place? Are lines of accountability clear? Can supervisors physically monitor all staff? Are effective incentives and sanctions available? • Facility capacity: Are training centers, offices, and workshops big enough, with the right staff in sufficient numbers, to support the workload? • Support service capacity: Are there training institutions, supply organizations, building services, administrative staff, research facilities, and quality control services?	• AEDOs spend only 37 percent of their time working with farmers, 38 percent on FISP- and APES-related activities. Much better for nongovernment frontline workers, who spend half their time helping and supporting farmers. • Expectations of frontline workers seem too high; not enough guidance and support, especially for government frontline workers. • Limited use of incentives (rewards or sanctions for good or bad performance) for government service providers, meaning that it does not really matter much whether frontline workers perform well or poorly. • Poor monitoring of performance and evaluation of outcomes and impacts, more severe in the government system. Targets being monitored usually stop at inputs/outputs (such as number of households trained) and do not go to the level of outcomes or impacts. • Plenty of reports, but most produced routinely and mechanically; reports rarely utilized for planning purposes or making improvements at district level.

Table 4.1 Continued

Questions and indicators	• Results from the assessment
System capacity: Structure, systems, and roles • Structural capacity: Are there decision-making forums or multistakeholder platforms at which intersectoral discussion of extension takes place, consensus is generated, collective decisions are made and recorded, and individuals are called to account for nonperformance? • Systems capacity: Do flows of information, money, and managerial decisions happen in a timely and effective manner? Are proper filing and information systems in use? Can private-sector services be contracted as needed? Is there good communication with the community? Are links with nongovernmental organizations sufficient? • Role capacity: Are functions, mandates, and roles clearly communicated? Have individuals, teams, and committees been empowered to make decisions to ensure effective performance regarding, for example, activities, programs, money, and rewards and sanctions?	• Limited coordination among service providers and among different sectors. • Majority of service providers use agricultural committees and stakeholder panels to get feedback from farmers, contrary to earlier reports of system dysfunction. Nevertheless, these structures could be more widely used and their functioning improved. • Weak capacity of research institutes and education and training institutes. • Weak link between education and training, research, and extension. • Limited accountability among service providers and their staff. • No clear mandates; no clear implementation and enforcement guidelines for elements of national extension policy.

Source: Modified from Potter and Brough (2004).

Note: The exchange rate as of April 18, 2017, is 726 Malawian kwachas = US$1. MK = Malawian kwachas; AEDO = agricultural extension development officer; FISP = Farm Input Subsidy Programme; APES = Agricultural Production Estimates Survey.

Analysis of the datasets collected for this study is ongoing, with many more aspects that need to be looked at and carefully assessed. Moreover, we are currently in the process of verifying some numbers with various stakeholders. Most important, the data will be analyzed at the district level to better guide planning and coordination at that level. But from the analysis and assessment done so far, we conclude that many issues need to be addressed in the Malawi extension system, ranging from sustainable funding, political support, and clear implementation and enforcement guidelines to human capacity and skill sets. Minor fixes such as ad hoc training of extension agents, changing the articulations or wordings of policy documents, or simply changing the delivery methods or approaches are not likely to produce the intended impacts if other aspects of the system are kept unchanged. Potter and Brough (2004) noted the following in their analysis of the capacity development process in the health system in India:

> Superficially throwing money at "worthy" schemes like additional buildings and training courses merely wastes resources, breeds cynicism and corruption, and

> ultimately undermines the very process it is designed to achieve: improved capacity and less dependency. (Potter and Brough 2004, 339)

> . . . there is little point training staff if they are not going to be allowed to use the skills or techniques taught, or if lack of consumables or power means that it is impossible to treat patients. (Potter and Brough 2004, 339)

These points resonate with the agricultural extension system as well. We recommend addressing the issues systematically, rather than piecemeal. More specifically, we recommend the following:

- More funding from the government for extension services (with a greater balance between operating and salary costs) will be needed, especially to fulfill GSP functions of coordination and addressing gaps in service provision where non-GSPs are not filling in, such as on sustainable production systems, natural resources management, and disadvantaged groups.
- There is a substantial number, size, and coverage of non-GSPs, and the coordination and harmonization of messages in this pluralistic system has never been more important or urgent. The government can focus on this role. The NACDC, instituted by MoAIWD in 2014, is a good start and should continue to be funded and strengthened.
- Regular training of extension workers to upgrade both technical and facilitation skills will be required. Nongovernment agents are being trained by projects more often, but these disparate capacity strengthening efforts are largely uncoordinated. Coordination of these efforts and a feedback system to and from the agricultural colleges and training institutions will be useful to ensure that the demand for and supply of skills and expertise meet.
- A monitoring system is an urgent need to trace the various extension service providers, harmonize messages, map complementarities, and address gaps in service provision at the district and national levels.
- An incentive system needs to be in place and enforced based on a credible performance evaluation (with performance indicators that go beyond inputs and outputs).

APPENDIX A: SELECTION OF SAMPLE DISTRICTS

Northern Region
Districts: Chitipa, Nkhatabay, Mzimba, Rumphi
The Northern Region had a fair representation. Chitipa was chosen because it is one of the two districts in the Karonga agricultural development division (ADD) with very different characteristics. Apart from being a border district with Tanzania, the district has also been isolated from the rest of the districts for a long due time to a poor road network. Only in 2012 did the district get an upgraded, paved road. The district is mountainous and has a large plain. Karonga, another district in Karonga ADD, was left out because it has similar characteristics to Nkhotakota, which was chosen, but also Salima, which was left out. Karonga has hot temperatures and is predominantly a rice-growing area like the other lakeshore districts.

Mzimba, Rumphi, and Khatabay, although they are all in Mzuzu ADD, have different farming patterns. Rumphi receives less rain than other districts in the ADD, but because it was one of the pilot districts for the District Agricultural Extension Service System (DAESS), the team was interested in knowing the functionality of its DAESS structures. Nkhatabay was chosen for its diverse farming pattern, different from that of most lakeshore districts, with farmers there growing cassava as a staple crop, as well as rice, and a few upland farmers growing maize. Mzimba South was chosen as a "normal" district, similar to many others, where extension services are performed without any outside influence.

Central Region
Districts: Kasungu, Lilongwe, Mchinji, Nkhotakota, and Ntcheu
The Central Region has three ADDs: Salima ADD (with Nkhotakota and Salima); Kasungu ADD (Dowa East, Dowa West, Kasungu, Mchinji, and Ntchisi) and Lilongwe ADD (Dedza, Lilongwe, and Ntcheu). Kasungu and Mchinji were selected to represent Kasungu ADD because their characteristics are representative of the districts in this ADD. Mchinji has the additional advantage of having piloted the DAESS in the Central Region, offering the opportunity to explore any differences between it and other districts.

In Salima ADD, Nkhotakota was chosen as a lakeshore district with farming patterns similar to those throughout Salima. Farmers are predominantly maize and rice growers, as in Karonga in the north. In Lilongwe ADD, Lilongwe District is the district with the largest number of nongovernmental organizations (NGOs) operating within it. It has farming pattern characteristics similar to those of Dedza District. Ntcheu exemplifies the "average" district in this ADD, with a number of NGOs, similar to Dedza.

Southern Region
In the Southern Region, the selection was diverse. It was based on district characteristics and farming patterns. The Southern Region has three ADDs: Blantyre, Machinga, and Shire Valley. Chikwawa was selected to represent Shire Valley ADD, which has hot weather and few rains. It was important to explore whether extension staff and NGOs find different challenges in these weather patterns than elsewhere. We omitted Nsanje because it is quite similar to Chikwawa.

Balaka, in Machinga ADD, is also a semi-arid district whose characteristics—receiving relatively little rain—very much mirror those of Mwanza, which was therefore omitted. Balaka, Mangochi, and Zomba were chosen to represent Machinga ADD, leaving out Machinga District. Mangochi represents the lakeshore district in Machinga ADD, which has a unique farming system, with farmers depending on fishing much more than farming, and thus adds a dimension to the analysis. Zomba represents a "normal" agricultural district in Machinga ADD.

Chiradzulu and Phalombe districts were chosen in Blantyre ADD because they mirror other districts in the ADD, such as Mulanje, Thyolo, and Blantyre, in terms of farming characteristics. Mwanza is semi-arid, just like Balaka District. Generally, the selected districts represent other districts in one way or another.

APPENDIX B: BRIEF DESCRIPTION OF SELECTED EXTENSION APPROACHES

Table B.1 Extension approaches

Approach	Provider	Description
Farmer-to-farmer extension	National Smallholder Farmers' Association of Malawi (NASFAM)	Farmer-to-farmer extension is one of the most efficient means of delivering agricultural advisory services to the farming community. Malawi has experience in farmer-to-farmer extension of more than 50 years. One of the most innovative models is the one implemented by NASFAM. Being a national farmer association, NASFAM enjoys a strong farmer base for delivery of services under the farmer-to-farmer extension model. In addition, NASFAM is a self-sustaining extension organization in terms of financing, and a committed partner of the Malawi Forum for Agricultural Advisory Services (MaFAAS), having made presentations at two of the three major national workshops MaFAAS has conducted.
Host farmer system for demonstrations	Agricultural Research and Extension Trust (ARET)	Demonstrations are well accepted as a technology promotion option. However, the need for capacity building and sustainable incentives to host farmers has been the most cited reason for failed demonstrations, especially result demonstrations. ARET has consistently outperformed most institutions in holding demonstrations, resulting in well publicized field days in demonstration plots across Malawi. In addition, ARET is a sustainably funded institution, relying on produce levies. It enjoys a permanent linkage with a research institution within the organization. ARET, one of the founding institutions of MaFAAS, presented its model at one of the MaFAAS workshops.
Clusters and *ulimi wa mndandanda* (belt farming)	Department of Agricultural Extension Services (DAES)	Malawi's Ministry of Agriculture, Irrigation, and Water Development (MoAIWD) has consistently failed to promote improved ridge spacing and plant population technologies for maize. Introduction of the Farm Input Subsidy Programme highlighted this failure by making it evident that no major changes in productivity would be achieved without improvement in these technologies. DAES therefore introduced the cluster and *ulimi wa mndandanda* model, whereby farmers in a stretch of not less than 1 km agree to implement similar recommended and innovative agronomic practices in their fields in a manner resembling a collaborative, large-scale demonstration. The result was widespread adoption of the aforementioned practices and other key technologies, thereby improving farmer livelihoods through increased productivity.
Radio-based extension service delivery	Farm Radio Trust	An increase in the number of radio stations in Malawi resulted in dissemination of low-quality extension messages by stations whose capacity in that area had not been well developed. Further, there were no mechanisms to share lessons and experiences in extension service delivery through radio. Farm Radio Trust revolutionized radio-based extension by introducing a widely attended annual farm radio symposium and building the capacity of radio stations in Malawi, notably community radio stations, resulting in improved services through radio as well as innovative program models such as extension radio programs developed by farmers.

Table B.1 Continued

Approach	Provider	Description
Long-term extension programs for significant poverty alleviation	World Vision Malawi	Nongovernmental organizations (NGOs) have a tendency to implement short-term extension projects that leave very little impact on the livelihoods of the farming community. In the rush to get quick results, most NGOs have tended to use unsustainable extension methods, commonly based on cash and noncash incentives to promote technology adoption within a short time, which unfortunately tends to be "artificial" adoption. World Vision Malawi has demonstrated a different approach. Through its long-term "area development programs," World Vision Malawi has implemented transformative extension, based on farmer training and constant farmer engagement on each intervention promoted, resulting in poverty alleviation in farming communities in Malawi.
Farmers Club program	Development Aid from People to People (DAPP)	Noting problems of low technology adoption as well as poor coverage and quality of extension services, DAPP adopted the Farmers Club approach as a more convenient and cost-effective way to interact with farmers. The approach empowers farmers by encouraging them to solve their own problems and learn from each other through the use of lead farmers. The clubs also provide an atmosphere conducive to the delivery of extension services in a participatory manner and facilitate efficient coordination among service providers. Through this approach, DAPP is reaching more farmers, resulting in increased involvement and an enhanced adoption rate.
Liwu la Mlimi Pa Wayilesi (Famer Voice Radio)	Malawi Broadcasting Corporation (MBC)	In response to the limited capacity of the agricultural extension service to reach many farmers throughout the country, MBC adopted the Farmer Voice Radio (FVR) approach, which developed a radio-enhanced agricultural extension service in order to increase the productivity of smallholder farmers. The approach was a result of the Farmer Voice Radio Project implemented by the American Institutes for Research from 2009 to 2012, in which MBC was a partner, among others. The main features of FVR are that programming hinges on impact and almost entirely on sustainability, focuses on providing voice to the voiceless with particular emphasis on women farmers, and emphasizes a near-real-time feedback system. The approach has helped MBC improve the quality and quantity of its radio agricultural programs through increased farmer participation and the enhanced feedback system.
Lead farmer approach	Development Fund of Norway	In response to the limited capacity of government extension workers to reach millions of smallholder farmers, the Development Fund of Norway, in partnership with several stakeholders including MoAIWD, is using the lead farmer approach to supplement the government extension system for rural farmers. By training farmers to become lead farmers, the approach is helping the government disseminate messages to a wider audience. The approach places knowledge and skills within the context of the community, thus empowering local communities. With time, the adoption of sustainable agriculture technologies is improving.

Source: Mthinda (2015).

REFERENCES

ACE Africa (Agricultural Commodity Exchange for Africa). 2017. Accessed August 16, 2017 http://aceafrica.org.

Birner, R.; Davis, K.; Pender, J.; Nkonya, E.; Anandajayasekeram, P.; Ekboir, J.; Mbabu, A.; Spielman, D.J.; Horna, D.; Benin, S.; and Cohen, M. 2009. From Best Practice to Best Fit: A Framework for Designing and Analyzing Pluralistic Agricultural Advisory Services Worldwide. *Journal of Agricultural Education and Extension 15*(4): 341-355.

Chapota, R., C. Mthinda, and P. Fatch. 2014. *The Role of Radio in Agricultural Extension and Advisory Services—Experiences and Lessons from Farm Radio Programming in Malawi.* Case Study 8. Urbana, IL, US: Modernizing Extension and Advisory Services, University of Illinois at Urbana-Champaign. www.farmradiomw.org/publications/MEAS-CS-Malawi-Farm-Radio-Chapota-Fatch-Mthinda-Feb-2014.pdf.

Chowa, C., C. Garforth, and C. Cardey. 2013. "Farmer Experience of Pluralistic Agricultural Extension, Malawi." *Journal of Agricultural Education and Extension* 19 (2): 147–166.

FARA (Forum for Agricultural Research in Africa). 2006. *Framework for African Agricultural Productivity*. Accra, Ghana. http://faraafrica.org/wp-content/uploads/2015/04/FAAP_English.pdf.

Flaherty, K., Essegbey, G.O. and Asare, R. (2010) Ghana: Recent Developments in Agricultural Research. ASTI Country Note. Washington DC: International Food Policy Research Institute.

IDAF (Institutional Development across the Agro-Food Sector). 2010. "Mapping of Extension Service Providers." Unpublished, Malawi Ministry of Agriculture and Food Security, Lilongwe.

Kamkwamba, S. 2015. "Agricultural Extension Services in Malawi: Past, Present and the Future." Paper presented at Modernizing Extension and Advisory Services symposium, Washington, DC, June 1–5.

Kumwenda, W. 2013. "NASFAM Extension System." Paper presented at workshop and general assembly of Malawi Forum for Agricultural Advisory Services, Lilongwe, Malawi, May 8–9.

———. 2017. *Proceedings of MaFAAS Malawi Extension Strategy Input Workshop 24 March Malawi Institute of Management.* Lilongwe.

Malawi, Ministry of Agriculture and Food Security. 2004. *District Agricultural Extension Services System Implementation Guide*. Lilongwe.

Malawi, Ministry of Agriculture and Irrigation. 2000. *Agricultural Extension in the New Millennium: Towards Pluralistic and Demand-Driven Services in Malawi*. Lilongwe.

Malawi, MoAIWD (Ministry of Agriculture, Irrigation and Water Development). 2016a. "Agriculture Sector Performance Report 2015/2016 Fiscal Year." Unpublished draft, MoAIWD, Lilongwe.

———. 2016b. *National Agriculture Policy*. Lilongwe.

Masangano, C. 2016. "Innovations in Agricultural Extension and Advisory Services with Emphasis on Policy." Paper presented at Extension Week, Lilongwe, Malawi, June 19–23.

———. 2017. "Issues Paper for the Development of Extension and Advisory Services Strategy for Malawi." Paper presented at PSI Consult International, Lilongwe, Malawi, April 12.

Masangano, C., and C. Mthinda. 2012. *Pluralistic Extension System in Malawi*. Discussion Paper 01171. Washington, DC: International Food Policy Research Institute.

MEAS (Modernizing Extension and Advisory Services). 2012. *Strengthening Pluralistic Agricultural Extension in Malawi*. East Lansing, MI, US: Michigan State University.

Mthinda, C. 2015. *Innovative Agricultural Extension and Advisory Services Approaches: A Synthesis Report.* Lilongwe: Malawi Forum for Agricultural Advisory Services.

Niu, C., and C. Ragasa. 2017. *Limited Attention and Information Loss in the Lab-to-Farm Knowledge Chain: The Case of Malawian Agricultural Extension Programs*. Discussion Paper 01654. Washington, DC: International Food Policy Research Institute.

Pamuk, H., Bulte, E., & Adekunle, A. 2014. Do decentralized innovation systems promote agricultural technology adoption? Experimental evidence from Africa. *Food Policy*: 227–236.

Potter, C., and R. Brough. 2004. "Systemic Capacity Building: A Hierarchy of Needs." *Health Policy and Planning* 19 (5): 336–345.

Ragasa, C., J. Mazunda, and M. Kadzamira. 2015. *The National Extension Policy of Malawi—Lessons from Implementation*. Policy Note 23. Washington, DC: International Food Policy Research Institute.

Ragasa, C., and C. Niu. 2017. *The State of Agricultural Extension and Advisory Services Provision in Malawi: Insights from Household and Community Surveys.* Malawi Strategy Support Program Technical Report. Washington, DC: International Food Policy Research Institute. http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/131093.

Ragasa, C. 2016. Organizational and Institutional Barriers to the Effectiveness of Public Expenditures: The Case of Agricultural Research Investments in Nigeria and Ghana, *European Journal of Development Research* 28(4): 660–689.

Ragasa, C., Alvarez-Mingote, C., McNamara, P. 2017. Is there a Role for Agricultural Committees and Stakeholder Panels in Improving Information and Accountability in Extension Services Provision? Evidence from Malawi. Draft paper.

World Bank and IFPRI (International Food Policy Research Institute). 2009. *Gender and Governance in Rural Services*. Washington, DC: World Bank.

RECENT IFPRI DISCUSSION PAPERS

For earlier discussion papers, please go to www.ifpri.org/publications/discussion_papers.
All discussion papers can be downloaded free of charge.

1672. What happens after technology adoption? Gendered aspects of small-scale irrigation technologies in Ethiopia, Ghana, and Tanzania. Sophie Theis, Nicole Lefore, Ruth Meinzen-Dick, and Elizabeth Bryan, 2017.

1671. Effects of tractor ownership on agricultural returns-to-scale in household maize production: Evidence from Ghana. Hiroyuki Takeshima, Nazaire Houssou, Xinshen Diao, 2017.

1670. Food expenditure patterns and dietary diversity in Nepal: Is dietary quality improving? Anjani Kumar, Ganesh Thapa, and P. K. Joshi, 2017.

1669. US trade wars with emerging countries in the 21st century: Make America and its partners lose again. Antoine Bouët and David Laborde, 2017.

1668. Heterogeneity in riverine ecosystem service perceptions: Insights for water-decision processes in transboundary rivers. Hassaan Furqan Khan, Y. C. Ethan Yang, and Claudia Ringler, 2017.

1667. Measuring trade integration in Africa. Antoine Bouët, Lionel Cosnard, and David Laborde, 2017.

1666. Policy options to accelerate variety change among smallholder farmers in South Asia and Africa South of the Sahara. David J. Spielman and Melinda Smale, 2017.

1665. Assessing the health and nutrition risks of smallholder poultry production in Burkina Faso: Insights from formative research. Aulo Gelli, Derek Headey, Francis Ngure, Elodie Becquey, Rasmané Ganaba, Lieven Huybregts, Abdoulaye Pedehombga, Armande Sanou, Abdoulaye Traore, Florence Zongo, and Amanda Zongrone, 2017.

1664. Health insurance, a friend in need? Evidence from financial and ealth diaries in Kenya. Xin Geng, Vera Ide, Wendy Janssens, Berber Kramer, and Marijn van der List, 2017.

1663. Women's land rights as a pathway to poverty reduction: A framework and review of available evidence. Ruth Meinzen-Dick, Agnes Quisumbing, Cheryl Doss, and Sophie Theis, 2017.

1662. Overview of the evolution of agricultural mechanization in Nepal: A Focus on Tractors and combine harvesters. Hiroyuki Takeshima, 2017.

1661. Cooking contests for healthier recipes: Impacts on nutrition knowledge and behaviors in Bangladesh. Berber Kramer, 2017.

1660. Mapping Indian agricultural emissions: Lessons for food system transformation and policy support for climate-smart agriculture. Nirmal Kumar Patra and Suresh Chandra Babu, 2017.

1659. Cash transfers and management advice for agriculture: Evidence from Senegal. Kate Ambler, Alan de Brauw, Susan Godlonton, 2017.

1658. Gender, climate change, and resilient food systems: Lessons from strategic adaptation by smallholder farmers in Cameroon. Lilian Nkengla-Asi, Suresh Chanda Babu, Holger Kirscht, Scarlett Apfelbacher, Rachid Hanna, and Amare Tegbaru, 2017.

1657. Integrating environmental considerations into the agricultural policy process: Evidence from Nigeria. Suresh Chandra Babu, George Mavrotas, and Nilam Prasai, 2017.

1656. Understanding the measurement of women's autonomy: Illustrations from Bangladesh and Ghana. Greg Seymour and Amber Peterman, 2017.

1655. Addressing transboundary cooperation in the Eastern Nile through the water-energy-food nexus: Insights from an e-survey and key informant interviews. Helen Berga, Claudia Ringler, Elizabeth Bryan, Hagar El Didi, and Sara Elnasikh, 2017.

1654. Limited attention and information loss in the lab-to-farm knowledge chain: The case of Malawian agricultural extension programs. Chiyu Niu and Catherine Ragasa, 2017.

1653. Does providing agricultural and nutrition information to both men and women improve household food security?: Evidence from Malawi. Catherine Ragasa, Noora-Lisa Aberman, and Cristina Alvarez Mingote, 2017.

1652. Is the WTO dispute settlement procedure fair to developing countries? Antoine Bouët and Jeanne Metivier, 2017.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

www.ifpri.org

IFPRI HEADQUARTERS

1201 Eye Street, NW
Washington, DC 20005 USA
Tel.: +1-202-862-5600
Fax: +1-202-862-5606
Email: ifpri@cgiar.org

IFPRI LILONGWE OFFICE

P. O. Box 31666
Lilongwe 3
Malawi
Tel.: + 265-1-789747
Email: IFPRI-Lilongwe@cgiar.org