INTERNATIONAL
FOOD POLICY
RESEARCH
INSTITUTE

IFPRI Discussion Paper 01283

August 2013

**Assessment of the Capacity, Incentives, and
Performance of Agricultural Extension Agents in
Western Democratic Republic of Congo**

Catherine Ragasa

John Ulimwengu

Josee Randriamamonjy

Thaddee Badibanga

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. IFPRI is a member of the CGIAR Consortium.

AUTHORS

Catherine Ragasa, International Food Policy Research Institute

Research Fellow, Development Strategy and Governance Division

c.ragasa@cgiar.org

John Ulimwengu, International Food Policy Research Institute

Research Fellow, West and Central Africa Office

Josee Randriamamonjy, International Food Policy Research Institute

Senior Research Analyst, Development Strategy and Governance Division

Thaddee Badibanga, International Food Policy Research Institute

Postdoctoral Fellow, Development Strategy and Governance Division

Notices

IFPRI Discussion Papers contain preliminary material and research results. They have been peer reviewed, but have not been subject to a formal external review via IFPRI's Publications Review Committee. They are circulated in order to stimulate discussion and critical comment; any opinions expressed are those of the author(s) and do not necessarily reflect the policies or opinions of IFPRI.

Copyright 2013 International Food Policy Research Institute. All rights reserved. Sections of this material may be reproduced for personal and not-for-profit use without the express written permission of but with acknowledgment to IFPRI. To reproduce the material contained herein for profit or commercial use requires express written permission. To obtain permission, contact the Communications Division at ifpri-copyright@cgiar.org.

Contents

Acknowledgment	vi
Abstract	vii
Abbreviations and Acronyms	viii
1. Introduction	1
2. Conceptual Framework	3
3. Methods and Data Sources	6
4. Extension Policy and Institutional Set-Up	8
5. Coordination	16
6. Organizational Capacity and Incentive	19
7. Delivery Methods and Tools	27
8. Motivations and Work Environment	31
9. Correlates of Performance	39
10. Discussion	48
11. Concluding Remarks and Recommendations	50
References	48

Tables

3.1—Number of respondents by type of interviews	6
3.2—Distribution of sample organizations and agents by their type of organization	7
4.1—Farmer–agent ratio in selected countries	10
4.2—Distribution of respondents based on benefits from decentralization reforms (organization perspective, N=28)	11
4.3—Distribution of respondents based on undesirable effects of decentralization (organization perspective, N=28)	11
4.4—Agricultural extension agent opinions on the value of CARGs (N=92)	12
4.5—Topic discussed in CARG meeting attended, organization perspective (N=58)	13
4.6—Training courses received, by type of provider and type of beneficiary organization, in percent	15
5.1—Frequency of meetings between AEAs and local government unit staff, in percent	17
6.1—Descriptive statistics of the level of staffing in sample extension organizations (N=107)	19
6.2—Descriptive statistics of the proportion of female in the staff of agricultural extension organizations (N=107)	19
6.3—Distribution of extension agents by type of organization and level of education, in percent	20
6.4—Distribution of agents by training received and organization type, in percent (N=162)	20
6.5—Field of specialization of agricultural extension agents and supervisors, in percent	21
6.6—Distribution of sample extension agents and supervisors by organization type	22
6.7—Funding received by government-based AEOs from government (N=59 government organizations)	23
6.8—Distribution of agricultural extension organizations by external funds received (N=107)	23
6.9—Percent of responding agents who agree or strongly agree that physical resources are adequate	24
6.10—Distribution of agricultural extension agents by transportation challenges (N=162)	24
6.11—Distribution of agricultural extension organizations based on targets received last year (N=47)	25
6.12—Percent of agents who use target criteria for input distribution (N=25)	26
6.13—Agricultural extension agents’ perception of supervision (N=162 agents)	26
7.1—Weekly hours worked for three seasons, AEA perspective, in percent (N=162 agents)	27
7.2—Methods of AEA interaction with farmers by province, in percent, (N=141)	27
7.3—Methods of AEA interaction with farmers by organization type, in percent (N=141)	28
7.4—Extension delivery methods and tools used, by organization type	28
7.5—Type of input distributed by agents, in percent	29
7.6—FBO descriptive by province, AEA perspective	29
7.7—Agent perspective of most frequently taught topics, by province, in percent (N=162)	30
7.8—FBO perspective of most frequently taught topics	30
8.1—Distribution of respondents based on top three disincentives and discouragements in performing better or serving farmers’ needs, in percent (N=162)	31
8.2—Distribution of respondents based on top three incentives in performing better or serving farmers’ needs, in percent (N=162)	32
8.3—Supervisors’ perspective of good agent performance, in percent (N=107)	32
8.4—Extension agents’ perspective of good agent performance, in percent (N=162)	33

8.5—Supervisors’ perspective of undesirable agent performance, in percent (N=107)	33
8.6—Extension agents’ perspective of undesirable agent performance, in percent (N=162)	33
8.7—Agents reporting rewards for performance, in percent	34
8.8—Type of rewards given to extension agents by supervisor, in percent	34
8.9—Biggest success in career, agent perspective (N=162)	34
8.10—Percent of agents receiving compensation in exchange for work	35
8.11—Financial compensation received for extension provision (N=107 organizations)	35
8.12—Indicators of extension agents’ job satisfaction (N=162)	36
8.13—Biggest constraints facing male farmers, based on agents’ perspective, in percent	37
8.14—Biggest constraints facing female farmers, based on organization perspective, in percent	38
8.15—Top three constraints reported, in percent (N=107 organizations)	38
9.1—Distribution of sample villages and extension visits by number of visits	39
9.2—Distribution of extension agent visits to sample villages according to their institutional home and gender	39
9.3—Descriptive statistics of variables on organizational performance	40
9.4—Descriptive statistics of variables explaining individual agent’s performance	41
9.5—Major themes and hypotheses based on literature	42
9.6—Results of the logit model on organizational performance	42
9.7—Results of the logit model on individual agent’s performance	43

Figures

2.1—Conceptual framework	5
4.1—Agricultural extension system in the Democratic Republic of Congo	8
5.1—Frequency of agricultural extension agents’ interaction with other actors, in percent (N=162)	16
5.2—Frequency of organizations’ interaction with other actors, in percent (N=107)	17
6.1—Distribution of agent perceptions that staff are well qualified for job, by percent (N=162)	21
8.1—Constraints to achieving the organization mission, extension agents’ perspective (N=162)	37

ACKNOWLEDGMENT

The authors are very grateful for the guidance provided by Regina Birner and Suresh C. Babu during the early stages of the study. The authors are also thankful for the excellent research assistance and outstanding support in the survey design and implementation by Renato Folledo, Joel Siku Kasereka, Tina Pholo, Sangeetha Malaiyandi, and all the enumerators; and funding from United States Agency for International Development, through the DRC Strategy Support Program of IFPRI

ABSTRACT

Agricultural extension is critical for agricultural growth and food security, but making the extension system effective, demand driven, and responsive to the needs of a diverse set of producers remains a challenge. As part of the institutional reforms in the Democratic Republic of Congo (DRC), the extension system is being reviewed to identify strategies and practical actions to transform the system to better respond to the knowledge needs in a rapidly changing agriculture and food sector. This paper provides an in-depth review of the agricultural extension system of DRC including an analysis of its policies and legal framework, organization, and management; links to critical institutions; and capacity and incentive of different actors in the system. This review involved document analyses, interviews with key informants, and surveys of 107 extension organizations and 162 extension agents in 156 randomly selected villages in western DRC. This review suggests serious funding constraints, human resource management problems, no linkage and coordination within the extension system and with research and education systems, and a majority of underserved communities and farmers. This review also highlights a good opportunity given the huge human resources (more than 11,000 agents) deployed into the sectors and territories as part of the Ministry's agricultural inspection system. However, their mandate is not clear and they currently focus on data collection (census) and checking what farmers do and limited in extension and advisory work. This review highlights the urgent need for human resource or civil service reform; public-sector commitment and funding; infrastructure rebuilding and skills upgrading in extension, education and training, and research organizations; and a unified policy or strategy with clear vision, mandate, targets, and performance-based incentive system.

Keywords: agricultural extension, capacity, incentives, agricultural reform, advisory services, Democratic Republic of Congo

ABBREVIATIONS AND ACRONYMS

UNIKIN	University of Kinshasa
AEA	agriculture extension agent
AEO	agriculture extension organization
CARG	Agricultural and Rural Management Councils
CDF	Congolese Franc
CRAFOD	Centre Régional d'Appui et de Formation pour le Développement (Regional Center for Support and Training for Development)
DRC	Democratic Republic of Congo
FAO	Food and Agriculture Organization of the United Nations
FBO	farmer-based organization
IITA	International Institute of Tropical Agriculture
INERA	National Agricultural Research Institute
INS	National Institute of Statistics
ISDR	Rural Development Institute
ISEAV	Agroveterinarian Studies Institute/College
MINAGRI	Ministry of Agriculture, Livestock, and Fisheries (DRC)
MINRD	Ministry of Rural Development
MINHEALTH	Ministry of Health
NGO	nongovernmental organization
SNV	National Extension Services (Service National de Vulgarisation)
SENAMA	National Mechanization Services
SENASEM	National Seed Services
SENAFIC	National Fertilizer Services
UNDP	United Nations Development Programme

1. INTRODUCTION

Numerous studies have emphasized the crucial importance of agricultural extension in achieving agricultural and rural development through education and transfer of knowledge, skills and technology (Swanson, Bentz, and Sofranko 1997; Alston et al. 2000; Davis 2008; Feder, Birner, and Anderson 2011). For example, rates of return on and economic contribution of the agricultural extension program in Uganda are estimated to be 8–49 percent (Benin et al. 2011 specifically on the National Agricultural Advisory Services program). However, extension systems and delivery methods in many developing countries have been constantly viewed ineffective in responding to the demands and technological challenges of various types of clients and in reaching the rural poor (Rivera, Qamar, and Crowder 2001; Davis 2008; Birner et al. 2009).

Reform in the extension system is realized by the government and the Ministry of Agriculture as a key aspect in the agricultural development strategy and economic recovery of the Democratic Republic of Congo (DRC). DRC is recovering from more than 15 years of war and is embarking on a series of institutional reforms and capacity development programs to realize its huge potential to be a food basket in Africa. However, DRC is one of the countries with the lowest productivity growth in world and is confronted with the old and new problems of diseases, pests, weeds, and declining soil fertility. Additional changes brought by drought and extreme weather events and increasing competition from imports require a more diverse and urgent role for the extension system to deliver much-needed technical advice to the rural population. DRC is worst among 82 countries in hunger and food insecurity based on the Global Hunger Index (IFPRI 2011).

As part of the reform and restructuring of the Ministry of Agriculture, the government of DRC plans to reform the national agricultural extension system to make it a more community-based and demand-driven system involving nongovernmental organizations (NGOs), the private sector, and rural producer organizations as service providers of extension services. Many donor-funded programs operated in the 1970s and 1980s and supported agricultural technology transfer and advice to small producers, including World Bank-funded projects based on the training and visit method. In 1988 the National Extension Services (SNV) was created to harmonize various extension services and to integrate them in the ministry's day-to-day activities, but SNV activities ceased to operate and it has not received any government funding for its operations since 1997 with the withdrawal of donors. Due to the absence of an active public agricultural extension system, churches and NGOs have been active in providing agricultural services to the rural population. However, the research team's visits to a numbers of villages reveal that the coverage of NGOs and church-based organizations in terms of agricultural extension services is limited.

A recent field visit by the IFPRI team in the three provinces in DRC (Kinshasa, Bas-Congo, and Bandundu) reveals a more complex process in terms of the role of Ministry of Agriculture, Livestock, and Fisheries (MINAGRI) staff being contracted by NGOs and church-based organizations and the role of farmer-based organizations (FBOs); spillover effect from medium and large farmers; and social and trust networks in small farmers' acquisition of information, advisory services, and technologies. Moreover, the field visits by the research team indicate that models in the past (for example, training and visit method and SNV creation) have been appreciated and found useful by most of the respondents when compared with the current absence of a public extension system in the country.

The big challenge being faced by the decisionmakers in DRC is how this ineffective extension system can be turned around to support the plan for the government and MINAGRI to reform and transform the agriculture and food sector in DRC. Is the issue only about funding or are there ways to improve the structure and institutional setup of the system? What was the old system like and can we find good elements to build on and not-so-good elements that we should avoid or improve on? To date, there is no systematic analysis of the agricultural extension system in DRC to guide the ongoing reform processes.

This paper explores the delivery process of extension services to provide a better understanding of strategies and approaches that can or cannot work in improving agricultural extension service provision and to assist small-scale farmers in increasing their productivity and incomes in DRC, focusing on the provinces of Bandundu, Bas-Congo, and Kinshasa. Specifically, this paper aims to:

- Characterize extension organizations and agents that provide different types of extension services to smallholder farmers;
- Provide a diagnostic assessment of their structure, capacity, functioning, and performance;
- Test significant correlates of performance among agricultural extension organizations (AEOs) and agents; and
- Identify feasible entry points of strengthening and reforming the national agricultural extension system.

2. CONCEPTUAL FRAMEWORK

The framework used to guide the data collection and analysis is adopted from Birner and Wittmer (2009) and Birner et al. (2009) (Figure 2.1). The ultimate goals of strengthening AEOs are to improve their performance and effectiveness and to contribute to the ultimate goal of the country toward technology adoption, agricultural productivity growth, improved incomes, and food and nutrition security. These are illustrated in the far right boxes of the framework in Figure 2.1.

The boxes left of the framework 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:

- *Institutional set-up:* Any organization or system starts with a clearly defined and commonly shared mission, objectives, roles, and responsibilities, explicit in a policy or strategy. Successful policies and strategies have clearly defined and measurable targets to monitor and evaluate their progress and areas of improvement. National extension policies or strategies have been developed for several countries. This policy is implemented by an institutional design, involving the level of decentralization, deconcentration, 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 a pluralistic system are expected to bring forth greater effectiveness and 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 according to its mandate.
- *Coordination:* Given the complexity of agricultural development and food security, an integrated approach requires collaboration among sectors and actors. The extension system plays a role as a bridging mechanism among sectors and actors for useful information and technologies. Linkage within the extension system and across sources and users of information and technologies is critical for the system to perform well.
- *Organizational capacity and incentives:* These involve (a) available resources in terms of human capital, financial resources, and infrastructure; (b) management, which includes leadership style, procedures used for planning, monitoring and evaluation, human resource management, financial management, and the role that coordination plays in managing the organization; and (c) culture within organization, which can be a result of the effectiveness of management systems or an organic accumulation of experiences, interaction, and dynamics within the organizations. The organizations that are relevant are those that are involved in any stage of agricultural extension service provision (extension service delivery, training of service providers). Organizations include field offices of the MINAGRI; Ministry of Rural Development (MINRD); Seed Services; National Extension Services (SNV); training and capacity strengthening institutes; Development Services at the National Agricultural Research Institute (INERA); and NGOs, church-based organizations, producer organizations, and the private sector. An important aspect of organizational capacity and incentive is the staff, especially the frontline extension agents who work directly with farmers. Their skills, motivations, sense of accountability, and work environment are key to their effective functioning and working with rural producers.
- *Extension delivery methods/tools:* Methods and technologies are primarily the way in which the organization chooses to deliver services. For the extension agents, this includes how they interact with farmers, conduct demonstrations, and spend their time.

These factors are in turn influenced by the country context, social and political processes, policy environment internationally and nationally, and the characteristics and potential of the agriculture sector. This paper focuses on the institutional setup (policy, structure, and mandate), coordination, organizational capacity and incentive, and delivery methods and tools in describing the agricultural extension in DRC as highlighted by the bold lines in Figure 2.1.

Figure 2.1—Conceptual framework

Source: Authors creation based on Birner and Wittmer 2009 and Birner et al. 2009.

3. METHODS AND DATA SOURCES

The data analyzed in this paper were taken from the IFPRI agricultural extension surveys conducted in three focus provinces of Bandundu, Bas-Congo, and Kinshasa in August–October 2011. As part of the preparation work for these surveys, a two-week scoping field visit was conducted in February 2011. Questionnaire design and rigorous pretesting and enumerators’ training were conducted in May to July 2012. For the choice of villages, the research team used a multistage random sampling consistent with that of the Democratic Republic of the Congo (DRC) government’s National Institute of Statistics (INS) for the implementation of its household surveys named Enquête 1-2-3. In each district, territories were randomly selected. Within the sample territories, villages were randomly selected. There are 156 villages included in the sample.

Since there was no existing comprehensive list of AEOs in these sample villages, the research team developed a list using a snowball approach. A total of 107 AEOs have been identified and interviewed. Within these AEOs, two to five agricultural extension agents (AEAs) were interviewed (for a few AEOs we could not find any AEA to interview). The sample AEOs also did not have (or refused to provide) a list of their AEAs to draw a random sampling. To circumvent this technical difficulty, we ask the head or supervisor in the sample AEO to provide us with the contact details of AEAs who were available and could be interviewed. A total of 162 AEAs are included in sample. Given the sampling method, the sample AEAs may represent those who are more active extension agents rather than a more comprehensive representation of AEAs.¹ Three types of semistructured questionnaires are implemented, namely, (1) village-level questionnaire, with a group of three to six village opinion leaders or FBO representatives as respondents; (2) organization-level questionnaire, with heads or supervisors in AEO as respondents; and (3) individual agent questionnaire, with AEAs as respondents (Table 3.1). These were implemented using a face-to-face interview using a computer-assisted mobile device to improve the quality of data collected and remove errors during the process of data entry. Each questionnaire took about one to three hours, depending on the speed of interviewing and circumstances faced by the enumerators. We analyze the data collected using (1) descriptive tables and figures to present the status of the different dimensions of extension system in western DRC; and (2) logit regression analysis that statistically finds significant correlates of performance among AEOs and AEAs, utilizing the variation in the dataset on the activities, structure, operations and capacities of the sample AEOs and AEAs.

Table 3.1—Number of respondents by type of interviews

Type of questionnaire (respondents)	Number of respondents
Extension agent level (agriculture extension agents, monitors, or animateurs / rural workers)	162
Organization level (agricultural extension organization heads or supervisors)	107
Village level (3–6 opinion leaders and farmer-based organization representatives)	156

Source: IFPRI survey, August–October 2011.

¹ Based on key informants’ interviews, some staff who are still on the payroll of MINAGRI or MINRD are not necessarily active in their jobs nor are working to deliver extension services to rural areas.

As illustrated in Table 3.2, about half of the sample extension organizations are government agencies (MINAGRI or MINRD in different locations) and the other half is from non-government-based organizations (one-third are NGOs; the private sector and producer associations represent about 6 percent each; and church-based organizations account for about 3 percent). It has to be noted that the distinction between NGOs, church-based organizations, private sector, and rural producer organizations is unclear in the context of DRC; and it is likely that respondents have loosely classified themselves in one type or the other. This paper maintains the same type as reported by the respondents, but it is likely that some should actually be in another type. In many parts of the paper, they are simply referred to as non-government AEOs.

Table 3.2—Distribution of sample organizations and agents by their type of organization

Type of organization	Extension organization		Extension agent	
	N	%	N	%
Government (different locations) ¹	59	55	114	70
Nongovernment organization (NGO) ²	33	31	25	15
Private sector ²	6	6	9	6
Church-based organization ²	3	3	6	4
Producer association ²	6	6	8	5
Total	107	100	162	100

Source: IFPRI survey, August–October 2011.

Notes: ¹ Different location (territories or sectors) of Ministry of Agriculture, Livestock, and Fisheries or Ministry of Rural Development. ² The distinction between NGOs, church-based organizations, private sector, and rural producer organizations is unclear. The classification retained here is what the respondents reported but it is likely that some respondents belong to another of the non-government-based organizations.

Seventy percent of the AEOs have the territory or commune² level as the coverage, 13 percent in the sector or quartier level, and 10 percent at provincial level. While government, NGO, and farmer-based extension organizations cover mainly the territory, private extension operational areas are more concentrated in the sector. The few church-based organizations operate in province and sector.

The majority of the extension agents are male across organization types. Within the government, respondents are mostly inspectors from MINAGRI and MINRD (with one respondent from National Extension Services, or SNV). With NGOs, most of the respondents are coordinators or presidents. Within church-based organizations, most respondents are directors or supervisors; while for producer organizations or private sector, they call themselves presidents of these organizations or simply farmers.

² Village or community is the lowest administrative unit; a groupement consists of a group of villages; a sector consists of several groupements and is equivalent to a quartier in the urban or peri-urban areas; a territory is a group of sectors and is equivalent to a commune in urban or peri-urban areas; a province is composed of several territories; and finally, a district is composed of different provinces.

4. EXTENSION POLICY AND INSTITUTIONAL SET-UP

No national agricultural extension policy and strategy currently exists in the DRC. The creation and institutional set-up of the agricultural extension system in DRC are detailed in the 1989 decree (No. 0045/BCE/DDR/89) and 1993 decree (No. 078/CAB/VPM/AGRIDRAL/93). The extension system involves three complementary sub-systems namely: (1) National Extension Services or *Service National de Vulgarisation* (SNV) for coordination with national headquarters and a coordinating team in each province; (2) support structures including researchers, subject-matter specialists and trainees for training and technical backstopping, as well as other providers of other complementary services including INERA (National Agricultural Research Institute), SENAMA (National Mechanization Services), SENASEM (National Seed Services), and SENAFIC (National Fertilizer Services); and (3) agricultural inspection system within the MINAGRI, with an estimated 11,245 field staff, and extension agents from non-government-based organizations for implementation and service provision.

In 1988, SNV was created by an official decree as an independent unit within the National Rural Development Department, with their own budget, to institutionalize the earlier National Extension Program. Another decree was passed in 1993 giving the administrative and financial autonomy to the SNV under the umbrella authority of MINAGRI. The secretary general of MINAGRI would be in charge of the execution. Its mission was the coordination, harmonization, and support of the rural extension activities.

The headquarters of SNV would be in Kinshasa and the area of action is expected to cover the entire country. The management would be composed of the SNV director and seven division chiefs, who would be nominated by the minister of MINAGRI. The divisions include programs, formation or training, knowledge management and publication, research and development, monitoring and evaluation, administration, and finance. During its early implementation, the plan was to have 121 staff at the national level trained in educational psychology and other disciplines and 82 coordinators and officers assigned to the different provinces (Figure 4.1). SNV would then be supported by researchers, subject-matter specialists, and trainers from the government agencies, nongovernment organizations (NGOs), private sector, and other projects. SNV and the support structures would then work with the MINAGRI extension chief, sector chiefs, and technicians to train supervisors and monitors who are the frontline staff in direct contact with rural producers. According to its director, the service is expected to make use of the staff of the agricultural inspection system to provide extension services, for example, by training the agronomists, veterinarians, and agricultural monitors of this system and providing them with extension materials and production guides.

Figure 4.1—Agricultural extension system in the Democratic Republic of the Congo

Source: Authors; 1988 and 1993 decrees on SNV creation.

Note: MINAGRI = Ministry of Agriculture, Livestock, and Fisheries; NGO = nongovernment organization; SENAFIC = National Fertilizer Services; SENAMA = National Mechanization Services; SENASEM = National Seed Services; SNV = National Extension Services.

From 1989 to 1997, SNV had been financially supported by donor and international organizations including World Bank, the French government, United Nations Development Programme (UNDP), and FAO; and by the government of DRC. From 1997 to 2001, funding came solely from the government and was used mostly to pay for salaries; starting in 2002, no operating funding was available from any source and even the salaries for staff were not regularly paid. This makes it difficult for SNV to fulfill this function, since the staff of the agricultural inspection system is not under the supervision of SNV; without offering a budget, SNV cannot train the staff of this system or provide other services to them. The SNV continues to prepare a budget every year. For example, in 2010, SNV prepared a budget of US\$100 million³ for extension activities but did not receive any funds at all. The budgetary resources for the salary of the SNV staff are in the range of \$2 million.

The extension system in DRC is characterized by drastic underfunding of the system without institutional reforms, and the results are severe human resource management problems, unclear mandates and no mission orientation, elite capture problem (public extension agents serve large-scale farmers), and largely underserved and illiterate rural producers. The current extension system in DRC is characterized by a defunct public extension system with an extensive field staff still on the payroll, and numerous NGOs, church-based organizations, or producer organizations that are trying to fill in the gaps mostly from ad hoc and project-based funding. Government extension agents and supervisors are often directly hired by these NGOs, church-based organizations, or producer organizations for their extension work.

To understand the current system of public agricultural extension service provision, it is useful to go back and trace what the extension system was working on in the past and how it worked, and even taking into account its roots in DRC's colonial history. The Belgian colonial rulers did not practice a system of *indirect rule* but rather engaged directly in the management of local affairs, including the management of agricultural production.

It is also well known that the atrocities committed by the Belgian colonial rulers to extract agricultural labor were far beyond those observed anywhere else in Africa (Mills n.d.). To implement the policy of directed food-crop production, the colonial rulers created an intensive and centrally guided and administered agricultural production. The system that is in place today still features elements of the system set up by the colonial administration.

The lowest levels of field staff in MINAGRI are referred to agricultural monitors, which is the same title they had in the colonial period. While it is difficult to ascertain the number of AEAs in DRC due to unclear mandate in public-sector organization, unclear roles of various staff, and the difficulties in drawing the lines of multiple roles of public-sector employees, it is estimated that about 13,000 to 18,000 staff are in the payroll of the MINAGRI, and a majority are the agricultural monitors assigned and are responsible for groupments and villages.⁴ An estimate from MINAGRI (2005) suggests that about 11,245 MINAGRI field staff can be considered as extension agents.

At the sector level, they are supervised by the sector agronomists and sector veterinarians, who report to agricultural and veterinary inspectors at the territory level, who in turn report to the provincial directors and inspectors. In provinces where the decentralization policy is not fully implemented, agricultural and veterinary inspectors are also at the district level. In the following, this line of the administration is referred to as the *agricultural inspection system*.

Table 4.1 shows estimates in terms of total number of AEAs for various countries. Due to a series of reforms and investment in agricultural extension systems in Ethiopia, the number of farmers per extension agent is the lowest among the seven countries shown. Tanzania has 2,500 and Nigeria has 3,333; both countries have also attempts to revitalize their research and extension systems.

³ All dollar amounts are given in U.S. dollars.

⁴ Actual figures vary across reports, indicating the difficulty of obtaining a consistent figure.

Table 4.1—Farmer–agent ratio in selected countries

	DRC*	Ethiopia	China	Kenya**	Indonesia	Tanzania	Nigeria	India
Total number of agricultural development or extension agents (in thousands)	11	60	800	6	30	7	5	60
Farmers per agricultural development or extension agent	535	476	625	949	1,667	2,500	3,333	5,000
Agricultural population-to-agent ratio*	3,440	1,095	1,035	4,800	2,893	4,714	7,800	9,788

Source: Davis et al. 2010; *Authors' calculations based on agricultural population data from FAO 2010; **Kamau 2012.

Estimates suggest that DRC has about 6 million farming households, 15 million farmers, and 39 million agricultural population (FAO 2010). Thus, DRC has about 535 farmers per agent or 3,400 agricultural population per agent. Anderson and Feder (2004) show that the farmer-to-agent ratio in most developing countries is more than 1,000:1. This signifies that the major problem may not be the number of agents but rather managing these available human resources and providing direction and funds for them to operate.

The case study suggests that the field staff in this system, the monitors, do not have a mandate for promoting new technologies or engage in other activities that would help farmers to increase their income. Rather, they collect data and—as their title suggests—monitor what the farmers are doing. One of the interviewed local experts with long-term field experience suggested that their role remains to be influenced by the colonial past and remarked that “they are still largely seen as policemen” by the farmers (personal communication, Professor Makala,⁵ February 8, 2011). One of the interviewed agricultural inspectors at the territory level emphasized that the task of this system is not extension. However, another agricultural inspector interviewed said that extension is part of their mission and that even without operating funds from the government, they have been working with a number of international organizations to provide extension services to farmers. This suggests a serious lack of clear mission and mandate of this extensive agricultural inspection system.

Another function apart from data collection that was emphasized by the respondents for the system of inspectors, agronomists/veterinarians, and agricultural monitors is the prevention of crop and livestock diseases. While this is a public-sector function according to the framework above, it appears more efficient to pursue this function together rather than separately from the promotion of new technologies and farming practices. A survey of extension agents and extension organizations can shed some light on the question as to whether the insights from the case study regarding the perceived mandate of the agricultural inspection system are representative on a larger scale.

To fill in this huge gap in public extension service provision, international NGOs and donors have been actively involving local NGOs or producer organizations for extension service delivery. NGOs can use stronger incentives (monthly salary and benefits of NGO extension agent are \$500–\$1,000, compared with \$50, or \$1.7/day, for government extension agent). Public-sector extension agents' salaries are seriously low. To put this into context, the daily farm labor wage is from \$0.5 to \$3.5, which on average is even higher than the salary of extension agents in the public sector.

⁵ Professor Makala serves as an advisor on strategic management and reform processes to the Minister of MINAGRI by the name of the study.

However, NGO involvement in extension service delivery has major limitations. First, NGOs lack technical capacity and often hire MINAGRI staff as extension agents and supervisors. Second, similar to government, they also lack follow-up of technologies or farmers trained; they lack performance targets, mission orientation, and accountability measures; and elite capture and leakages are common complaints. For example, extension agents hired are not always qualified technicians but friends or relatives as reported by interview and survey respondents. Third, the quality of services is questionable, and many of our respondents are skeptical about whether extension agents have sufficient knowledge about new technologies that are profitable for the farmers. Fourth, coverage by NGOs is very limited, as confirmed by our dataset on Bandundu, Bas-Congo, and Kinshasa. This suggests that the public sector cannot be ignored, as it plays a major complementary role with NGOs and other service providers in extension systems.

Decentralization of Extension Services

Decentralization of agricultural services is part of the overall reforms and economic recovery strategy of the DRC. However, the actual implementation of this decentralization process has been slow and has yet to even begin for provision of funding to local government units and capacity development at the local level.

We asked about the awareness that AEAs have of the decentralization processes. About 83 percent of the AEAs have heard about the decentralization process in the DRC. The AEAs' perception of decentralization is positive overall as indicated by all respondents reporting positive benefits and expectations from the decentralization process in the agriculture sector.

Decentralization and other reform processes in the agriculture sector have recently just started and are still ongoing; therefore, the majority of respondents did not respond to the actual benefits gained from and disappointments with these reform processes (Tables 4.2 and 4.3). Six AEO heads reported having better materials, supplies, and training events due to the reform processes. Two reported having greater interactions with international partners (donors and international NGOs); another two reported better monitoring and management of staff; and one reported that the reform enabled the implementation of Agricultural and Rural Management Councils (CARGs), which are considered useful and important.

Table 4.2—Distribution of respondents based on benefits from decentralization reforms (organization perspective, N=28)

Reported benefits	Percent
Nothing / not applicable (the reform is just starting)	64
Service provision (training, inputs, and other services for farmers)	18
Direct interactions with international partners (donors, NGOs)	7
Better organization and better control of the staff	7
CARGs implementation	4

Source: IFPRI survey, August–October 2011.

Notes: NGO = nongovernment organization; CARG = Agricultural and Rural Management Council.

Table 4.3—Distribution of respondents based on undesirable effects of decentralization (organization perspective, N=28)

Responses	Percent
Not applicable / lack of visible change or achievement	43
Lack of staff and weak administration	25
Lack of capacities (technical, material, financial)	14
Land-tenure conflicts (insecurity, exclusion)	14
Dependence on international partners (donors, NGOs)	4

Source: IFPRI survey, August–October 2011.

Note: NGO = nongovernment organization.

Although only 26 percent of the organizations provided insight for why the system is worse, lack of visible achievement is one of the main responses that can be associated with the recent establishment of the reforms (Table 4.3). Some respondents also reported the limited number of staff, lack of technical and management skills of staff, weak administration, and lack of physical and financial resources at the decentralized units. A respondent also reported greater dependence on international NGOs.

Another aspect of the decentralization process is the setting up of CARGs, which are established as a platform for policy dialogue and as a bottom-up and participatory approach for agricultural policy and decisionmaking. Since the initiation of CARGs in 2008, 156 territory-level CARGs have been set up, along with provincial and national coordinating CARGs (Ragasa, Babu, and Ulimwengu 2011). Major issues have come up in the implementation of sustainability of funding to support CARG activities (Ragasa, Babu, and Ulimwengu 2011). Based on key informants' interviews, stakeholders also do not know what CARG can really do. Over the years, CARGs have also been seen as a potential platform that links supply (providers) and demand (users or clients) of extension services.

The majority of respondents are aware of CARGs. Fifty-eight percent of AEAs and 79 percent of AEOs reported having heard of CARGs (Table 4.4). Perceptions vary on what CARGs are and what they can do. Of those who reported being aware, 38 percent said that CARGs are set up to help organize, train, inform, and monitor the activities of rural producers; 25 percent said that it is a platform for consultation and local participation; 12 percent said that they do not have any idea; 6 percent said that they serve as local resource and agricultural management committee; 6 percent said they are set up to support community development, particularly in advocacy and funding; and other respondents mentioned partnership building, road maintenance, monitoring activities of NGOs, and distribution of inputs. Overall, there is a positive perspective about CARGs among the respondents.

Table 4.4—Agricultural extension agent opinions on the value of CARGs (N=92)

Perceived value of CARGs	%
Organize/train/inform/monitor farmers	38
Local/participatory consultative platform	25
No idea since CARG has been recently set up	12
Local resource / agriculture management committee	6
Support community development (advocacy and funding)	6
MINAGRI decentralization process outcome	5
Network/partnership building	2
Road maintenance	2
Monitoring of extension-providing NGOs	1
Distribution of inputs	1

Source: IFPRI survey, August–October 2011.

Notes: CARG = Agricultural and Rural Management Council; MINAGRI = Ministry of Agriculture, Livestock, and Fisheries; NGO = nongovernment organization.

Similarly, 71 percent and 52 percent of the supervisors and AEAs, respectively, who have heard about CARGs have ever attended meetings organized by CARGs. In addition, the majority (80 percent) of these supervisors/heads of the extension organization think that CARG is beneficial to farmers and community. Table 4.5 shows topics that were discussed during the CARG meetings. As CARG is still new, only 19 percent of supervisors and AEA heads said that they have actually benefited from CARG activities; and 14 percent said that they know people in the communities they work with that have benefited from CARG activities.

Table 4.5—Topic discussed in CARG meeting attended, organization perspective (N=58)

Topics	%
Information on programs (CARG implementation, MINAGRI reform)	43
Problems in community (for example, road and transport)	14
Organize/meet community or FBO	9
Local natural resource management	9
Dialogue with stakeholders	5
Planning/management meetings	5
Information sharing and finding market	5
Cooperative set-up and credit access	4
Tractor management	4
Training/information about new technology	2
Women's empowerment	2

Source: IFPRI survey, August–October 2011.

Notes: CARG = Agricultural and Rural Management Council; FBO = farmer-based organization; MINAGRI = Ministry of Agriculture, Livestock, and Fisheries.

Training Institutions for Extension Service Providers

Within the ministry of education, High Institute of Rural Development (ISDR) and High Institute of Agronomic Studies (ISEA) are government institutes that offer agricultural training and education and are responsible for training AEAs and rural development workers. ISEA trains agricultural technicians (agronomists and veterinarians), while ISDR trains rural development workers. Almost all territories have at least an ISEA or ISDR. In some cases, farmer organizations also go to them directly to request training, oftentimes with a fee. Moreover, students who are taking their practicum to the villages are also useful way to disseminate technology packages and production techniques to farmers. In these cases, ISEA and ISDR are potentially useful pathways of technology dissemination and extension services delivery that can be explored more. ISDR is more general about rural development, with focus on communication and education; while ISEA is more technical and more agriculture focused. The research team visited an ISDR in Bas-Congo and ISEA in Bandundu. The functioning of these institutes is described below, highlighting several challenges in agricultural education and training in DRC including (1) lack of sustained funding; (2) no vision, strategic planning, and forward-looking mentality for ISDR/ISEA in particular and an education system in DRC more generally; (3) outdated curriculum; (4) problems of quality of education starting at the primary level; (5) lack of up-to-date training and skills development for staff; and (6) lack of linkages with the rest of the agricultural support system including extension, research, and universities.

High Institute of Rural Development (ISDR)

Each territory has one ISDR, which is under the ministry of education. It offers a three-year college program after six years of secondary or high school education. Curriculum is often dictated by the national government's ministry of education. The first year covers more general courses such as computer science, English, math, rural development, and agriculture and livestock techniques. The second and third years pursue a specific field: social organization, regional planning, rural techniques (including agricultural and livestock production techniques), or rural enterprise management.

The research team visited one ISDR located in the Seke-Banza territory in Bas-Congo. Established in 1993, the ISDR has 121 students per academic year (of which only 5 are females) and about 20 graduates per year. Since 1993, they have had 280 graduates (15 females). All of them have jobs (self-employed having their own enterprise, employed by NGOs, teaching in high schools, or employed in the government). This ISDR has 17 staff and one visiting professor from Bas-Fleuve. Among the staff, one has a PhD, one has a master's degree (graduated from University of Belgium), one currently attends Master's Degree at the University of Kinshasa (UNIKIN), and the rest have five-year bachelor's degrees. There are no females on the staff.

Some of the teaching assistants (TA) conduct research; they continue their thesis and publish. Within the school, four papers are published each year in the *Review of Province* journal. The school severely lacks physical infrastructure; it has only four computers, and the only software available is Microsoft Excel and Word. Its annual budget is \$27,000, which comes from tuition fees (which is about \$285/year on average). Aside from salaries, no funding has come from the government since 2004. Despite concern as one of the problems ISDRs face, salaries of ISDR staff are relatively better than those of many public offices in DRC: \$170/month for TA; \$350/month for instructor; and \$1,000 for assistant professor. The ISDR officials interviewed highlight a number of key problems they face: (1) lack of funding; (2) no vision, strategic planning, and forward-looking mentality for ISDR in particular and for the education system more generally; (3) problems with quality of education start in primary education; and (4) lack of up-to-date training and skills development for staff.

ISDR's 11 hectares of demonstration plots and fields for hands-on training for students and farmers are also used for revenue-generating activities, with proceeds going to building more rooms for the school. About 10 varieties of *niebe* (beans) and 5 varieties of cassava and maize are being tested, along with onion and other crops. ISDR works together with INERA, which usually gives them new varieties to test and multiply. They also have chicken-raising activities, with inputs from CRAFOD (Regional Center for Support and Training for Development), one of the NGOs in the territory, which then distributes the chickens to the rural population. Extension or farmer training is not in ISDR's mandate, but it does provide farmer training if requested. On average, it conducts one farmer training per year, with 20 trainees for one week. Farmers pay some fees, and the training is done in ISDR classrooms.

High Institute of Agronomic Studies (ISEA)

Similar to ISDR, ISEA offers a three-year college program after six years of secondary or high school education. Curriculum is often dictated by the national government through the ministry of education. It offers a three-year college degree, with programs for general agronomy, agroveterinary, and community development for project management. Students are required to do an internship for 30 hours and practical exercise, where they live with rural producers, for 15 hours.

The research team visited an ISEA located in the Kenge territory in Bandundu province. Established in 1992, the ISEA in Kenge has produced 300 graduates since its establishment. About 45 percent teach in high school, 35 percent are hired for projects (NGOs, church), 5 percent continue further studies in universities (for example, UNIKIN), and the remaining 20 percent are self-employed or jobless. They have heard of INERA and the International Institute of Tropical Agriculture (IITA), but there is no current link.

No budget is received from the government. Tuition is about \$214/year on average. Staff usually publish in three local journals (*Piste and Research*, *Luwanggo Creation*, and *Unaculture* of Belgium). On average, one chief of works / TA publishes one article per year. No faculty or staff trainings are available. They have four computers, but staff and students do not know how to use them.

The ISEA has 15-hectare demonstration plots experimenting on cassava, banana, fruits, pineapple, coffee, and maize; four fish ponds for aquaculture demonstration; and livestock (pig, sheep, and chicken) production activities for demonstration to students.

There are 21 people on the staff: 5 chiefs of works, 9 TA and 7 in charge of practical exercises. There are no PhD staff, but 1 visiting professor with a PhD; 1 with MS; 5 with a five-year BS; and 13 with G3 level (lower than BS; a three-year degree). No females are on the staff.

Major concerns are funding and outdated curriculum, but these are handled at the national level. In 2003, the national government asked for proposals for possible changes, and ISEA sent their proposal, but nothing happened.

Classes have about 23 students, including about 3 females. A female student was interviewed. She was interested in becoming an agroengineer; employment options would be to be hired by an NGO with higher monthly salary and motorbike provided to each agent or be hired by MINAGRI to have security and have a pension after retirement. The practical exercises are perceived to be tough for females since they perceive working in the forest or in farms.

Students interviewed are not sure if they will be employed after college. They think that NGOs and MINAGRI are not hiring enough people and not frequently enough, and churches hire only their members. They reported that it is hard to get a job anywhere. Most of them prefer MINAGRI due to long-term employment and security.

Other Training Organizations

In addition to the formal education from ISEA and ISDR, numerous organizations have been providing ad hoc short-term training to AEAs and rural development workers. Of all trainings attended by the extension agents interviewed, more than half are given by donors or international organizations; around 21 percent are given by government agencies such as MINAGRI or SNV, and another 21 percent are from national NGOs and other local organizations (Table 4.6). Only 5 percent of the trainings are from the education system, including ISDR/ISEA, and less than 1 percent are given by the agricultural research stations (INERA). The issue with these trainings is that they have been provided on an ad hoc basis and in an uncoordinated manner, leaving the capacity of the agricultural training and education institutes largely weak and underfunded.

Table 4.6—Training courses received, by type of provider and type of beneficiary organization, in percent

Type of providers/sponsors	Government different locations (N=121)	NGO (N=46)	Church based (N=9)	Private sector (N=6)	Producer Association (N=9)	All training (N=191)
University, college, vocational or training school	5.79	2.17		16.7		4.7
Agricultural research stations (INERA)	0.83					0.5
NGO (national, local), church-based organization, private input dealers	11.57	50	11.11	16.7	11.11	20.9
International organization	54.55	39.13	77.78	66.7	66.67	52.9
State organization/agency (MINAGRI, MINDR, MINHEALTH, SNV)	27.27	8.7	11.11		22.22	20.94

Source: IFPRI survey, August–October 2011.

Notes: INERA = National Agricultural Research Institute; MINAGRI = Ministry of Agriculture, Livestock, and Fisheries; MINDR = Ministry of Rural Development; MINHEALTH = Ministry of Health; NGO = nongovernment organization; SNV = National Extension Services.

5. COORDINATION

Agricultural extension agent (AEA) social networks and linkages with other actors in the innovation system are important. As illustrated below, extension organizations and their extension agents interact with specific and appropriate stakeholders such as agricultural researchers, provincial and territory MINAGRI staff, other extension workers, and CARG members. However, the frequency of interactions is often limited, as reported by the respondents.

Overall, linkages between extension organizations and their agents and other stakeholders are seriously limited. Given that extension agents are the brokers of information and the bridging institution between users and sources of innovation, their lack of interaction or linkage with other organizations and stakeholders poses a serious issue in fulfilling their role in strengthening farmer capacity and achieving agricultural growth. Absence of interaction with employees of rural banking and financial institutions was shared by the AEA's and the organization heads and supervisors. Almost all of the sample AEA's have not interacted in the previous year with any central MINAGRI staff, any financial institutions, other extension agents, or input suppliers (Figure 5.1). Similarly, only 7–8 percent of supervisors of extension organizations have met with agroprocessors or financial institutions a few times a year (Figure 5.2). About 80 percent of the sample extension organizations have not interacted in the previous year with input suppliers, traders or buyers, colleges and universities, or research institutes. About 70 percent of the sample extension organizations have never met with the CARG management committees. About half have not met with local political authorities. The only sets of actors that a majority of sample extension agents met with in the previous year are other extension agents (36 percent of sample extension organizations).

Figure 5.1—Frequency of agricultural extension agents' interaction with other actors, in percent (N=162)

Source: IFPRI survey, August–October 2011.

Notes: CARG = Agricultural and Rural Management Council; MINAGRI = Ministry of Agriculture, Livestock, and Fisheries; NGO = nongovernment organization.

Figure 5.2—Frequency of organizations' interaction with other actors, in percent (N=107)

Source: IFPRI survey, August–October 2011.

Note: CARG = Agricultural and Rural Management Council.

Local government unit participation in extension and other agriculture activities also deserves some attention. In this regard, local government and AEA interactions are worth noting. Table 5.1 highlights, by province, important aspects concerning meetings and interactions between the AEAs and local government staff members. Clearly, the two interact; however, local government unit staff member involvement in extension activities is limited and inconsistent. In addition, there is some variation in responses, most notably the meetings with local government staff members from the extension agents' perspective, in which 86 and 70 percent of agents in Bas-Congo and Kinshasa, respectively, reported never speaking with them in 2010. Though similar in Bandundu, the organization respondents report a much higher rate of AEA interactions in the two other provinces.

Table 5.1—Frequency of meetings between AEAs and local government unit staff, in percent

Province	Never	Few times a year	Once a month	Several times a month
AEA perspective				
Bandundu (N=90)	57.8	23.3	6.7	12.2
Bas-Congo (N=35)	85.7	11.4	0.0	2.9
Kinshasa (N=37)	70.3	24.3	5.4	0.0
Organization perspective				
Bandundu (N=58)	53.4	19.0	8.6	19.0
Bas-Congo (N=29)	51.7	41.4	3.4	3.4
Kinshasa (N=20)	50.0	45.0	0.0	5.0

Source: IFPRI survey, August–October 2011.

Note: AEA = agricultural extension agent.

The AEAs claim to interact with the stakeholders for various reasons. The most common reason is to know and identify the pressing problems and concerns of farmers and other clients, followed by the opportunity to share information and discuss ideas. In addition, AEAs interact with colleges and universities for training and further education. They interact with researchers to learn and discuss research findings, improved technologies, and good practices. The most pressing constraints in interactions as reported by AEAs are remoteness, lack of transportation, limited funds for organizing or attending meetings, time constraints due to numerous other demands from supervisors or other more pressing activities, limited support from organization or management, and no initial contacts of key actors to start the interaction. It is worth noting that regular or prolonged absence of local government staff from their office as well as lack of location for meeting with CARG members were also mentioned more than once as constraints to interaction between AEAs and other actors.

6. ORGANIZATIONAL CAPACITY AND INCENTIVE

Human Resources

On average, AEOs have 51 total staff; among them are 33 technical and field staff (Table 6.1). The number of staff varies widely across organizations, from 1 to 1,466 total staff per organization. Sample AEOs from the government have more staff than other organization types. A government office has about 80 staff, but this number ranges from 2 to 1,466 total staff. Those with a large number of staff are in provincial-level offices, where they have extensive staff working on various services of MINAGRI or MINRD. Among NGOs, the total staffing widely varies: the average number is 17 total, but it ranges from 1 to 104.

Table 6.1—Descriptive statistics of the level of staffing in sample extension organizations (N=107)

Organization type	Statistics	Technicians	Field staff	Administrative	Management	Other	Total
All respondents	Average	17	16	1	6	11	51
	Standard Deviation	41	40	4	20	88	160
	Minimum	0	0	0	0	0	1
	Maximum	317	307	39	194	903	1,466
Government (different locations)	Average	28	26	1	8	17	80
	Standard Deviation	53	51	5	26	118	210
	Minimum	0	0	0	0	0	2
	Maximum	317	307	39	194	903	1,466
Nongovernment*	Average	5	5	1	4	2	17
	Standard Deviation	5	11	1	3	5	21
	Minimum	0	0	0	0	0	1
	Maximum	22	60	5	12	30	104

Source: IFPRI survey, August–October 2011.

Note: *Includes nongovernment organizations, church-based organizations, private firms, and farmer-based organizations.

On average, female staff comprises 19 percent of total staffing in extension organizations and about 13 percent of all technical and field staff in these organizations (Table 6.2). The proportion of female staff to total staffing is lower in the government than in other organizations.

Table 6.2—Descriptive statistics of the proportion of female in the staff of agricultural extension organizations (N=107)

Organization type	Statistics	Technicians	Extension agents	Administrative	Management	Other	All staff
All respondents	Average	12	15	30	31	25	19
	Standard Deviation	18	22	39	31	35	18
	Minimum	0	0	0	0	0	0
	Maximum	100	100	100	100	100	100
Government (different locations)	Average	12	13	14	28	9	15
	Standard Deviation	13	17	21	33	15	13
	Minimum	0	0	0	0	0	0
	Maximum	50	67	50	100	40	47
Nongovernment*	Average	11	16	41	35	34	24
	Standard Deviation	22	24	46	28	41	22
	Minimum	0	0	0	0	0	0
	Maximum	100	80	100	100	100	100

Source: IFPRI survey, August–October 2011.

Note: *Includes nongovernment organizations, church-based organizations, private firms, and farmer-based organizations.

In terms of the profile of field staff, 78 percent have at least a secondary or high school degree (Table 6.3). A large majority (57 percent) of field staff from the government have a vocational or three-year agricultural college degree. In contrast, most field staff from NGOs have a university degree. Across all organization types, a good proportion of field staff (22 percent) have only a primary or secondary degree. Without extensive training and retraining, the technical capacity to provide extension and advisory services to farmers could be seriously limited.

Table 6.3—Distribution of extension agents by type of organization and level of education, in percent

Organization type	Primary	Secondary/ high school	Vocational/ college	University
All respondents (N=162)	4	18	48	31
Government (different locations) (N=114)	2	17	57	25
Nongovernment organizations (N=25)	8	16	20	56
Church-based organizations (N=6)	17	17	33	33
Private sector (N=9)	11	33	11	44
Farmer organizations (N=8)	0	25	50	25

Source: IFPRI survey, August–October 2011.

Sixty-one percent of agents received other professional training besides formal education (Table 6.4). A greater proportion of agents (more than 80 percent) in NGOs and church-based organizations have received training than those in the government, private sector, or producer organizations. Across all respondents, a greater proportion of agents with lower formal education (primary or high school) did not receive training than those with higher education, reinforcing the serious challenge of weak skill sets of a good proportion of agents due to lack of formal education and technical training. For those who received training, most training sessions received were in areas of crop production, education and communication in general, monitoring and evaluation, and general management.

Table 6.4—Distribution of agents by training received and organization type, in percent (N=162)

Organization type/education level	Primary	Secondary/ high school	Vocational/ technical	University	All respondents
All respondents	33	59	52	80	61
Government (different locations)	0	53	51	79	57
Nongovernment organization	50	100	100	86	88
Church-based organization	100	100	50	100	83
Private sector	0	67	0	50	44
Producer association	no respondent	0	25	100	38

Source: IFPRI survey, August–October 2011.

An overwhelming majority of AEAs and managers/supervisors in extension organizations are trained and specialize in crop production (Table 6.5). About 13 percent of agents specialize in livestock and veterinary services, and 3 percent specialize in fisheries and aquaculture. No agent reported specialization or training on postharvest or marketing extension. Existing field staff should also be trained in marketing skills so that they can provide marketing extension and education among farmers. They should be trained in a diverse set of skills so that they can respond to the widely varying challenges and bottlenecks faced by farmers. Also, the skill set should include food preparation, nutrition, and health advice to prepare mothers and adults for how to best utilize their existing food production and resources to maximize their children's nutrient intake.

Table 6.5—Field of specialization of agricultural extension agents and supervisors, in percent

Technical skills	Agents (N=160)	Supervisors (N=107)
Crop production	66	59
Livestock/veterinary	12	8
Education and communication	11	19
Fisheries/aquaculture	2	0
Crop protection/disease control	2	1
General management	2	5
Monitoring and evaluation	1	0
Apiculture	1	0
Soil fertility management	1	2
Land and water management	1	0
Others	0	5

Source: IFPRI survey, August–October 2011.

We asked agents to rate how strongly they agree with the following statement: “The majority of people in your organization are well qualified to do their job.” Most respondents reported that their organizations have well-qualified staff (Figure 6.1). Across all respondents, about 20 percent believe that their organization does not have well-qualified staff. Most of these unfavorable responses about staff qualifications are from the government and private sector.

Figure 6.1—Distribution of agent perceptions that staff are well qualified for job, by percent (N=162)

Source: IFPRI survey, August–October 2011.

Note: FBO = farmer-based organization; NGO = nongovernment organization.

The average age of extension agents in our sample is 52 years. About 60 percent of the extension agents are more than 50 years old; 44 percent are more than 55 years old. The agents in the government are relatively older, while agents from NGOs and FBOs are relatively younger. About 51 percent of agents in the government are more than 55 years old, compared with only 16 percent in NGOs and 13 percent in FBOs. About 29 percent of agents from the government are more than 60 years old, while only 12 percent in NGOs and 13 percent in FBOs are in this age group. A majority of agents in NGOs and FBOs are in the age group 35–45 years old.

Only 5 percent of our random selection of extension agents are women (Table 6.6). Of all the extension supervisors/heads interviewed, only 7 percent are women. There was no female supervisor or head from the public-sector agencies. Only a limited dataset exists on the differentiated access to extension services between female and male farmers, but evidence from the literature in many different countries suggests a strong correlation between the sex of the agent and the gender differential in access to extension services. For example, a 1993 study by FAO of 24 extension programs in Africa, Asia, and Latin America suggests that the presence of female extension agents was an important factor in the participation of female farmers in extension activities. The World Bank and International Food Policy Research Institute (2009) find that female extension workers serve a higher proportion of female farmers than do male agents (the average ratio of women to men farmers is 1.3 for female agents and 0.53 for male agents). This may suggest that extension services from female extension agents are better targeted to female farmers. In Tanzania, according to Due, Magayane, and Temu (1997), 40 percent of women farmers preferred to work with female extension agents (compared with 26 percent who preferred male extension agents; the remaining 34 percent had no preference). Female farmers stated that they preferred female extension agents because they were freer to discuss problems with them, and female agents were better able to accommodate their time preferences for meetings than were male agents. Gender-based constraints such as social norms that limit women's school attendance or mobility also limit their opportunities and willingness to work as agricultural extension agents. It may be difficult at a practical level for a married woman to work in a rural area away from her husband and family or to find housing and schooling appropriate for her children.

Table 6.6—Distribution of sample extension agents and supervisors by organization type

Organization type	Extension agent		Extension supervisor/head	
	N	Female (%)	N	Female (%)
Overall	154	5	107	7
Government (different locations)	114	5	59	0
Nongovernment organization	25	4	33	15
Private sector	9	11	6	17
Church-based organization	6	0	3	33
Rural producer organization	8	0	6	17

Source: IFPRI survey, August–October 2011.

Financial Resources

Due to irregularity of release of funds in the government, more than half (54 percent) of government-based AEOs reported no funding at all in 2009 or 2010 from the government (Table 6.7). Only 2 percent of government-based AEOs got operating funds from the government in 2009 or 2010. Only 7 percent of AEOs got capital funds from the government in 2009 or 2010. More than half (51 percent) of government-based AEOs did not receive any funds from any source in 2009 or 2010. One NGO and one church-based organization reported receiving operating and capital funding from the government. Of those that did receive government funding, total average funds (salary + operating + capital; mostly

salary) are 29 million CDF (Congolese francs),⁶ but the amount varies widely from 4,000 to 451 million CDF average in 2009 and 2010. Of the four AEOs that reported receiving any operating funds from the government, the average is 8 million CDF, but the amount varies widely from 50,000 to 23.7 million CDF. An AEO interviewed reported receiving 5 million CDF of any capital funds from government.

Table 6.7—Funding received by government-based AEOs from government (N=59 government organizations)

Funding type	Number of AEOs that did not received	Number of AEOs that received	Average	Standard Deviation	Minimum	Maximum
Total government funds (million CDF)	32	27	28.90	85.60	0.00	451.00
Salary funds (million CDF)	32	27	25.20	85.90	0.10	451.00
Salary funds per staff (million CDF)	32	27	0.60	1.43	0.004	7.15
Operating funds	54	4	8.02	10.70	0.05	23.70
Capital funds	58	1	5.05	19.90	5.05	5.05

Source: IFPRI survey, August–October 2011.

Notes: AEO = agricultural extension organization; CDF = Congolese francs, which is equivalent to about USD900 (as of December 2012).

Only 23 percent of AEOs (all organization types) have received external funding (international NGOs, donors, private sector, or foundations) (Table 6.8). The greatest proportion of AEOs that received external funding are NGOs. Among government-based AEOs, only 5 percent got external funding. None of the FBOs got external funding. Still, a large proportion of NGOs, church-based organizations, the private sector, and FBOs do not get funding to do extension. For government-based AEOs, more than half do not get funds from the government, and only 5 percent get funds from other sources. This still leaves about half of the government-based AEOs any type of funding to do their operations and any extension work in 2009 or 2010. Respondents also said that this has been the case for several years now.

Table 6.8—Distribution of agricultural extension organizations by external funds received (N=107)

Organization type	Received external funds	Did not receive external funds
Total	23	77
Government (different locations)	5	95
Nongovernmental organizations	61	39
Church-based organizations	33	67
Private sector	17	83
Farmer-based organizations	0	100

Source: IFPRI survey, August–October 2011.

Physical Resources

It is important to note that severe gaps exist in physical resources available to agents. Seventy-nine percent of AEA staff does not believe they have the resources to carry out their work as required, while 92 percent disagree that the inputs for the work come regularly (Table 6.9). Moreover, while 47 percent used materials in their demonstrations and trainings, 15 percent have to purchase them from personal resources and another 15 percent are able to access them from their office. Almost all of them report that they do not receive protective clothing.

⁶ CDF 1 is equivalent to about USD900 (as of December 2012).

Table 6.9—Percent of responding agents who agree or strongly agree that physical resources are adequate

Statements	Government (different locations (N=114)	Non- government (N=25)	Church- based (N=6)	Private sector (N=9)	Producer association (N=8)	All (N=162)
Staff have enough resources to carry out their work.	13	32	50	11	88	21
Inputs for the work come regularly.	2	12	50	44	25	9
Worker is provided with protective clothing.	3	16	17	11	13	6
Worker uses physical demonstration materials.	46	56	50	33	25	46

Source: IFPRI survey, August–October 2011.

Transportation is also an aspect that lacks resources for extension, yet is related to financial mismanagement as illustrated by the allocation of travel funds. While 81 percent of AEAs believe that the workload is adequate, only 40 percent feel that the distances from where they stay to the farms are manageable, and 47 percent think that mobility to their operational area is difficult (Table 6.10). Supervisors estimate that 55 percent of AEA time (in a month) is spent getting to the field. While this discrepancy is likely due to poor road conditions, the way in which AEAs obtain travel resources could also be part of this issue, as many agents claim to receive insufficient funds. On average they spend 21,600 CDF per month on mobility for their job and receive 18,545 CDF per month for travel and transport (Table 6.10). It should be noted that although having a motorbike is common for extension agents in many African countries, the survey results indicate that 91 percent do not have access to a bike, motorbike, or vehicle for work.

Table 6.10—Distribution of agricultural extension agents by transportation challenges (N=162)

Statement	Percent who agree or strongly agree
Workload is adequate.	81
Farm distances from where you stay are manageable.	40
Mobility to your operational area is difficult.	47
You do not have access to a motorbike or vehicle for work.	91
	CDF
Amount spent per month on mobility for job (in CDF)	21,600
Amount received in travel and transport per month (in CDF)	18,545
	Percent
Estimation of agent time spent for getting to the field (in a month)	55

Source: IFPRI survey, August–October 2011.

Note: CDF = Congolese francs, which is equivalent to about USD900 (as of December 2012).

Organization and Management

Planning Process

The majority of respondents reported having a planning process for their activities and operations. All church-based organizations have planning sessions; while about 83–85 percent of government, NGOs, and producer organizations have planning processes. Half of the private sector reported not undergoing any planning process in their extension work, and they provide extension services in a more ad hoc manner depending on the availability or urgency of the project.

Targets

AEAs were asked if they have targets for work. According to respondents, 59 percent of extension agents claim to have targets for work and that multiple actors set these targets. About 25 percent who claimed to have targets set the targets themselves. This means that only about 24 percent of AEAs are reporting any target set by supervisors or heads.

About 44 percent of AEO supervisors also receive targets from the head office. Supervisors were asked to describe their targets (Table 6.11). About 20 percent of these targets could be considered related to some kind of outcome (yield improvement); the rest are associated with training and other supports. The disaggregation of targets by province as illustrated in Table 6.11 indicates that there is no relationship between targets and location.

Table 6.11—Distribution of agricultural extension organizations based on targets received last year (N=47)

Targets	Bandundu (N=27)	Bas-Congo (N=16)	Kinshasa (N=4)
Yield improved	22.2	12.5	25.0
Number of farmers monitored/trained/supported	25.9	37.5	25.0
Number of organizations monitored/trained/supported	18.5	18.8	25.0
Seed provided	14.8		
Census conducted	3.7	6.3	25.0
Community-development activity achieved	7.4	6.3	
Agricultural calendar monitoring and evaluation	3.7	6.3	
Marketing activity	3.7		
Microfinance/cooperative formed		6.3	
Report written		6.3	

Source: IFPRI survey, August–October 2011.

Finally, AEAs were asked which target criteria they use to distribute inputs to the farmers in their operational area. About 48 percent of the 52 AEAs who have ever distributed inputs to farmers claimed that they target a particular type of farmer (Table 6.12). FBOs, gender, and location are all mentioned as target criteria for input-related activities; the respondent who stated “other” as a condition explained that he distributed input to a migrant who has a parcel but it is unclear whether the criterion here is the migrant status or the landownership. The top targeting criterion used by most AEAs is that the farmer has to be a member of an FBO. Gender of the farmer is also often used as a criterion. When AEAs were asked about the extent to which these criteria are followed, they noted that 65 percent of the beneficiaries or farmers they serve follow the FBO criterion, while only 30 percent follow the gender criterion. This indicates the lax implementation of the targeting approach, which also mirrors lax implementation and monitoring of the extension and input projects.

Table 6.12—Percent of agents who use target criteria for input distribution (N=25)

Target for inputs	Percent of agents	Reported fulfillment of the criteria (percent of farmer beneficiary)
Farmer-based organization	76.0	64.5
Gender	12.0	29.3
Location	8.0	37.5
Other	4.0	60.0

Source: IFPRI survey, August–October 2011.

Monitoring and Evaluation

Another key aspect of human resources is supervision, or monitoring and evaluation. Table 6.13 highlights a few key responses from AEAs concerning supervision. While these seem to be positive responses from the AEAs, they could also indicate some poor supervision. In fact, though more than two-thirds of AEAs claimed that their supervisors visit them in the field, they reported also that on average the frequency of supervisor visits is only 3.9 times during past quarter.

Table 6.13—Agricultural extension agents' perception of supervision (N=162 agents)

Statements	Percent who agree or strongly agree
Supervisor visits you in the field.	67.3
Supervisor is satisfied with your work.	95.1
Supervisor knows enough about your daily activities.	93.8
Supervisor is always around when needed.	87.0
Know someone in the office subject to sanctions for poor performance.	14.8
Have ever received an award for good performance.	10.5
Farmers never complain about the performance of the organization.	69.1

Source: IFPRI survey, August–October 2011.

Also illustrated, 15 percent of AEA respondents know someone in their office who was subject to sanctions for poor performance or unprofessional conduct. While AEAs cited unauthorized absence as the main reason for sanctions, supervisors mentioned lack of capacity or carelessness on the part of the AEA as the main reason, followed by nonattendance, mismanagement, poor reporting, or bad interpersonal relations as other reasons. Sanctions were mostly in the form of suspension, followed by verbal warning and dismissal.

7. DELIVERY METHODS AND TOOLS

The methods that extension workers use to increase agriculture productivity vary widely, from demonstrations to forming FBOs to assisting with loan repayments. Insights regarding these methods are gained by exploring how AEAs interact with farmers, how they educate farmer groups, and other related subjects.

Time Allocation on Extension Work

Examining agent responses concerning the farmers they serve and the hours they work is a useful way to learn about agents' operations and processes. Extension agents work on average in six operational areas. As illustrated in Table 7.1, AEAs often work fewer than the expected number of hours. Agents could be seen as working part-time, as over half of respondents work less than 30 hours weekly. Thus, assuming a five-day workweek, the average AEA spends only less than 6 hours each day. On average, AEAs spend 53 percent of their time in the field; 14 percent for in-service training to farmers; 22 percent in the office; and 11 percent doing reporting, other community work, and other ad hoc assignments from heads or supervisors (Table 7.2). Therefore, AEA spends 3-4 hours in the field each day on average. AEAs in the government spend less time in the field.

Table 7.1—Weekly hours worked for three seasons, AEA perspective, in percent (N=162 agents)

Number of hours	Planting season	Harvest season	Off-season
Under 21 hours	15.4	25.3	45.1
21–30 hours	28.4	25.9	17.9
31–40 hours	24.1	22.8	17.9
41–50 hours	18.5	17.3	13.6
More than 50 hours	13.6	8.6	5.6

Source: IFPRI survey, August–October 2011.

Table 7.2—Methods of AEA interaction with farmers by province, in percent, (N=141)

Method of interaction	Bandundu (N=83)	Bas-Congo (N=29)	Kinshasa (N=29)	All (N=141)
At a farmer-based organization	22	10	10	17
Travel to farms	49	72	48	54
AEA visits to farmer homes	5	0	7	4
Farmer visits to AEA home	1	0	4	1
Farmer visits to AEA office	2	4	14	5
Reciprocal visits	2	0	7	3
Trainings of trainers and in groups	18	14	10	16

Source: IFPRI survey, August–October 2011.

Note: AEA = agricultural extension agent.

Communication Approaches

Tables 7.2 and 7.3 illustrate how the agents typically interact with their target farmers and other clients. Across provinces and across extension organization types, the most common method of interaction is traveling to and visiting with farms, followed by visiting and information sharing at the FBO level, and then training or demonstration farms. The use of visits to FBOs, trainings, and demonstrations seems to be more frequent in Bandundu than in Bas-Congo and Kinshasa; while farmer visits to extension offices are more frequently used in Kinshasa than in Bandundu or Bas-Congo. NGOs and FBOs more frequently

visit and meet with FBOs and training and demonstration farms than do government agencies and church-based organizations. Church-based organizations and the private sector use more frequent AEA visits to farmer homes than do other organization types.

Table 7.3—Methods of AEA interaction with farmers by organization type, in percent (N=141)

Method of interaction	Government (different locations (N=100))	Nongovernment (N=23)	Church- based (N=5)	Private sector (N=5)	Producer association (N=8)	All (N=141)
At a farmer-based organization	12	30	—	20	50	17
Travel to farms	60	35	80	60	12	54
AEA visits to farmer homes	5	0	20	20	0	4
Farmer visits to AEA home	1	0	—	—	0	1
Farmer visits to AEA office	5	4	—	—	12	5
Reciprocal visits	2	9	—	—	0	3
Trainings of trainers or in groups	15	22	—	—	25	16

Source: IFPRI survey, August–October 2011.

Note: AEA = agricultural extension agent.

Delivery Techniques

The survey results indicates that 74 percent of AEAs hold special meetings, such as planning meetings, in which farmers can express which types of activities they expect to carry out. These meetings are usually held at the community, groupment, or sector levels. In 2010, an average of eight community meetings were reported by AEAs, and additional six groupment meetings and two meetings at the sector level on average.

About half of the AEAs interviewed use demonstration materials or demonstration farms for extension services (Table 7.4). About half of AEAs from the government reported teaching in farmer field schools, while 64 percent from NGOs and only 17 percent from church-based organizations use this approach in their extension work. In terms of distributing inputs along with providing extension service, a quarter of government AEAs reported that they distribute inputs, while more than half of AEAs from NGOs and all AEAs from church-based organizations reported distributing inputs. This indicates that nongovernment AEAs often have a more integrated approach to service delivery and seemingly focus more on complementing inputs with technical knowledge and services for the farm management.

Table 7.4—Extension delivery methods and tools used, by organization type

Statements	Government (different locations) (N=114)	Nongovernment (N=25)	Church- based (N=6)	Private sector (N=9)	Producer association (N=8)
Worker uses physical demonstration materials.	47	56	50	38	25
Worker distributes inputs.	25	56	100	12	25
Worker teaches groups involved in farmer field schools.	45	64	17	38	75

Source: IFPRI survey, August–October 2011.

Among the inputs and other services provided by agents, seed and equipment/tools are the most common inputs provided by AEAs across various organization types (Table 7.5). In addition, AEAs from church-based organizations also commonly provide fertilizer, herbicides, pesticides, and other chemicals; while AEAs from producer organizations often provide cash loans to farmers.

Table 7.5—Type of input distributed by agents, in percent

Other services offered	Government (different locations) (N=114)	Nongovernment (N=25)	Church-based (N=6)	Private sector (N=9)	Producer association (N=8)	All (N=62)
Seed	17.5	48.0	50.0	11.1	25.0	23.5
Fertilizer	4.4	8.0	33.3	0.0	0.0	5.6
Pesticides/herbicides	0.0	4.0	16.7	0.0	0.0	1.2
Cash loan	0.0	0.0	0.0	0.0	12.5	0.0
Equipment/tools	10.5	36.0	83.3	11.1	0.0	17.3
Planting materials	4.4	4.0	0.0	0.0	0.0	3.7

Source: IFPRI survey, August–October 2011.

Assisting Farmer-Based Organizations

AEA activities include the formation, mobilization, and support of FBOs. Evidently, the number of FBOs and agroprocessing facilities, and the number of FBOs that AEAs claimed responsibility for forming, varies significantly by province (Table 7.6). It should be noted that 61 percent of AEAs believe that after the FBOs are established, the members can maintain the organization without AEA assistance.

Table 7.6—FBO descriptive by province, AEA perspective

Statistics	Bandundu N=89	Bas-Congo N=35	Kinshasa N=33
Average number of FBOs in area	51.9	12.4	10.8
Average size of largest FBO	130.7	17.7	131.6
Average number of agroprocessing facilities	1.7	0.2	0.2
Number of FBOs AEA responsible for forming	11.2	1.6	0.8

Source: IFPRI survey, August–October 2011.

Notes: AEA = agricultural extension agent; FBO = farmer-based organization.

Trainings and Information Dissemination

Though AEAs, FBO members, and extension organization heads consider access to credit, access to inputs, and poor markets as top constraints to increasing productivity, a noteworthy gap exists between these perceptions and the trainings and activities of the extension agents (in part because these issues are somewhat external) (Tables 7.7 and 7.8). AEAs were asked to name 10 technologies they recently promoted or taught to farmers. Planting techniques and improved seed are the most taught topics, while key topics like food processing, marketing of farm produce, and financial literacy are rare.

Table 7.7—Agent perspective of most frequently taught topics, by province, in percent (N=162)

Province	First	Second	Third
Bandundu (N=90)	Planting techniques 44.4	Improved seed 31.1	Animal disease 4.4
Bas-Congo (N=35)	Planting techniques 51.4	Pest control techniques 8.6	Improved seed 5.7
Kinshasa (N=37)	Improved seed 37.8	Planting techniques 21.6	Pest control Chemical fertilizer Animal disease 5.4 each

Source: IFPRI survey, August–October 2011.

Table 7.8—FBO perspective of most frequently taught topics

Topics taught by AEA	Frequency	Percent
Group formation, management, leadership	30	31
Planting techniques	21	22
Improved seed variety of plant material	7	7
Soil fertility management	6	6
Aquaculture	6	6
Financial literacy	4	4
Governance	4	4
Food security, nutrition	3	3
Food processing	2	2
Sanitation and hygiene	2	2
Marketing and price of farm produce	2	2
Reforestation, forest management	2	2
Animal housing construction techniques	1	1
Farmer field school	1	1
Poultry farming	1	1
Gender	1	1
HIV/AIDS	1	1
Microcredit	1	1

Source: IFPRI survey, August–October 2011.

Notes: AEA = agricultural extension agent; FBO = farmer-based organization.

8. MOTIVATIONS AND WORK ENVIRONMENT

Motivations

The five most consistently cited factors that contribute to lack of motivation for extension agents to perform better or serve farmers' needs more are (1) insufficient funds or budget to do work, (2) poor infrastructure to go to the field, (3) lack of encouragement from supervisor or management, (4) poor communication and information facilities, and (5) unmotivating work environment and organizational culture (Table 8.1).

Table 8.1—Distribution of respondents based on top three disincentives and discouragements in performing better or serving farmers' needs, in percent (N=162)

Responses	Government (different locations) (N=114)	Nongovernment (N=25)	Church- based (N=6)	Private sector (N=9)	Farmer- based (N=8)
Not enough funds or budget to do work	93	92	83	89	88
Poor infrastructure to go to the field	55	64	83	67	88
No encouragement from supervisor or manager	40	28	17	56	0
Nonconducive and nonsupportive work environment and organizational culture	37	28	17	0	75
Cumbersome systems and bureaucratic processes	18	8	0	0	13
Time constraints	11	20	17	33	0
Limited skills and competency of other staff in the organization	10	12	0	11	0
Inadequate skills and knowledge	9	8	0	0	0
Limited international contacts	6	8	17	11	25
Inadequate teaching, training, and education facilities	5	4	17	11	0
Poor communication and information facilities and systems	6	24	50	11	13

Source: IFPRI survey, August–October 2011.

In terms of motivating factors, the most consistently cited across all organization types are higher salary, more timely salary, and promotion. Among church-based organizations, the most cited are (1) more time for experimentation, analysis, and report writing and (2) more conducive more environment. Other motivating factors cited by many respondents across all organization types are (1) skills development and training, (2) appreciation by farmers, (3) more conducive work environment, and (4) more guidance from management or supervisor (Table 8.2).

Table 8.2—Distribution of respondents based on top three incentives in performing better or serving farmers' needs, in percent (N=162)

Responses	Government (different locations) (N=114)	Nongovernment (N=25)	Church- based (N=6)	Private sector (N=9)	Farmer- based (N=8)
Higher salary	88	64	17	53	88
More timely salary	62	40	17	50	63
Promotion	52	40	33	53	13
Skills development and training	21	40	33	33	63
Appreciation by farmers	19	24	17	33	13
More conducive work environment	18	20	50	44	13
More administrative support	13	8	17	44	0
More guidance from management, supervisor, or inspector	11	32	17	50	38
More international concepts	4	4	17	33	0
Means of transport to field	4	4	0	0	0
Better communication facilities and systems	4	4	17	33	0
Better leadership or management	2	8	0	0	0
More time for experimentation, analysis, and report writing	2	8	67	33	13
Peer recognition	1	4	0	0	0

Source: IFPRI survey, August–October 2011.

The quality of AEA job performance fluctuates considerably as observed through the variations in hours spent performing certain types of activities. To understand what might account for these differences in AEA performance, it is important to review AEAs' perception of themselves and that of their respective colleagues. Table 8.3 outlines the characteristics of a well-performing extension worker as viewed by the supervisor. While assiduity and interpersonal relations are the most important features of a good extension worker, regular training and monitoring of the agent is the most important quality of supervisor. From the AEA point of view, ability to help solve farmers' problems and knowledge of how to increase agricultural productivity are the most important qualities of the extension worker. In open-ended responses, health is also considered a feature of a well-performing AEA (Table 8.4).

Table 8.3—Supervisors' perspective of good agent performance, in percent (N=107)

Quality	Agent	Supervisor
Assiduity/regular monitoring of farmers	79.4	
Interpersonal relations (communication, negotiation, facilitation)	79.4	63.6
Background (education, trainings, innovations)	55.1	30.8
Reporting	14.0	9.3
Planning		27.1
Regular training and or monitoring of agents/diligence		78.5

Source: IFPRI survey, August–October 2011.

Table 8.4—Extension agents' perspective of good agent performance, in percent (N=162)

Quality	Percent
Able to help solve farmers' problems	72.8
Knowledge of agriculture and increasing productivity	71.0
Always available in the village when help is needed	69.8
Lives with the community	65.4
Able to help increase farmers' incomes	37.7
Up-to-date with information about technologies and market opportunities	30.3

Source: IFPRI survey, August–October 2011.

In a similar vein, insights related to agent motivation can be found in their perceptions of a poor-performing agent (Tables 8.5 and 8.6). The majority of respondents see bad interpersonal relations and lack of ability to solve farmers' problems as the top characteristics of a poor-performing AEA. Supervisors feel that laziness is the second worst characteristic, which could suggest that lack of motivation is somewhat common among extension workers. Surprisingly, weakness at tax collection is also mentioned as quality of poor performance mentioned by one supervisor in his open-ended response.

Table 8.5— Supervisors' perspective of undesirable agent performance, in percent (N=107)

Characteristics	Agent Percent	Supervisor Percent
Bad interpersonal relations	72.9	70.1
Laziness, irregular or no monitoring of farmers	61.7	66.4
Lack of capacities (education, training, skills)	49.5	63.6
Weak planning	22.4	8.4
Weak reporting	6.5	15.0

Source: IFPRI survey, August–October 2011.

Table 8.6— Extension agents' perspective of undesirable agent performance, in percent (N=162)

Characteristics	Percent
Not able to help solve farmers' problems	74.1
Not knowledgeable of agriculture and increasing productivity	68.5
Rarely available in the village when help is needed	58.0
Does not visit the community	58.0
Laziness	40.7
Not able to help increase farmers' incomes	37.7
Does not have up-to-date information about technologies and market opportunities	27.8

Source: IFPRI survey, August–October 2011.

Incentives provide additional insight to the organizational motivation of extension agents. About 10 percent of AEAs reported having ever received an award for good performance, such as Farmers' Day Best Extension Agent. The most common performance being recognized is a particular delivery of a task (Table 8.7). The second most common type of performance is diligence and regular monitoring of farmers. The most common rewards are bonus, promotion, in-kind gifts, motorbike, pension payment, parcel of land, verbal recognition, or letter of congratulations (Table 8.8).

Table 8.7—Agents reporting rewards for performance, in percent

Type of performance	Respondents	
	Agent (N=11)	Supervisor (N=27)
Particular task achievement (outcomes, cost effectiveness, timeliness)	72.7	33.3
Yield/income improvement	18.2	14.8
Assiduity/regular monitoring of farmers	9.1	29.6
Reporting		14.8
Interpersonal relations (negotiation, facilitation)		7.4

Source: IFPRI survey, August–October 2011.

Table 8.8—Type of rewards given to extension agents by supervisor, in percent

Type of performance	Respondents	
	Agent (N=11)	Supervisor (N=27)
Bonus	25.0	29.6
In-kind, gift, or donation	18.8	22.2
Motorcycle, bike	18.8	
Promotion	12.5	14.8
Pension payment	12.5	3.7
Parcel (land)	12.5	
Verbal social recognition		22.2
Letter of congratulation		7.4

Source: IFPRI survey, August–October 2011.

Table 8.9 displays AEA perception of the biggest success in their career. As illustrated, the majority feel the biggest success is improving and educating farmers to adopt improved agricultural technology. Promotion is the main incentive for extension agents, and thus an important contributing factor to their motivation. In 2010, 23 percent of respondents applied for a promotion, while only 8 AEAs were advanced.

Table 8.9—Biggest success in career, agent perspective (N=162)

Biggest success	Percent	Applied for promotion
	N=162	N=162
Improving the income of farmers and agent	35.2	9.88
Educating farmers to adopt improved technologies	30.3	4.94
Distributing new technologies	10.5	1.85
Improving families' nutritional practices	6.8	1.23
Monitoring animal disease outbreaks	4.9	1.23
Carrier development	1.9	0.00
Providing trades for women	1.2	0.62
Teaching families about hygiene	1.2	0.62
Relation with farmers and farmer-based organization	1.2	0.00
Motivation	1.2	0.00
Monitoring crop disease outbreaks	0.6	0.00
Creation of farmer-based organization	0.6	0.62
Environmental protection	0.6	0.00

Source: IFPRI survey, August–October 2011.

Financial Compensation

In an attempt to measure financial incentive and compensation among AEAs, we asked AEAs different sources and types of compensation in exchange for their extension work. About half of AEAs receive a basic salary (Table 8.10). AEAs reported receiving 75,000 CDF per month as a basic salary on average, but it can range from 16,000 CDF to 921,000 CDF per month across AEAs (Table 8.11). This is very low compared with the cost of living in the Democratic Republic of the Congo (DRC). About half of AEAs interviewed reported receiving some kind of bonus or commission in cash for their extension work. AEAs reported receiving 22,000 CDF per month as a cash bonus, but this can range from 800 CDF to 78,000 CDF per month across AEAs. This indicates additional financial incentives for AEAs, but still the total cash compensation reported is not much compared with cost of living in DRC. Only 3–5 percent of AEAs interviewed reported any in-kind compensation or gift for their extension work from farmers or other clients.

Table 8.10—Percent of agents receiving compensation in exchange for work

Type of compensation received	Percent of agents
Basic Salary	54.9
Bonus	45.1
Commission	1.2
Food	4.9
Seeds	3.7
Planting material	3.1
Crops	0.0
In-kinds (from beneficiaries)	4.3

Source: IFPRI survey, August–October 2011.

Table 8.11—Financial compensation received for extension provision (N=107 organizations)

Compensation type	N	Mean	Standard Deviation	Minimum	Maximum
Basic Salary	86	75,497	105,527	15,600	921,000
Bonus	73	22,468	17,253	833	78,000
Commission	1	5,000	.	5,000	5,000
Total	107	76,056	97,892	833	921,000

Source: IFPRI survey, August–October 2011.

Job Satisfaction and Work Environment

AEA motivations can also be explored through the job satisfaction lens. Table 8.12 highlights a number of issues significantly related to job satisfaction. The implications of these findings are described below.

Table 8.12—Indicators of extension agents' job satisfaction (N=162)

Statements about job satisfaction	Percent agree (N=162)	Proportion test: agree vs. disagree (p-value)
You are satisfied with your job.	91	0.00
Without subsidies, farmers do not use modern inputs.	82	0.00
Salary encourages you to work better.	12	0.00
Salary/benefits are decent.	9	0.00
Staff in your organization receive salary on time.	10	0.00
Staff in your organization are promoted based on merit.	51	0.82
Performance appraisals are carried out in a fair way.	49	0.82
Staff in your organization have to worry about losing their jobs in the near future.	54	0.18
Staff often disagree with the policies or programs we are asked to implement.	33	0.00
Hardly any political interference exists in our work.	64	0.00
Corruption or mismanagement of funds is present in organization.	62	0.00
Corruption or mismanagement of funds is present in operation area.	71	0.00
Farmers never complain about the performance of agent organization.	69	0.00

Source: IFPRI survey, August–October 2011.

As recorded in Table 8.12, 91 percent of respondents are satisfied with their jobs. Thus, it would be expected that salaries are considered acceptable. The low proportion of AEAs who claimed that salaries are adequate is probably due to the limited competing organization and employment options for the AEAs. Across organization types, government AEAs reported lower satisfaction in terms of salary than AEAs from other extension organizations. In addition, a contradiction seems to exist in that the majority reported that political interference in their work is minimal yet only half of the AEAs stated that extension staff promotion is based on merit. Because a lack of transparency in funds is the principal reason given for the negative effects of decentralization on extension, it may be useful to note a few responses concerning corruption. Table 8.12 highlights that 62 percent of AEAs feel that corruption or the misuse of funds is present in their district office. Almost one-third of extension workers feel that funds mismanagement, corruption, and/or political ill will exists.

AEA-perceived constraints to extension organization mission also impact both organizational motivation and job satisfaction (Figure 8.1). Lack of funds and lack of political commitment are the highest-rated constraints to achieving success, which likely lead to constraints on mobility and access to inputs.

Figure 8.1—Constraints to achieving the organization mission, extension agents' perspective (N=162)

Source: IFPRI survey, August–October 2011.

Enabling Environment

When comparing responses from AEAs and supervisors or heads of extension organizations, it becomes obvious that credit, access to inputs, access to lucrative markets, access to tractor services and other equipment and tools, and access to land are the top interrelated obstacles preventing agricultural growth across all focus provinces and other sectors and commodities (Tables 8.13–8.15). Training or extension services are only part of the problem. The results are clear, as each province reports a similar pattern related to complementary inputs and services, which warrants complementary review and reform in the policies and investments governing these inputs and services. Even if agents are appropriately teaching new technologies and organizing farmer groups, as long as inputs are expensive, markets are unavailable, and land is not accessible, credit will continue to be limited due to severe default risk.

Table 8.13—Biggest constraints facing male farmers, based on agents' perspective, in percent

Province	First	Second	Third
Bandundu (N=90)	Access to credit 74.4	Access to land 35.6	Seedlings 28.9
Bas-Congo (N=35)	Access to credit 74.3	Postharvest losses 37.1	Markets 31.4
Kinshasa (N=37)	Access to credit 59.5	Pests and diseases 35.1	Markets 35.1

Source: IFPRI survey, August–October 2011.

Table 8.14—Biggest constraints facing female farmers, based on organization perspective, in percent

Province	First	Second	Third
Bandundu (N=90)	Access to credit 72.2	Access to land 41.1	Marketing of farm produce 27.8
Bas-Congo (N=35)	Access to credit 74.3	Access to land 48.6	No markets 28.6
Kinshasa (N=37)	Access to credit 64.9	Postharvest losses 35.1	No markets 32.4

Source: IFPRI survey, August–October 2011.

Table 8.15—Top three constraints reported, in percent (N=107 organizations)

	First constraint	Second constraint	Third constraint
From crop production	Inputs (seeds, fertilizer)	Access to land	Equipment (tools, storage)
Male farmers (N=105)	71.4	44.8	41.0
Female farmers (N=105)	67.3	48.1	43.3
From livestock production	Inputs (breeds, drugs)	Equipment (tools, storage)	Training
Male farmers (N=96)	88.5	29.17	28.13
Female farmers (N=86)	84.9	30.23	33.72
From fish production	Equipment (tools, storage)	Inputs (breeds, feed)	Training
Male farmers (N=67)	85.1	47.8	43.3
Female farmers (N=52)	57.7	34.6	32.7
From aquaculture	Inputs (breeds, feed)	Training	Access to land
Male farmers (N=75)	88.0	45.3	40.0
Female farmers (N=61)	78.7	49.2	34.4

Source: IFPRI survey, August–October 2011.

9. CORRELATES OF PERFORMANCE

System Performance

While performance of extension organizations is hard to measure, this study aims to provide some indications of extension system's performance, namely, (1) activeness in technology transfer and (2) visits made to the villages as reported by the village representatives. Approximately half of the 107 extension organizations included in the survey reported that they had not disseminated or promoted any agricultural technology in the previous two years. An even greater proportion of government agencies had not promoted or disseminated technologies to farmers in the previous two years. This mirrors limited activity by a good proportion of so-called extension organizations.

Only 17 percent of the sample villages reported having had visits from any extension agent or development worker (Table 9.1) in the previous two years (2009–2010). A large majority (83 percent) of villages reported not receiving any extension visits. Of those receiving extension visits, about 70 percent reported a single visit, 19 percent reported being visited by two extension agents, and the remaining 11 percent reported being visited by three to five extension agents. These agents come mostly from the MINAGRI and NGOs. Of the 43 extension agents who visited the sample villages, only 9 percent were women (Table 9.2). Only two female agents (13 percent) were from MINAGRI, two other female agents (10 percent) came from NGOs, and there were no female agents from other extension organizations.

Table 9.1—Distribution of sample villages and extension visits by number of visits

Category	Number of sample villages	Percent of total villages
No visit by extension agent	129	83
Visited by at least 1 extension agent	27	17
Number of agents who visited		
1	19	70
2	5	19
3	1	4
4	1	4
5	1	4

Source: Village-level survey implemented by IFPRI in 2011.

Table 9.2—Distribution of extension agent visits to sample villages according to their institutional home and gender

Institution	Number of agents visiting	Female (percent)
MINAGRI	16	13
NGO	20	10
FBO	1	0
Church-based organization	2	0
Private sector	4	0

Source: Village-level survey implemented by IFPRI in 2011.

Notes: FBO = farmer-based organization; MINAGRI = Ministry of Agriculture, Livestock, and Fisheries; NGO = nongovernmental organization.

Organization and Agent Performance

Taking advantage of the availability of a unique dataset on AEO and AEA performance that shows some variation in their activities, structure, capacity, and operations, we explore the conditions for why some AEOs and AEAs are performing better than others. At the AEO level, performance is measured in terms of whether, in the past two years, the AEO has (1) disseminated at least one technology; (2) organized

training and visits; (3) conducted farm demonstrations; and (4) produced and promoted training materials. At the level of the AEA, we look at whether the AEA has, in the past two years, (1) disseminated at least one technology; (2) monitored how many farmers adopted the technologies promoted; and (3) monitored the impact of the promoted technologies on farmers' production costs and incomes. These indicators and their descriptive statistics are presented in Tables 9.3 and 9.4.

Table 9.3—Descriptive statistics of variables on organizational performance

Variables	Mean	Standard deviation	Minimum	Maximum
<u>Dependent variables</u>				
AEO disseminated at least one technology in last two years (dummy)	0.50	0.50	0.00	1.00
AEO conducted training and visit in last two years (dummy)	0.45	0.50	0.00	1.00
AEO organized farm demo in last two years (dummy)	0.55	0.50	0.00	1.00
AEO produced and promoted training materials in last two years (dummy)	0.29	0.46	0.00	1.00
<u>Explanatory variables</u>				
Government AEO (dummy)	0.55	0.50	0.00	1.00
Number of technicians and agents (count)	32.98	80.73	0.00	624.00
Proportion of female staff (%)	13.31	17.75	0.00	100.00
AEO enforces sanction (dummy)	0.26	0.44	0.00	1.00
AEO has reward system (dummy)	0.26	0.44	0.00	1.00
AEO has annual planning (dummy)	0.83	0.38	0.00	1.00
Number of motorbikes per staff (ratio)	0.91	2.08	0.00	15.00
Proportion of agents' time spent on getting to the field (%)	54.86	26.63	0.00	90.00
AEO has performance targets (dummy)	0.44	0.50	0.00	1.00
AEO received external funding in 2009–2010 (dummy)	0.23	0.43	0.00	1.00
Salary funds (million CF, 2009–2010 average)	8.20	60.20	0.00	619.00
Capital funds (million CF, 2009–2010 average)	0.05	0.53	0.00	5.51
Frequency of interaction with other extension organizations and agents (1–4 scale)	1.88	0.85	1.00	4.00
Frequency of interaction with input suppliers (1–4 scale)	1.28	0.61	1.00	4.00
Frequency of interaction with buyers/traders (1–4 scale)	1.30	0.70	1.00	4.00
Frequency of interaction with local political authorities (1–4 scale)	1.78	1.01	1.00	4.00

Source: IFPRI surveys (August–October 2011).

Note: AEO = agricultural extension organization; CF = Congolese franc; conversion rate is US\$1 for CF 900 (as of December 2012).

Table 9.4—Descriptive statistics of variables explaining individual agent’s performance

Variables	Mean	Standard deviation	Minimum	Maximum
<u>Dependent variables</u>				
Agent taught at least one technology (dummy)	0.82	0.39	0.00	1.00
Agent monitored farmers’ adoption (dummy)	0.52	0.50	0.00	1.00
Agent monitored impact on farmers (dummy)	0.19	0.39	0.00	1.00
<u>Explanatory variables (individual agent level)</u>				
Male (dummy)	0.94	0.24	0.00	1.00
Age	52.51	11.39	25.00	81.00
Education level	3.05	0.75	1.00	4.00
Agent received training (dummy)	0.59	0.49	0.00	1.00
Agent has motorbike (dummy)	0.07	0.25	0.00	1.00
Amount of travel allowance (000 CF/month)	16.77	47.78	0.00	300.00
Agent interacted with other extension agents (dummy)	0.35	0.48	0.00	1.00
Agent interacted with technical experts of projects (dummy)	0.60	0.49	0.00	1.00
Agent interacted with local political or government staff/officials (dummy)	0.41	0.49	0.00	1.00
Agent interacted with NGOs (dummy)	0.34	0.47	0.00	1.00
Satisfied with fair and adequate salary (dummy)	0.42	0.50	0.00	1.00
<u>Explanatory variables (organization level)</u>				
Agent received external funding in 2009–2010 (dummy)	0.23	0.3	0.00	1.00
Organization has performance targets (dummy)	0.44	0.50	0.00	1.00
Number of staff	32.98	80.73	0.00	624.00
Government AEO (dummy)	0.55	0.50	0.00	1.00
Number of motorbikes per staff	0.03	0.06	0.00	0.27
Number of cars/vehicles per staff	0.02	0.12	0.00	0.91
Salary funds (million CF, 2009–2010 average)	8.20	60.20	0.00	619.00
Capital funds (CF million, 2009–2010 average)	0.05	0.53	0.00	5.51

Source: IFPRI surveys (August–October 2011).

Note: AEO = agricultural extension organization; CF = Congolese franc; conversion rate is US\$1 for CF 900 (as of December 2012).

Given the framework adopted in Figure 2.1, we test which are significant correlates of the different measures of AEO and AEA performance. We selected measurable indicators that are already described in detail in Sections 4 through 8 and that vary among AEOs and AEAs to enable a regression analysis to determine correlates of performance. These indicators are summarized in Table 9.5, which are consistent with Figure 2.1 and compiled based on a literature review.

Table 9.5—Major themes and hypotheses based on literature

Themes	Hypotheses	Measurements of indicators used in this paper
Local context and enabling environment	Location, which mirrors the local context and the agricultural and market potential of the area, matters. Extension policy and strategy, as well as performance targets, are the embodiments of vision, thinking, and commitment on agriculture extension, and are key drivers of performance.	(1) dummy for location; (2) several village-level indicators such as distance to closest market; (3) presence of policy and strategy in AEO; (4) presence of performance targets set; and (5) implementation and enforcement of those targets
Organizational commitment	Organizational commitment is needed to identify and acknowledge the competencies that will meet the needs of future clients and align staff's incentives with the organization's objectives.	Indicators of quality of the supervisor or head of the organization such as education, leadership style, and amount of supervision to extension agents
Organizational capacity	Sustainable funding and resources in the organization are important for management and staff to perform well. Organizational capacity not only includes physical and financial capacity but also involves an effective organizational management system to run the operations and ensure that resources are well managed.	(1) funds received; (2) number of staff; (3) availability of motorbikes and vehicles; and (4) presence and enforcement of system of sanctions and rewards
Partnership and linkages	<i>Interaction</i> is a major principle in the agricultural innovation systems framework. Given the more prominent role as knowledge broker, extension agents and their organizations are increasingly required to form and cultivate partnerships and linkages with sources and users of knowledge.	Frequency of AEO's and AEA's interaction or communication with researchers, agricultural education system, agrodealers, market actors, farmers' organizations, and other organizations
Learning and competency development	Individual capacity affects performance. Processes of training and learning are important for performance.	Indicators of quality of staff and quality of their learning process such as education, training received, types and topics of training received, and field of specialization
Delivery methods	Group-based extension delivery is effective. Mixed approaches (combined delivery methods) work better than a single approach.	Dummy for delivery methods

Source: Compiled by authors from various literature.

Given the binary nature of the outcome variables (that is, dummy variables), this paper follows the widely used logistic regression analysis to estimate the marginal effects and statistical significance of the factors described above on the probability of good performance among AEAs and AEOs.⁷ Results of the logistic regression analyses are presented in Tables 9.6 and 9.7

⁷ A probit regression model, which is also widely used for binary outcome variables, was also estimated, but the results were similar to those of the logit regression, and therefore we do not present the probit regression results here. Given the hierarchical nature of the data (that is, two or more AEAs are part of the same AEO), a multilevel model was also employed to explain AEA performance, but the results were similar to those of the simple logit regression. This suggests that no other organizational characteristics, beyond what were employed in the regressions, are significant in explaining the probability of good performance among individual extension agents.

Table 9.6—Results of the logit model on organizational performance

Dependent variables →	Disseminated technology		Conducted farm demonstration		Conducted training and visit		Produced and promoted training materials	
Explanatory variables	Marginal effect	Standard error	Marginal effect	Standard error	Marginal effect	Standard error	Marginal effect	Standard error
Government AEO (dummy)	-0.463	0.317	0.064	0.154	-0.258	0.153	0.131	0.130
Number of technicians and agents (count)	0.003	0.002	0.001	0.001	-0.001	0.001	0.001	0.001
Proportion of female staff (%)	0.014	0.008	0.010	0.004	0.003	0.004	0.004	0.003
AEO enforces sanction (dummy)	-0.059	0.182	0.065	0.165	-0.085	0.157	0.134	0.138
AEO has reward system (dummy)	0.285	0.334	0.358	0.125	0.169	0.143	0.095	0.132
AEO has annual planning (dummy)	0.035	0.210	-0.031	0.178	0.134	0.177	-0.062	0.177
Number of motorbikes per staff (ratio)	0.386	0.425	-0.028	0.386	0.056	0.375	0.200	0.271
Proportion of agents' time spent on getting to the field (%)	0.005	0.004	0.005	0.003	0.003	0.003	0.002	0.002
AEO has performance targets (dummy)	-0.008	0.143	0.129	0.128	0.264	0.125	0.113	0.106
AEO received external funding in 2009–2010 (dummy)	0.082	0.226	0.382	0.159	0.078	0.212	0.472	0.199
Capital funds (CF, 2009–2010 average)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Salary funds (CF, 2009–2010 average)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Frequency of interaction with other extension organizations and agents (1–4 scale)	-0.010	0.080	0.033	0.073	0.016	0.072	-0.007	0.057
Frequency of interaction with input suppliers (1–4 scale)	0.255	0.195	-0.136	0.115	0.252	0.143	-0.099	0.102
Frequency of interaction with buyers/traders (1–4 scale)	0.258	0.177	-0.004	0.113	-0.068	0.096	0.028	0.088
Frequency of interaction with local political authorities (1–4 scale)	0.156	0.096	-0.032	0.061	0.077	0.066	0.112	0.050
Number of observations	107		107		107		107	
Pseudo R2	0.41		0.28		0.21		0.27	

Source: IFPRI surveys (August–October 2011).

Note: *** significant at 0.01 level; ** significant at 0.05 level; * significant at 0.10 level. Other controls, such as distance to nearest market and proximity to conflict events, were also used in a number of the estimations performed but are insignificant in the models tested; therefore, they are not presented in this table. AEO = agricultural extension organization; CF = Congolese franc.

Table 9.7—Results of the logit model on individual agent’s performance

Dependent variables	Taught at least one technology		Monitored farmers’ adoption		Monitored impact on farmers	
	Marginal effect	Standard error	Marginal effect	Standard error	Marginal effect	Standard error
<u>Explanatory variables (individual agent level)</u>						
Male (dummy)			0.014	0.206	0.088	0.136
Age	0.002	0.003	0.002	0.005	-0.001	0.004
Education level	-0.048	0.051	-0.029	0.073	-0.005	0.056
Agent received training (dummy)	0.061	0.086	0.072	0.117	0.180	0.085
Agent has motorbike (dummy)			0.288	0.243		
Amount of travel allowance (CF/month)	0.000	0.000	0.000	0.000	0.000	0.000
Agent interacted with other extension agents (dummy)	0.030	0.086	0.200	0.125	0.037	0.094
Agent interacted with technical experts of projects (dummy)	-0.026	0.073	0.038	0.118	-0.074	0.091
Agent interacted with local political or government staff/officials (dummy)	0.027	0.082	0.065	0.131	0.101	0.104
Agent interacted with NGOs (dummy)	0.045	0.079	0.332	0.117	0.117	0.108
Satisfied with fair and adequate salary (dummy)	0.070	0.071	-0.128	0.108	-0.038	0.080
<u>Explanatory variables (organization level)</u>						
Received external funding in 2009–2010 (dummy)	0.177	0.067	0.563	0.085	0.426	0.245
Organization has performance targets (dummy)	0.125	0.079	0.118	0.106	-0.071	0.083
Number of staff	0.000	0.000	0.000	0.000	0.000	0.000
Government AEO (dummy)	-0.010	0.143	0.004	0.214	0.092	0.114
Number of motorbikes per staff	-0.122	1.587	-1.725	2.032	-0.749	1.499
Number of cars/vehicles per staff	-1.370	1.103	-0.735	0.630	-0.192	0.694
Salary funds (CF, 2009–2010 average)	0.000	0.000	0.000	0.000	0.000	0.000
Capital funds (CF, 2009–2010 average)	0.000	0.000	0.000	0.000	0.000	0.000
Number of observations	127		127		127	
Pseudo R2	0.15		0.16		0.13	

Source: IFPRI surveys (August–October 2011).

Note: *** significant at 0.01 level; ** significant at 0.05 level; * significant at 0.10 level. Other controls, such as distance to nearest market and proximity to conflict events, were also used in a number of the estimations performed but are insignificant in the models tested; therefore, they are not presented in this table. NGO = nongovernmental organization; AEO = agricultural extension organization; CF = Congolese franc.

The logit regression analysis clearly shows that AEOs with performance targets are more likely to perform well in terms of extension provision and monitoring technology adoption and impacts on farmers (Tables 9.6 and 9.7). AEOs with performance targets have a 26 percent higher probability of conducting training and visits compared with those without targets (Table 9.6). AEAs in AEOs with performance targets have a 13 percent higher probability of being active in technology dissemination and rural education than AEAs in AEOs without performance targets (Table 9.7). Similarly, the results show that the presence and enforcement of a system of rewards and sanctions is an important indicator of organizational performance. AEOs with a system of rewards and sanctions are 36 percent more likely to conduct farm demonstrations than those without such a system (Table 9.6).

There is no conclusive evidence that the number of staff in the AEO is a statistically significant factor in explaining good performance in terms of extension service provision among AEOs and AEAs. However, results suggest a strong correlation between having female agents in the AEO and performance in service provision. AEOs with female agents are more likely to be active and perform well in extension service delivery compared with AEOs without female agents. A 1 percent increase in the proportion of female agents in AEOs is associated with a 1 percent increase in the probability of good performance in technology dissemination and farm demonstration among AEOs (Table 9.6).

Results suggest that the availability of financial resources, especially in the form of external funding, is a strongly significant factor in explaining good or poor performance among AEOs and AEAs. AEOs that receive external funds are more likely to be active and perform well in extension service delivery. AEOs that receive external funds have a 33 to 48 percent higher probability of conducting farm demonstrations and promoting training materials in rural areas versus the AEOs that do not receive external funds (Table 9.6). AEAs that receive external funds have an 18 to 42 percent higher likelihood of being engaged in technology dissemination, rural education, monitoring farmers' technology adoption, and monitoring technology impacts on farmers (Table 9.7). It will therefore be crucial to support knowledge provision and agriculture extension through external funds in the coming few years, but the government could start streamlining its human resources to free some resources from salary to operating and capital funds.

Those few AEAs and AEOs with strong interactions were more active in providing knowledge and technology information to farmers. Results in Tables 9.6 and 9.7 suggest strong evidence on the importance of linkages and interaction in organizational and individual agent performance. AEOs and AEAs that interact with and link more to other actors and organizations are 11 to 33 percent more likely to perform well in technology dissemination, training, farm demonstration, and monitoring adoption and impacts on farmers than those that do not have any interactions.

AEOs and AEAs that reported performing their functions of extension service delivery use different methods and advisory techniques, from farm demonstrations to forming FBOs and assisting with loan repayments. Insights regarding those methods are gained by exploring how AEAs interact with farmers, educate farmer groups, and disseminate information. Dummy variables for each of the delivery methods were used in the logit estimations but were not significant,⁸ which suggests that no particular method works in a broad sense but that such methods are specific to certain conditions.

⁸ Results are not presented here but can be provided upon request from the authors.

10. DISCUSSION

Both constraints and opportunities can be discussed in light of the DRC experience. One constraint is the lack of sustainable funding for extension provision in DRC. The extension system collapsed after the completion of the World Bank project in the 1990s. Often, reforms fail without the commitment of the government and sustainable funding for extension. Ad hoc projects supported by donors or NGOs may take place, but without sustained government funding, the system as a whole cannot perform well. Similarly, with training, most activities are done in an ad hoc, small, uncoordinated, and unsustainable way within NGOs and church-based organizations with links to their international counterparts. The cadre of government AEAs and other organizations are often not included and rarely receive regular skills updating. This implies the need for more regular, coordinated, and sustainable provision of training and learning opportunities and strengthening the whole DRC agricultural education system.

A second major problem is that agricultural extension in DRC lacks a clear vision and mandate. A related issue is its lack of operational targets and monitoring. There are no targets set for agents and organizations for their extension work as reported by a large majority of AEAs interviewed and more than half of organizations heads and supervisors in our sample. As a result, there is no effective monitoring and evaluation to assess the quality and performance of extension services. More than 11,000 field staff work at MINAGRI, but it is not clear to them whether they should be doing extension work in addition to their data collection and census activities. If they could be used efficiently, they could offer the opportunity and starting point for revitalizing the agricultural extension system and for reaching farmers with valuable information. To date, their mandate covers mainly data collection and “monitoring” farmers’ activities. With a clear mandate and clear definition and communication of roles and responsibilities, along with a corresponding performance-based incentive mechanism, the inactive and defunct inspection system could be transformed into an efficient system that supports knowledge dissemination and technology transfer in rural areas. The older, relatively inefficient agents could be retired to streamline the salary structure and shift available government funds to much-needed operating and capital components. External funds will be crucially needed to support extension service delivery during the reform process.

An opportunity exists in the presence in western DRC of many nongovernmental and church-based organizations that provide extension services to the rural population. There is even some evidence (see Table 9.6) that nongovernmental AEOs are more likely to perform well in extension service provision than those in the government agencies. Nongovernmental AEOs can use stronger incentives—for example, the salary and benefits of an NGO extension agent amount to about \$500 to \$1,000 versus \$50 per month (US\$1.7/day) for a government extension agent. Public-sector extension agents’ salaries are seriously low. To put it into context, the daily farm labor wage ranges from \$0.5 to \$3.5, which on average is higher than the salary of a government extension agent.

However, nongovernmental AEO involvement in extension service delivery has major limitations in attempting to fill the huge vacuum in service delivery in western DRC. First, such AEOs lack technical capacity and often hire MINAGRI staff as extension agents and supervisors. Second, similar to the government, they do not do a good job following up on technologies and farmers trained; they also lack for performance targets, mission orientation, and accountability measures. Elite capture and leakage are also common complaints based on the IFPRI surveys and interviews. Based on key informant interviews, extension agents hired are not always qualified technicians but friends or relatives and therefore compromise the quality of information and technical support to farmers. Third, coverage by nongovernmental AEOs is limited as confirmed by our dataset on Bandundu, Bas-Congo, and Kinshasa. At the same time, there exists a large cadre of agricultural monitors from MINAGRI, whose efforts could be enjoined. This suggests that government extension agencies cannot be ignored as they play a major complementary role with NGOs and other service providers in agricultural extension. Moreover, trainings-of-trainers could target pluralistic service providers (including public, private, NGO, and church-based organizations, FBO, and CARGs) rather than focusing on a single group and ignoring the government inspection system.

Based on indicators used in the diagnosis, this study reveals major issues in the capacity and incentives of extension agents, which indicates the need for both institutional and individual capacity strengthening. In the government extension agencies, the personnel are aging and the majority of the decentralized structures are inactive. Of the 154 extension agents surveyed, about 60 percent were over 50 years of age and only 5 percent were women. Of the 107 extension supervisors and organization heads interviewed, only 7 percent were women. The paucity of female agents and supervisors can limit the ability of the extension system to reach out to women producers, especially in the most remote areas. Studies worldwide have shown that female extension agents can reach more women farmers, especially in communities in which female–male social interactions are restricted, compared to male agents. About 22 percent of field staff have only a primary or secondary degree. Whereas 61 percent of agents received other professional training besides formal education, a greater proportion of agents with lower formal education (primary or high school) did not receive professional training. This underscores the serious challenge of weak skill sets of a high proportion of agents due to the lack of formal education or to shorter-term technical training. In the absence of extensive training and retraining of agents and technicians, the technical capacity to provide extension and advisory services to farmers suffers.

The persistent lack of attention to partnerships and linkages is a major constraint in the extension system in western DRC. Linkages between extension organizations and their agents and other stakeholders are limited. To be effective brokers of information, agents should be able to connect different stakeholders together. Extension agents who have no interaction, formal or informal, with stakeholders are seriously inhibited in their ability to perform their work.

A weak policy environment and inadequate investment in complementary inputs and services also limits the effectiveness of extension. Poor access to credit, inputs, markets, land, and equipment and tools is the most common and most consistently mentioned constraint among farmers based on the perspectives of agents, organization heads, and farmers themselves. Training and extension services are mentioned as only a part of the problem and therefore only a part of the solution. The results warrant complementary review of and reform in the policies and investments governing these inputs and services.

11. CONCLUDING REMARKS AND RECOMMENDATIONS

As a result of prolonged civil unrest and armed conflict, the DRC government has a weak capacity to provide agricultural and rural services to producers, while several nongovernmental and church-based organizations came in to fill some of the gaps in service provision. This paper has analyzed a unique dataset of 107 AEOs and 162 AEAs from different extension organization types in western DRC. Several lessons emerge from the qualitative and regression analyses conducted, which have implications for DRC and the wider extension and development community.

First, public-sector extension remains crucial even in areas with very weak government institutions. An important strategy, therefore, is to include public-sector extension agents and subject-matter specialists in capacity-strengthening and learning programs instead of bypassing them and focusing only on NGOs. Second, training opportunities have been proven to be important in performance, confirming the findings of several previous studies. Especially in DRC, where almost a quarter of agents have only primary education and the majority of government agents have no university degree, regular training is extremely important, and this needs to be institutionalized rather than being provided as an ad hoc activity. Third, the agricultural extension system relies on the strength of the agricultural education system, and therefore any efforts to revitalize the former will need complementary investments in the latter.

Fourth, linkages and partnerships have been shown to be important in extension performance. Interactions with other extension agents, other NGOs, agrodealers and agribusiness, and local political authorities are particularly important. Interaction with other service providers and with other extension agents increases the likelihood that agents will provide effective extension services and monitor farmers' adoption. Organizations that have interactions with local political authorities are more likely to be able to disseminate technologies and produce training materials.

Fifth, this paper complements findings by Davis et al. (2010) and Ragasa et al. (2013) on Ethiopia indicating that merely increasing the number or quantity of AEAs is not enough; an effective system must focus on building the quality of AEAs and creating an enabling environment in which AEAs can work effectively. This study identified external funding, enforcement of performance targets, systems of rewards and sanctions, and skills development and training as significant enabling conditions. Sixth, in the absence of government funding, external funding has been crucial for the functioning of the extension system. External funders such as donor agencies and international NGOs also tend to provide conditional funding and place more emphasis on monitoring adoption and impact, and this has implications for the importance of their support for a transition economy such as DRC. As has been proven during the past decades of neglect in DRC, short-term support for extension from external actors is extremely important, but the extension program will need to be supported and continued by the government in order to achieve sustainability.

Seventh, clear direction and vision, coupled with measurable targets, are extremely important. The 11,000-plus agents in DRC are confused due to unclear mandates and responsibilities. As shown in the analysis, AEOs with clear vision, clear performance targets, and enforced reward and sanction systems are likely to perform better. Eighth, the analysis suggests a strong correlation between the presence of female agents in AEOs and performance in service provision, which confirms the results of past studies. In locations where female heads and agents are extremely rare, as in DRC, focusing on girls' education and recruiting more female students and graduates to work in agriculture and extension will be an important strategy.

Finally, from a research perspective, an assessment of both capacity and incentives provides a more holistic and comprehensive view of the constraints and opportunities present in the extension system. In most cases, lack of capacity is not the major issue; it is often the lack of incentives and motivation that creates inaction and inefficiency. Incentives do not come only in the form of higher financial compensation but also in the form of organizational support and encouragement, mobility, and a conducive environment. Creating incentives often starts with clearly identifying what the system wants to achieve and enforcing a reward system based on the achievement of these goals.

REFERENCES

- Alston, J., C. Chan-Kang, M. Marra, P. Pardey, and T. J. Wyatt. 2000. *A Meta-Analysis of Rates of Return to Agricultural R&D Ex Pede Herculem*. Research Report 113. Washington, DC: International Food Policy Research Institute (IFPRI).
- Anderson, J. R., and G. Feder. 2004. "Agricultural Extension: Good Intentions and Hard Realities." *World Bank Research Observer* 19 (1): 41–60.
- Badibanga, T., C. Ragasa, and J. Ulimwengu. 2012. *Assessing the Effectiveness of a Multi-Stakeholder Process in the Democratic Republic of the Congo's Agricultural Sector: The Case of the Agricultural and Rural Management Councils (CARGs)*. Draft discussion paper. Washington, DC: IFPRI.
- Benin, S., E. Nkonya, G. Okecho, J. Randriamamonjy, E. Kato, G. Lubade, and M. Kyotalimye. 2011. "Returns to Spending on Agricultural Extension: The Case of the National Agricultural Advisory Services (NAADS) Program of Uganda." *Agricultural Economics* 42 (2): 249–267.
- Birner, R. and H. Wittmer. 2009. "Making Environmental Administration More Effective: A Contribution from New Institutional Economics." In *Institutions and Sustainability*, edited by V. Beckmann and M. Padmanabhan, 153–173. Berlin and Heidelberg: Springer Verlag.
- Birner, R., K. Davis, J. Pender, E. Nkonya, P. Anandajayasekeram, J. Ekboir, J. 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.
- Davis, K. 2008. "Extension in Sub-Saharan Africa: Overview and Assessment of Past and Current Models, and Future Prospects." *Journal of International Agricultural and Extension Education* 15 (3): 15–28.
- Davis, K., B. Swanson, D. Amudavi, D. Ayalew Mekonnen, A. Flohrs, J. Riese, C. Lamb, et al. 2010. *In-Depth Assessment of the Public Agricultural Extension System of Ethiopia and Recommendations for Improvement*. Discussion Paper 01041. Washington, DC: IFPRI.
- Due, J. M., F. Magayane, and A. Temu. 1997. "Gender Again: Views of Female Agricultural Extension Officers by Smallholder Farmers in Tanzania." *World Development* 25 (5): 713–725. doi:10.1016/S0305-750X(96)00129-5.
- FAO (Food and Agriculture Organization of the United Nations). 2010. FAOSTAT. Rome.
- Feder, G., R. Birner, and J. Anderson. 2011. "The Private Sector's Role in Agricultural Extension Systems: Potential and Limitations." *Journal of Agribusiness in Developing and Emerging Economies* 1 (1): 31–54.
- IFPRI. 2011. Global Hunger Index. Washington, DC: IFPRI.
- Kamau, M. 2012. "Human Resource Development in Staff Training, Adult Learning and Field Methods." Presentation during Modernizing Extension and Advisory Services' Global Learning Exchange on Best Fit Approaches in Extension and Advisory Services, Washington, DC, June 8.
- Mills, W. (n.d.). "Belgian Colonial Policy." Unpublished notes. Accessed June 10, 2012, at www.saylor.org/site/wp-content/uploads/2011/12/HIST252-Belgian-Colonial-Policy.pdf.
- MINAGRI (Ministry of Agriculture, Livestock and Fisheries). 2005. "Plan of Restructuring of Ministry of Agriculture, Livestock, and Fisheries (MAPE)." Project TCP/DRC/2904. 2005. Internal Report. July.
- Ragasa, C. G. Berhane, F. Tadesse, and A. Seyoum Taffesse. 2013. "Gender Difference in Extension and Productivity," *Journal of Agricultural Education and Extension* (forthcoming).
- Ragasa, C., S. Babu, and J. Ulimwengu. 2011. *Institutional and Capacity Challenges in Agricultural Policy Process: The Case of the Democratic Republic of Congo*. Discussion Paper 01066. Washington, DC: IFPRI.
- Ragasa, C., T. Badibanga, and J. Ulimwengu. 2012. *Assessing the Performance of Rural Producer Organizations in the Provision of Agricultural Services: Evidence from Western Provinces of the Democratic Republic of Congo*. Draft discussion paper. Washington, DC: IFPRI.

- Rivera, W. M., K. M. Qamar, and L. V. Crowder. 2001. *Agricultural and Rural Extension Worldwide: Options for Institutional Reform in Developing Countries*. Rome: FAO.
- Swanson, B., R. Bentz, and A. Sofranko. 1997. *Improving Agricultural Extension. A Reference Manual*. Rome: FAO. www.fao.org/docrep/W5830E/w5830e00.htm#Contents.
- World Bank and IFPRI. 2009. *Gender and Governance in Rural Services*. Washington, DC.

RECENT IFPRI DISCUSSION PAPERS

For earlier discussion papers, please go to www.ifpri.org/pubs/pubs.htm#dp.
All discussion papers can be downloaded free of charge.

1282. *The formation of job referral networks: Experimental evidence from urban Ethiopia*. Antonio Stefano Caria and Ibrahim Worku Hassen, 2013.
1281. *Agriculture and adaptation in Bangladesh: Current and projected impacts of climate change*. Timothy S. Thomas, Khandaker Mainuddin, Catherine Chiang, Aminur Rahman, Anwarul Haque, Nazria Islam, Saad Quasem, and Yan Sun, 2013.
1280. *Demand for weather hedges in India: An empirical exploration of theoretical predictions*. Ruth Vargas Hill, Miguel Robles, and Francisco Ceballos, 2013.
1279. *Organizational and institutional issues in climate change adaptation and risk management: Insights from practitioners' survey in Bangladesh, Ethiopia, Kenya, and Mali*. Catherine Ragasa, Yan Sun, Elizabeth Bryan, Caroline Abate, Atlaw Alemu, and Mahamadou Namori Keita, 2013.
1278. *The impact of alternative input subsidy exit strategies on Malawi's maize commodity market*. Mariam A. T. J. Mapila, 2013.
1277. *An ex ante analysis of the impact and cost-effectiveness of biofortified high-provitamin A and high-iron banana in Uganda*. John L. Fiedler, Enoch Kikulwe, and Ekin Birol, 2013.
1276. *Local warming and violent conflict in north and south Sudan*. Margherita Calderone, Jean-Francois Maystadt, and Liangzhi You, 2013.
1275. *Comprehensive food security and vulnerability analysis: Nigeria*. Oluyemisi Kuku-Shittu, Astrid Mathiassen, Amit Wadhwa, Lucy Myles, and Akeem Ajibola, 2013.
1274. *Targeting technology to reduce poverty and conserve resources: Experimental delivery of laser land leveling to farmers in Uttar Pradesh, India*. Travis J. Lybbert, Nicholas Magnan, David J. Spielman, Anil Bhargava, and Kajal Gulati, 2013.
1273. *The logic of adaptive sequential experimentation in policy design*. Haipeng Xing and Xiaobo Zhang, 2013.
1272. *Dynamics of transformation: insights from an exploratory review of rice farming in the Kpong Irrigation Project*. Hiroyuki Takeshima, Kipo Jimah, Shashidhara Kolavalli, Xinshen Diao, and Rebecca Lee Funk, 2013.
1271. *Population density, migration, and the returns to human capital and land: insights from Indonesia*. Yanyan Liu and Futoshi Yamauchi, 2013.
1270. *Reverse-share-tenancy and marshallian inefficiency: Landowners' bargaining power and sharecroppers' productivity*. Hosaena Ghebru Hagos and Stein T. Holden, 2013.
1269. *The child health implications of privatizing Africa's urban water supply*. Katrina Kosec, 2013.
1268. *Group lending with heterogeneous types*. Li Gan, Manuel A. Hernandez, and Yanyan Liu, 2013.
1267. *Typology of farm households and irrigation systems: Some evidence from Nigeria*. Hiroyuki Takeshima and Hyacinth Edeh, 2013.
1266. *Understanding the role of research in the evolution of fertilizer policies in Malawi*. Michael Johnson and Regina Birner, 2013.
1265. *The policy landscape of agricultural water management in Pakistan*. Noora-Lisa Aberman, Benjamin Wielgosz, Fatima Zaidi, Claudia Ringler, Agha Ali Akram, Andrew Bell, and Maikel Issermann, 2013.
1264. *Who talks to whom in African agricultural research information networks?: The Malawi case*. Klaus Droppelmann, Mariam A. T. J. Mapila, John Mazunda, Paul Thangata, and Jason Yauney, 2013.
1263. *Measuring food policy research capacity: Indicators and typologies*. Suresh Chandra Babu and Paul Dorosh, 2013.
1262. *Does freer trade really lead to productivity growth?: Evidence from Africa*. Lauren Bresnahan, Ian Coxhead, Jeremy Foltz, and Tewodaj Mogues, 2013.
1261. *Data needs for gender analysis in agriculture*. Cheryl Doss, 2013.

**INTERNATIONAL FOOD POLICY
RESEARCH INSTITUTE**

www.ifpri.org

IFPRI HEADQUARTERS

2033 K Street, NW
Washington, DC 20006-1002 USA
Tel.: +1-202-862-5600
Fax: +1-202-467-4439
Email: ifpri@cgiar.org

IFPRI KINSHASA OFFICE

4163 Avenue Haut-Congo
Quartier Revolution
Kinshasa/Gombe
DR Congo
Email: ifpri-kinshasa@cgiar.org