

HUMAN RESOURCE DEVELOPMENT FOR EXTENSION AND ADVISORY SERVICES:

TRAINING, ADULT LEARNING, AND FIELD METHODS

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Human Resource Development for Agricultural Extension and Advisory Services

Training, Adult Learning, and Field Methods

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Abbreviations and Acronyms

AKRSP	Agha Khan Rural Support Program
BACAS	Bureau of Agricultural Consultancy and Advisory Services
BSc.	Bachelor of Science
CARTC	Central Agricultural Research and Development and Training Centre
CECI	Centre d'Etudes et de Coopération Internationale
CES	Cooperative Extension Service
CLICs	Community Learning and Information Centers
СТА	Technical Center for Agricultural and Rural Cooperation
EAS	Extension and Advisory Services
FAO	Food and Agriculture Organization of the United Nations
FFF	Farmer Field Fora
FFS	Farmer Field Schools
FtF	Farmer to Farmer
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HRD	Human Resource Development
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural Development
IITA	International Institute of Tropical Agriculture
IPM	Integrated Pest Management
MEAS	Modernizing Extension Advisory Services
MFR	Maison de la Famille Rurale
MOFA	Ministry of Food and Agriculture
MOU	Memoranda of Understanding
MRD	Ministry of Rural Development (of Mali)
MSP	Multi-Stakeholder Platform
NGO	Non-Governmental Organization
OCES	Oklahoma Cooperative Extension Service



ODI	Overseas Development Institute
PACA	Participatory Analysis for Community Action
PASAOP	Programme d'Appui aux Organisations Paysannes
Ph.D.	Doctor of Philosophy
PNVA	Programme National de Vulgarisation Agricole
PRONAF	Projet Niébé pour l'Afrique
REFLECT	Regenerated Freirean Literacy through the Empowering Community Technique
RIPS	Rural Integrated Project Support in Tanzania
SAA	Sasakawa Africa Association
SAFE	Sasakawa Africa Fund for Extension Education
SEP	Supervised Enterprise Project
SMS	Subject Matter Specialist
T&V	Training and Visit
USAID	United States Agency for International Development



Part I

Introduction

The Need for Human Resource Development in Extension and Advisory Services

Gilley, Eggland, and Gilley (2002) observed that "HRD is about the development of people within an organization" (p. 4). HRD also refers to the "advancement of knowledge, skills, and competencies for the purpose of improving performance within an organization" (Gilley et al., 2002, p. 5). However, HRD is more than just professional development. It is also about optimizing the match between organizational needs and human resources (Clark, 1987).

In agriculture and extension, Röling (1988) stated that "the objective of HRD is not to develop farms through people but to develop people themselves, so as to make them better leaders, entrepreneurs and decision-makers, and to help them organize themselves into effective associations, institutions and, of course, constituencies (p. 149)". Human resources are indeed the most vital assets in extension services (Clark, 1987), and a sufficient number of well-trained personnel are key to a successful extension system (Bahal, Swanson, and Farner, 1992). Therefore, optimizing human resource development (HRD) must be a priority for extension and advisory services (EAS).

There is a crucial need for human resource development in EAS. Based on a global review of good agricultural extension and advisory service practices, the Food and Agriculture Organization of the United Nations (FAO) (2008) concluded that EAS must identify and fill gaps in knowledge and skills among farmers as well as among the extension professionals who work with them. Similarly, after a series of needs assessments in various countries (e.g., Ghana, Liberia, Malawi, Mali, and Rwanda), the Modernizing Extension Advisory Services (MEAS) project confirmed that actions should be taken to upgrade the skills of extension personnel and their clients.

Around the world, extension operates in a constantly changing environment with new technologies and approaches appearing at an ever-quickening pace. Extension agents need to regularly upgrade their knowledge and skills to adapt to ever-changing socio-economic and environmental conditions (Navarro, 2008). In addition, Fessler (1968) advocated that professionals dealing with community development need special training "in how to work more effectively with their fellow citizens" (p. 45). If extension is not only to survive but also to thrive, its educational programs and delivery mechanisms must account for these dynamics. An appropriate HRD approach can be useful in this regard.

Overview of HRD for Extension Personnel

This section presents an overview of human resource development for extension personnel by examining the organizations and people involved in EAS, their roles and their clients, their HRD needs, and the challenges they face.

Organizations and Agencies Involved in EAS

Extension services are provided by a wide range of actors around the world. Governments are major providers of extension service in many countries, usually acting through Ministries of Agriculture at district, regional, and national levels. Public EAS often have limited formal structures and resources (Downswell, Cleaver, and Russell, 1993). The involvement of private sector extension providers, including companies,



non-governmental organizations (NGOs), rural producer organizations, and specialized consulting firms has increased in recent years (Silverman, 1992). Today, the private sector is playing a major role in advisory services with the focus changing towards the commercialization of agricultural technology and research (Rivera and Alex, 2003). The private sector complements public extension services, increasing coverage and reducing costs.

A large number of international NGOs also provide EAS to smallholder farmers as part of larger agricultural and rural development initiatives. For example, the Sasakawa Africa Association (SAA) provides extension services in Ethiopia, Mali, Nigeria, and Uganda. The Rural Integrated Project Support program (RIPS) in Tanzania operates at local levels in various regions of the country. Other organizations such as ACDI/VOCA, GIZ, Oxfam, Plan International, and Winrock International have headquarters in Europe or North America but operate with more or less autonomous national offices in targeted countries to be more effective (Lodhi, 2003).

Many large organizations as well as medium and small NGOs undertake agricultural and rural development with an emphasis on building local leadership skills through participatory approaches to extension delivery. In Pakistan for example, such organizations include the Agha Khan Rural Support Program (AKRSP), the Balochistan Rural Support Program, the National Rural Support Program, the Punjab Rural Support Program, and the Sarhad Rural Support Corporation (Malik, 2011). Many NGOs also work with research institutions and farmer organizations in various agricultural extension programs.

Private research institutions provide extension services through the Internet, mass media channels, and during face-to-face training sessions with extension personnel and farmers, largely to disseminate research products. Public and private universities and colleges of agriculture also contribute to EAS. Extension departments of universities and colleges often translate their research findings into simple messages for local farmers (Fielding and Ninsiima, 2012). They use pamphlets, books, and journals to disseminate research results (Malik, 2011) and hold seminars, workshops, and agricultural fairs in farming communities. In Pakistan, the Institute of Applied Research and Technology Transfer of the University of Agriculture Faisalabad provides extension services to established community organizations at project sites in the Faisalabad and Khushab districts. In Nigeria, the University of Agriculture in Makurdi has a well-established outreach program that shares technical information with farmers. The Supervised Enterprise Projects (SEPs) component of the Sasakawa Africa Fund for Extension Education (SAFE), which currently operates in nine countries in Africa, is another means of providing EAS. Each student enrolled in the SAFE program works with farmers to identify a problem and the appropriate technology for addressing it. SAFE lecturers from respective universities then provide systematic instruction and supervision to students to come up with solutions.

In sub-Saharan Africa, farmer organizations and farmer-to-farmer extension approaches are another major source of agricultural advice for many farmers who do not have much contact with formal advisory services (Adolph, 2010). Many NGOs and government programs have supported farmer-to-farmer extension by providing incentives for farmers to create or join groups. The belief is that farmers are better able to learn from each other and to build their capacities through joint experimentation when they are in groups. To this end, formal extension personnel are often trained to facilitate farmer-to-farmer extension initiatives (O. Coulibaly, 12 September 2012, personal communication). There are few comprehensive studies that show the extent to which farmer-to-farmer extension has impacted agricultural and rural development in Africa.



However, case studies suggest that farmer-to-farmer extension does contribute to the systematic sharing of innovations that have made farmers more competitive in local, regional, and international markets (Abbas, Muhammad, Nabi, and Kashif, 2003).

Another approach is for the private sector to work with governments to deliver extension services (Chapman and Tripp, 2003; Swanson, 2008; World Bank, 2004). Such public-private partnerships can take many forms, according to Umali-Deininger (1997), including (1) Ministries and Departments of Agriculture working with agricultural research centers to provide extension services; (2) international NGOs, bilateral and multilateral aid projects, universities, community boards, associations and foundations (including farmers' groups), and other non-commercial associations directly providing services; (3) commercial farmers, farmer group-operated enterprises (including cooperatives), and the private sector providing extension; and (4) commercial production and marketing firms (such as input manufacturers and distributors), agro-marketing and processing firms, trade associations, private consultants, and media companies (publishing and telecommunication firms) providing extension services. In most of these scenarios, organizations contract with the Ministry of Agriculture to deliver extension and advisory services in exchange for public support and funding (Anderson, 2007).

Structures of Extension Systems

Extension systems in both public and private organizations usually include senior managers, administrative staff, subject matter specialists (SMS), field-level extension agents, information and communications technologies support staff, and in-service training staff (Alberts, Wirth, Gilmore, Jones, and McWaters, 2004). In many countries, subject matter specialists support regional and district extension officers in advisory services delivery (Bureau of Agricultural Consultancy and Advisory Services [BACAS]), 1997, as cited in Rutatora and Mattee, 2001).

The United States uses different categories of extension personnel to provide EAS at national, state, and county levels. Professional extension agents usually work in a single county. Area agents work in multiple counties. State specialists are generally located on the campuses of land-grant universities. At the federal level, extension personnel are usually found in Cooperative Extension Service (CES) units. In addition, thousands of paraprofessionals work alongside professional extensionists in the US system, as do many volunteers (Graham, 1994). The CES thus resembles a pyramid with a broad base of local volunteers and county extension agents who are supported by state specialists and federal staff (Graham, 1994).

Beneficiaries of Specialist EAS Training

Human resource development in EAS benefits a range of individuals working for public, private, nongovernmental, and civil society organizations. They include extension agents, farmers, volunteers, paraprofessionals, and others who contribute to extension delivery. This section describes the learners by category and explains what they need to know to perform extension duties and the challenges they face in their professional development.

Extension agents are the primary links to farmers in the public and private sector, or civil society and voluntary organizations, that provide extension services. Many do not possess Bachelor of Science (BSc.) degrees in agricultural or related fields but instead have completed a certificate or diploma training at a two-year college or technical school. Assessments in Mali show that 70% of extension agents held a "Technician Degree" when they entered the SAFE BSc. program (Kanté, 2010). This level of education, coupled with a



tendency to lack in-service training, can yield extension agents with limited technical knowledge. Furthermore, extension agents tend to be middle aged and years removed from formal schooling. For example, 80% of mid-career extension agents who pursued the SAFE BSc. program in Mali were in their late forties (Kanté, 2010). These factors indicate the need for human resource development in EAS and point to these agents as the key recipients.

Extension volunteers share their time, talent, and resources to support both public and private EAS. They may work with local community organizations, government agencies, and as individuals to disseminate improved farming practices. Government and NGOs sometimes engage foreign experts as full-time extension volunteers. For example, the Centre d'Etudes et de Coopération Internationale (CECI) and Winrock International, both international NGOs, collaborate on government schemes that select expert volunteers who help solve specific problems in agriculture by working with farmer groups, agricultural training institutions, cooperatives, processors, and marketers.

Paraprofessionals are community-based or local volunteers who serve as internal catalysts, information banks, service providers, trainers, knowledge disseminators, and innovators in local communities. They also monitor and facilitate the relationship between governments, extension agencies, and community groups (Warner and Korsching, 1975). India has used paraprofessionals to address chronic crises in agriculture and to compensate for an inadequate number of qualified personnel in the agricultural and rural development sector (Government of India Planning Commission, 2006). In Tanzania, paraprofessionals work in farmer field schools to mitigate the shortage of field-level extension personnel (United Republic of Tanzania, 2003). To ensure that they can meet the needs of local people, paraprofessionals often receive technical training in leadership, networking, supervision, program monitoring and evaluation, group dynamics, sustainability, and management. Paraprofessionals do not always receive financial compensation for their work in EAS, which leads to differences in the quality, coordination, coverage, and sustainability of the programs in which they serve, often as a result of individual levels of motivation (Overseas Development Institute [ODI], 1994).

Farmers as Contributors to EAS

Farmers are contributors as well as learners in extension systems. They possess a wealth of experience and knowledge that they can contribute to making EAS more efficient and effective if properly engaged as resource persons. Farmers can be strongly motivated to contribute their knowledge if what they learn is practical and beneficial to their own agriculture (Knowles, Swanson, and Holton, 2005; Strong, Harder, and Carter, 2010).

Competencies Needed by EAS Personnel

Extension competencies comprise the knowledge, skills, attitudes, and behaviors that are critical to the successful performance of EAS. The specific competencies needed by extension agents relate to the mission of their organization and the nature of their job (Kassambara, 1 January 2012, personal communication). However, these will tend to be broad-based because extension professionals must receive and provide information on many subjects (Cooper and Graham, 2001). Farmers have diverse needs, making it sometimes desirable to have generalist extension agents who can address a variety of issues. Practical knowledge is required above all (Arnold and Place, 2010).

The transformation of the agricultural sector has led modern extension education to go beyond traditional technology transfer approaches to an approach based on facilitation and participation in fostering farmer



learning. This approach repositions farmers as partners and prompts extension agents to help establish farmer groups and facilitate farmers' participation in markets and partnerships with a wide range of service providers and other agencies (Davis, 2008).

Extension practitioners need to acquire new knowledge and competencies if they are to adopt this broader approach. The competencies cluster around technical, extension delivery, and social skills (Azadvary and Pezeshki-Raad, 1997; Karbasioun and Mulder, 2004; Swanson, 2008; Tiraieyari and Uli, 2011; Traoré, 2008). On the technical side, agents need knowledge that ranges from effective and modern agronomic practices to the optimum use of pesticide and fertilizer to agricultural mechanization and the marketing of agricultural products (Pezeshki-Raad and Agahi, 2002).

In Mali, the technical knowledge required by farmers – and thus by extension agents – includes topics such as rationing animal feeds; collecting and conserving seeds; smoking and drying fish; processing onions and tomatoes; producing water receptacles; installing nurseries; enriching straw to improve animal nutrition; composting; treating seeds with fungicides; fencing in plots; installing wells; installing micro-basins; seeding demonstration plots; and combating animal diseases, among many others (Kassambara, 1 January 2012, personal communication). An assessment carried out in Nigeria showed that farmers' needs go beyond well production, requiring extension workers to acquire skills in post-harvest, processing, marketing, and value addition (Sanni, Daneji, and Bakori, 2009).

In addition to technical agricultural expertise, the competencies required to deliver extension services include program planning, implementation, facilitation, community engagement, and management. Establishing effective relationships with other organizations, knowledge of extension philosophies, instructional technologies, innovation and adoption processes, and adult education are also considered a general necessity for effectively delivering extension (Azadvary and Pezeshki-Raad, 1997; Karbasioun and Mulder, 2004). Gender-related competencies are also essential process skills in extension. Mastery of teaching methods, such as experiential learning (Kolb, 1984), media, organizing groups and field days, and using teaching strategies and methods appropriate for adult learners and youth are other important skills for extensionists.

In Ghana, Owens, Zinnah, Annor-Frempong, and Obeng (2001) found that extension process skills include "planning extension programs, working with farmer groups, communication, demonstrations, group discussions, audio visual, farm and home visits, teaching materials, evaluation/monitoring, report writing, developing linkages with marketing and gender-related projects, critical analysis, problem solving, management/administration, and advisory skills" (p. 3). In Mali, organizing regional and national progress workshops, communicating the results of national workshops, validating contact groups, and identifying basic problems are important (Kassambara, 1 January 2012, personal communication). For Kenyan extension workers, Mary Lopokoyoiti advocates that skills in proposal writing, economic empowerment, information and communication technology (ICT), sustainable agriculture, disaster management, HIV/AIDS, and gender issues are essential.

Service orientation, dependability, and personal skills and work habits were found to be important for extension agents in the United States (Cooper and Graham, 2001; Mincemoyer and Kelsey, 1999; Oklahoma Cooperative Extension Service [OCES], 2009). Extension agents may also need to be able to identify and direct problems to researchers, speed up the diffusion of new technology developed by research, and lobby policy-makers to develop sound agricultural policies.



Training for Public Sector Extension Personnel

Extension personnel acquire the skills, knowledge, and abilities they need through formal institutional training, professional development while employed in EAS, and informal education, such as participation in conferences, seminars, workshops, and short courses. Training can be broadly classified as comprising preservice training and in-service training (Chang, 1986).

Pre-Service Training

Pre-service training provides individuals with requisite knowledge and skills before their employment with extension organizations. In the developing world, many extension personnel receive pre-service education at the secondary level, receiving the certificates in agriculture and related fields needed to qualify for entry-level employment in extension. A typical curriculum might include training on crops, fisheries, animal husbandry, and other skills to prepare students for their future work (Halim and Ali, 1988). However, many countries now require that extension workers hold at least a college degree. Today, most extension personnel who possess only a secondary-level education are very senior and nearing the age of retirement (Annor-Frempong and bin Yahya, 2008). In the United States, by contrast, all extension agents are expected to have a Master's degree or to acquire one after working for a given period of time in the CES (Prawl, Medlin, and Gross, 1984).

Pre-service training at the tertiary or post-secondary level is offered by agricultural universities, colleges, polytechnics, and vocational training institutes. Tertiary agricultural education institutions offer diplomas and degree programs that often focus on broad agricultural issues and generally include only a handful of courses dedicated to extension, although students can study extension as a specialization. These programs vary considerably.

In Korea, the Central Agricultural Research and Development and Training Centre (CARTC) trains graduates from the agricultural universities on the principles and responsibilities of agricultural extension. The training takes one month and acts as a supplement to post-secondary degree curricula (Cho and Boland, 2004). Preservice training of extension professionals in the United States is conducted by specialized academic units, usually at land-grant universities (Hildreth and Armbruster, 1981; Rivera, 1998).

The United States Agency for International Development (USAID) introduced the Land Grant pre-service training model in Nigeria at independence in 1960 to address the insufficient number of faculty at agricultural teaching institutions. The Nigerian Land Grant institutions were expected to increase the number of undergraduates in pre-service training and to strengthen agricultural extension and research services (Eicher, 2006). The model was successful in building the capacities of university teachers in eastern Nigeria but not in establishing research and extension services at the University of Nigeria. This was mainly blamed on the university's administrative bottlenecks, bequeathed by its colonial heritage (Eicher, 2006). The model was more successfully applied at Ahmadu Bello University in northern Nigeria because both the research institute and the Ministry of Agriculture were integrated into the agricultural education system, allowing information to flow from farmers to researchers and technology to flow from researchers to farmers through extension agents (Eicher, 2006).



In-Service Training

In-service training is an on-the-job process of capacity building that offers extension personnel the opportunity to update their knowledge and skills. Halim and Ali (1988) identified five types of in-service training, which are described below.

Induction or orientation. This type of training helps new employees become acquainted with the organization in terms of its administration, personnel, and mode of working. Induction training often supplements preservice training for new personnel.

Foundation training. This type of training is used to strengthen the basic technical knowledge and extension process skills of newly recruited personnel. Extension personnel are introduced to communication, leadership skills, report writing, and various administrative and financial rules and regulations of the extension organization.

Maintenance or refresher training. This training is used to update the knowledge of extension personnel with new information and methods on an on-going basis throughout employment in EAS. The aim of refresher training is to keep employees at peak performance by ensuring they are up to date with necessary technical information, process skills, and administrative procedures. Moreover, it updates older materials and methods that extension personnel use to educate farmers.

On-the-job training. This training, which is often provided by a senior officer or extension subject matter specialist, is generally problem- or technology-oriented. It often combines formal and non-formal processes such as presentations and discussions. Such training enables more junior personnel to try out new skills and knowledge on the job. Knowledge and skill gaps experienced by extension agents with no pre-service training can sometimes be addressed through in-service training on the job (Davis, 2008). For example, during the colonial period, French agricultural service providers in Africa – who had little agricultural knowledge – were taught how to use animal ploughs, cultivate new plant species, and use new equipment on traditional farms (Traoré, 2008).

Career or development training. This kind of training is designed to upgrade the knowledge, skills, and abilities of extension agents and to prepare them to assume greater responsibilities in higher positions within EAS (Halim and Ali, 1988). Career training may take the form of study leave at academic institutions. Extension organizations may also offer the facilities and personnel to support career training. The Sasakawa Africa Fund for Extension Education initiative, which focuses on training mid-career extensionists, has had a tremendous impact. At least 100 graduates with Bachelor's degrees in agricultural extension emerge each year from the SAFE programs, significantly adding to the number of African extension personnel with higher education in a relevant field (Deola, 2010).

Conferences, Seminars, Workshops, and Short Courses

Conferences, seminars, workshops, and short courses bring together extension personnel to examine the technical and practical aspects of extension work, exchange information, and make new contributions that improve the field of agricultural extension. These events help raise awareness of issues affecting best practices, promote learning, facilitate discussion, and set challenges for the field. The sharing of knowledge, experiences, and expertise during workshops improves the performance of the participants, their colleagues, and their clients (Radhakrishna and Martin, 1999).



Designing and Delivering Training Programs for Extension Personnel

The effectiveness of extension training programs depends on their design and delivery strategies. Technologies, resources, and time available for training are important considerations for the design of training programs, as are objectives, outcomes, delivery structure, and evaluation methods. Key factors in design also include the age, experience and knowledge, learning styles, perceived needs, and expectations of learners.

The success of a training program depends on the selection and use of appropriate methods and practices. Campbell and Barker (1997, as cited in Swanson, Bentz, and Sofranko, 1997) deemed this the most important step in a training activity after identifying the subject matter. Some of the most frequently used methods include classroom lectures, seminars and workshops, group discussions, problem-solving scenarios, role-playing, demonstrations, simulations, field trips, debates, brainstorming activities, videoconferencing, and distance learning tools (Food and Agricultural Organization of the United Nations, 1990; Kelsey and Mincemoyer, 2001; Olaitan, 1984; Van den Ban and Hawkins, 1996). Using a variety of methods is particularly effective.

ICTs have transformed education in many countries. The Internet enables learners to access, disseminate, and use information as never before. Distance education approaches using ICTs to accommodate individual learning needs (Loxley and Julien, 2004) are widely used in extension (Kumar, Balaji, Dileepkumar, Prabhakar, and Yaduraju, 2011). However, despite some advances in the use of mobile telephones for agricultural development (Fielding and Ninsiima, 2012), ICTs are underutilized as a source of learning and human resource development for extension in many developing countries (Erbaugh, Donnermeyer, and Amujal, 2010). The main barriers are that extension workers either lack basic computer literacy or do not consider the use of ICTs to be important. In many cases, the hardware and infrastructure needed to support ICTs are also missing (Annor-Frempong, Kwarteng, Agunga, and Zinnah, 2006). Governments and international partners should consider implementing policies and allocating resources to eliminate the barriers to using ICT in education, training, and related aspects of HRD for extension personnel.

Training in the Private Sector

As described in the previous section, public sector universities and extension organizations tend to focus on the general training and/or upgrading of extension workers. The private sector, non-governmental organizations, producer and farmer organizations, and actors such as input suppliers and agricultural purchasers also conduct human resource development activities. Commonly, these activities take place through workshops or short courses and often involve specialized technical training relevant to their interests, such as on cash crops or the use of inputs (e.g. seed, chemicals, fertilizer) and machinery (Chapman and Tripp, 2003; World Bank, 2003). Non-commercial and commercial associations train extension personnel as well. For example, the World Bank supported the National Program of Extension and the National Program of Assistance to Farmers' Organizations in Mali to train extension personnel (see the case studies).

As EAS systems have become more pluralistic, the public-private partnerships that result from this increased pluralism have led extension agents to work more closely with both public and private extension providers. In the past, the World Bank provided funding for sub-Saharan African countries to train extension personnel, who in turn trained farmers under the Training and Visit (T&V) scheme. In this model, the World Bank provided direct funding to governments to train extension personnel, who then trained farmers (Benor and



Baxter, 1984). The T&V approach also created a platform for public and private extension personnel, subject matter specialists, researchers, and farmers to work together to improve their technical capacities.

The SAFE program is another example of public and private sector collaboration in the training of extension personnel. Currently, SAFE supports distance learning, work-study courses, weekend courses, and short courses that strengthen the competencies of extension personnel while circumventing constraints (e.g. time, resources) found in the public sector. Numerous bilateral and multilateral projects also support the participation of public extension agents in conferences, seminars, workshops, short courses, and higher education at home and abroad.

Evaluating the Impact of Training

Training programs are impactful when they affect the professional behaviors of extensionists (Kirkpatrick, 1996). Evaluating training programs helps to identify discrepancies between what a program has achieved and its objectives. Assessing these impacts involves looking at the long-term goals of learners; changes in knowledge, attitudes, skills, and aspirations; the reactions of extension agents to the training while considering the number and characteristics of learners; the training activities conducted; and the resources dedicated to the program (Bennett, 1975).

Evaluating extension personnel against training objectives can also motivate trainees to implement their learning, thereby improving job performance. Changes in job performance can be evaluated using indicators such as objectives and deadlines met, quality of work, knowledge and skills, cooperation on team activities, ability to work with minimum supervision, self-discipline, dedication, creativity, flexibility, communication skills, vision and strategy, motivation and initiative, future potential, confidence, commitment, and loyalty to the organization's goals (Buford and Benedeian, 1988). Evaluation can also identify employees with untapped potential that administrators can focus on developing further.

Challenges in the Professional Development of Extension Agents

Training of extension agents comes with many challenges. For example, inappropriate training strategies can impede the professional development of extension professionals. Ferrell (2006) identified the need for a training approach based on higher-order thinking processes that require problem-solving, peer observation, coaching, and targeted and constructive feedback. Inadequate facilities, a focus on theories rather than practicalities, and poor instruction were seen as impediments to the training of extension officers in Iran (Chizari, Karbasioun, and Lindner, 1998). Lack of capacity and the resources to fully exploit ICTs, which has been discussed above, is another major constraint in developing countries.

The curriculum should be a dynamic instrument that reflects the training objectives and provides achievable educational experiences (Chambers, 1977; Hoyle, English, and Steffy, 1994). It should be easily adapted to changes in program objectives or in sustainable agricultural production practices and schemes (Swanson, 2008; Taylor, 1998). However, the curricula used today in HRD for extension is commonly outdated and therefore often ineffective. For example, the curriculum used during in-service training at Alemaya University in Ethiopia did not provide participants with the current technical information and process skills they needed to function well in their positions (Sasakawa Africa Fund for Extension Education, 2005). In addition, the structure and development of curricula in many extension training institutions is inflexible (Taylor, 1998), despite demands for nuanced and responsive curricula that can be adapted to changing needs in agriculture. This is primarily an issue for pre-service training, but it can also affect the in-service training provided to



existing extension professionals. Addressing these constraints remains a major challenge for human resource development in extension.

Part II

Examples of Human Resource Development in Extension

Innovative tools, field methods, and approaches are used to train extension workers and farmers. This section presents fourteen case studies in extension training and delivery and their lessons for addressing HRD needs in West Africa.

Sasakawa Africa Fund for Extension Education (SAFE), by Deola Naibakelao

The SAFE initiative was established to address the challenges of insufficient or unavailable teaching and learning materials, inappropriate curricula, low participation by women in extension, and the lack of practical training available to extension professionals. The initiative works with universities and colleges in sub-Saharan Africa to create innovative in-service training programs for mid-career public sector extension workers and to support links between academic programs and the realities of farmers and end users in agriculture.

The SAFE approach to extension training starts with a stakeholder meeting to discuss the needs and challenges of learners. Curriculum development is careful to balance structure, theory, and practice. Strong links with both educational institutions and farming communities are key to the approach (Zinnah, Steel, and Mattocks, 1998). Memoranda of Understanding (MOU) commit participating universities and colleges to use the SAFE model for training the mid-career extension personnel of Ministries of Food and Agriculture and related EAS providers.

SAFE provides hands-on, problem-focused courses, and field-based Supervised Enterprise Projects (SEPs), which allow learners to apply the principles learned in classrooms in the local communities to address the needs of farmers. In the process, the students improve their knowledge and skills while the farmers benefit from improved extension services.

Experience has shown that time constraints often prevent mid-career extension personnel – particularly females – from participating in formal in-service training in colleges and universities (Deola, 2010). SAFE is therefore supporting new modes of training delivery, such as distance learning, work-study courses, weekend courses, and short courses to augment traditional training conducted by universities and colleges.

SAFE has made a major contribution to extension education and service delivery in the region. The initiative influenced the restructuring of agricultural extension curricula in 14 higher-education institutions and also prompted several partner universities to adopt practices that support lifelong learning. SAFE has produced about 2,700 agricultural extension graduates at various levels, about 22% of whom have been women. In addition to supporting in-service training, SAFE provides scholarships for Master's and Ph.D. students, either locally or abroad. The graduates are well-trained change managers and leaders who are analytical and able to address existing and emerging challenges in the agricultural and rural development sectors of Africa. Many mid-career extensionists have been able to upgrade their professional competence through the initiative. The SAFE initiative demonstrates that resources provided by the private sector to address challenges faced



by public institutions can support the development of a flexible and demand-driven training program that benefits both extension personnel and farmers.

Supervised Enterprise Projects: A Tool for In-Service Training of Mid-Career Extension Professionals, by Festus Annor-Frempong

Supervised Enterprise Projects (SEPs) assist SAFE partner training institutions to develop human resources in agriculture. SEPs projects are implemented by mid-career extension personnel of Ministries of Agriculture and related organizations as part of their in-service training in SAFE partner universities and colleges. The projects are practical agricultural activities formulated by mid-career students with active participation of the beneficiaries under the guidance of lecturers and employers. The aim of the SEPs is to transform classroom learning into field experience. In turn, the knowledge and skills acquired in the field improves the professional competence of SAFE participants.

Students develop proposals for SEPs based on needs assessments, environmental constraints, and available resources. Successful proposals are implemented in partnership with beneficiaries under the supervision of employers and university lecturers. The students later present their experiences at a forum that highlights the professional competencies acquired in the implementation of the SEPs.

A major challenge in the implementation of SEPs is the cost, both to students and to universities. Financial support is being sought from students, NGOs, banks, municipal/district assemblies, beneficiary communities, and Ministries of Agriculture to implement the projects. Sustainability is another challenge. The projects are chosen based on the assumption that students will continue the work after graduating from the program, which unfortunately is not always the case. Despite the challenges, experience has shown that the SEPs can be a useful tool for both community and human resource development.

Volunteer In-Service Training Linked to Community Capacity Development: A Personal Story of a Peace Corps Volunteer, by William Hallgren

The Peace Corps places volunteers with college degrees in sectors that best correspond to their education, experience, and skills. Volunteers work to support and build the capacity of community members in developing countries. The program is administered by the US government and includes a measure of preservice training, since host countries later contribute to the training and community integration of Peace Corps volunteers. Volunteers study agriculture, health, community and economic development, the history and culture of the host country, and also learn the local language. In the process, volunteers acquire the knowledge, skills, and attitudes needed to work on development projects in the future.

William Hallgren, a Peace Corps volunteer, helped to develop a small income-generating project with villagers in Mali. Hallgren started by conducting a feasibility study with the Participatory Analysis for Community Action (PACA) method used frequently by Peace Corps to determine community needs (Peace Corps, 2007). Thereafter, he implemented the project on a small-scale basis. Hallgren concluded that his project enabled him to train men, women, and youth to improve their businesses and livelihoods. Success was partly due to the choice of an efficient local counterpart and partly to the construction of a road that created access to surrounding markets.

Thanks to good communication, cooperation, and planning that involved all actors, the villagers felt ownership of the project, an important factor in its success. They were able to learn from their mistakes and



become more creative. The project empowered the villagers to implement small-scale development activities on their own. Hallgren gained a deep understanding of the villagers' problems, aspirations, culture, indigenous knowledge and practices, and personal stories.

Regenerated Freirean Literacy through the Empowering Community Technique (REFLECT), by Ouédraogo Germaine Ouédraogo

REFLECT is a non-formal educational system that uses multiple strategies to improve learning and eliminate illiteracy. Although REFLECT works with the state and civil society, it is transnational and remains one of the rare non-formal educational approaches that connects several African countries. In Burkina Faso, it is one of the most important non-formal educational alternatives.

REFLECT uses many strategies to achieve its goals in Burkina Faso. The make-do strategy is used to determine community concerns and the roles and competencies of stakeholders. The outcome of this strategy informs the development of participatory training in the communities. REFLECT uses an alphabetization strategy that puts the learner at the center of the training process, which is conducted in the local language. Facilitators use a discussion tree or preferential classification procedure and diagrams to plan how to address the learning needs of students. Observation, checklists, and interview guides are used as feedback tools during exchange meetings. These tools and activities create harmony among members of a community and preserve the interests and rights of individual community members.

Farmer Field Fora of the Projet Niébé pour l'Afrique, by Brice Jean Gbaguidi and Ousmane Coulibaly

Farmer Field Schools (FFS) are a well-known approach used in training on agriculture, integrated pest management (IPM), and other agro-environmental practices. Farmer Field Fora (FFF), which are less known, draw strongly from experiences gained from the implementation of FFS. The FFF offer community-based, non-formal education to farmers. They are a participatory and cost-effective tool that uses farmers as facilitators to share their knowledge and empower others. The FFF build the capacities of farmers to develop their own technologies, manage farming practices, and solve problems in a specific agro-ecological zone. The fora also encourage the exchange of experiences among and between farmers, scientists, and extension agents. FFF derive experiences from the champ de diversité to refine and reorient research and the in situ conservation of genetic resources (FAO, 2005).

The International Institute of Tropical Agriculture (IITA) used FFF in Projet Niébé pour l'Afrique (PRONAF) projects funded by the International Fund for Agricultural Development (IFAD) to test and diffuse technologies to cowpea farmers. The projects reached over 10,000 farmers in Benin, Burkina Faso, Cameroon, Ghana, Mali, Niger, Northern Nigeria, Senegal, and Togo between 1999 and 2011. FFF have been used to train and disseminate many other technologies to farmers, including storage techniques such as solar drying, double and triple bagging, and hermetic drums. In addition, FFF have been used to promote local knowledge and disseminate sustainable integrated cowpea and soybean production technologies. Best cultural practices, such as using botanical extracts from neem and papaya as pesticides, the promotion of agro-ecosystem analysis as a decision-making tool, and seed germination testing have also been delivered through FFF.

An assessment of FFF in Benin shows that the approach can be successfully applied in different areas of technology testing and dissemination. The practical and task-based nature of the training received through



FFF ensured that the knowledge and skills gained were shared easily with family and friends. However, the need exists to invest more in training and provide beneficiaries with relevant information and data on agricultural practices as the FFF networks grow and take on more complex initiatives. Meeting this need would ensure improved communication to bridge the information gap, enhance the diversification of business opportunities, and increase farmers' operational efficiencies.

FFF/PRONAF demonstrates that collaboration between farmers is essential for sharing useful technologies on a wide scale. Farmers were trained in technology development and managerial practices, which enabled them to solve specific problems relating to agriculture and the environment and, in turn, to share new information and innovations with other farmers.

Maison de la Famille Rurale (MFR) in Burkina Faso, by Estelle Weta Koita

Maison de la Famille Rurale (MFR) translates from French to Rural Family House. It is a non-profit organization that promotes the development of human resources and the environment for good health and living. MFR requires learners to stay at its training center during training to acquire the requisite knowledge and skills. The approach offers an inexpensive but intensive and effective training that ensures that learners lead the development process and become active participants in their own development.

MFR training centers offer long-term (two year) agricultural training for young people between 15 and 25 years of age and short-term (3 to 6 months) courses on enterprises such as poultry, livestock fattening, and gardening. Participants spend about 25% of their training in MFR classrooms and the rest in practical training on their own farms. Major challenges for the MFR approach include the lack of supervisory staff at its training centers, inadequate technical follow-up visits to farmers, and limited access to technological innovations.

MFR approach's has created employment opportunities for young people and reduced their migration to urban centers; promoted women's development; improved living conditions in rural areas; and contributed to agricultural productivity. The lesson from MFR is that it is critically important to introduce an element of practical on-the-job training. Theoretical training needs to be connected to work in the field. This approach can best improve the livelihoods and environments of learners and their communities.

Sasakawa Global 2000 Niètakènès in Mali, by Amadou Diané, Justine Wangila, Abou Berthé, and Juliana Rwelamira

Niètakènès are village development centers established in a joint initiative between village cooperatives and Sasakawa Global 2000. In 2007, ten Niètakènès were set up in Klela, Lobougoula, Loutana, Niamala, and Ouré (in the Sikasso region), and Kodogola, N'Dinzana, Niatia, Sorobougou, and Tingoni (in the Segou region).

The main objectives are to: Provide training opportunities; Provide meeting venues and accommodation facilities at the village level to learners; Support the acquisition of inputs; Improve the quality of production and the productivity of farmers; Build the capacities of participants in management, entrepreneurship, and leadership; Promote the development of income-generating activities.

In developing Niètakènès, Sasakawa Global 2000 first conducts a sensitization meeting to select the target village. Then, working with the village cooperative, it organizes demonstrations of various technologies. A



management committee oversees the day-to-day activities of the center. Committee members receive periodic training on reducing post-harvest losses, business management, and advocacy skills, which they transfer to other members of the cooperative through training exercises.

The Niètakènè initiative has had a major impact on agricultural production and practices in the villages. Assessment of the initiative revealed extensive knowledge sharing and the adoption of many useful farming technologies. The cooperative members improved their negotiation skills and acquired post-harvest equipment, infrastructure, and management skills. Knowledge sharing has increased farmers' access to financial resources and also improved the storage capacity of crops. The quality of grains has improved, thereby attracting more potential buyers. The training provided by Niètakènès has improved marketing capacities and the incomes of farmers and has facilitated access to credit from financial institutions. Overall, the Niètakènè initiative has shown that the empowerment of farmer cooperatives by development partners, coupled with training for farmers, can improve storage, marketing, and negotiation skills, contributing to rural economic growth.

Value Chain Approach-Based Platforms: A Case Study of Multi-Stakeholder Platforms in Africa, by Djalalou-Dine A. Arinloye, Ousmane Coulibaly, and Sidi Sayang

The value chain approach seeks to strengthen interactions among various actors and enterprises in order to deliver products and services that respond to consumers' demands. Some value chains use the Multi-Stakeholder Platform (MSP) as a tool to improve such interactions. The MSP enables stakeholders within the chain to solve problems together as a means of ensuring collective learning, improving decision-making, and developing innovations (Mwesige, 2010).

In many countries, MSPs facilitate access to product markets, develop fair prices, promote access to various components of the value chain, improve governance, lower transaction costs, enhance gender equity, increase public-private partnerships, and enhance the sustainability of value chains. Furthermore, MSPs stimulate actors to have a holistic view of chains rather than to focus on a series of isolated entry points of interest only to the individuals involved. This idea of taking a broader view is important because different countries and regions understand concepts and market entry points differently.

The MSPs have made significant contributions to the operations and practices of value chain actors, in particular by improving communications and information sharing among stakeholders and even benefiting poor people that might not be active in the chain. Platforms have created a strong collaborative environment, which has increased trust among stakeholders. Farmers in the chain are better able to meet market demands as a result of the new technologies available through the MSPs. The success and sustainability of many platforms depend on good governance, capacity building, effective links between actors, and low transaction costs. The involvement of the public sector has enabled safe and productive institutional environments for the activities of the MSPs.

Performance indicators such as effectiveness, efficiency, gender equity, public-private partnerships, and sustainability also show the successes of the MSPs. The experience of the platforms indicates that when farmers and other stakeholders are engaged in dialogue and collective learning, their decision-making and ability to innovate are greatly improved. The successful development of communication and information sharing also increases trust among stakeholders and creates strong collaborative environments for learning and the adoption of innovations.



Songhaï Center in Benin, by Simplice Davo Vodouhe

The Songhaï Center was established as an NGO in 1990 by authorization of the national government of Benin (Vodouhe and Zoundji, 2013). Its mission is to promote agribusiness, green cities, and youth development through functional training in agricultural entrepreneurship. Core activities include training, research, and the development of a society based on solidarity. The ultimate goal is to stimulate the growth of an African society that considers social and economic factors in the advancement of a sustainable development agenda.

Young people are at the heart of the Songhaï Center, which trains young farmers to recognize the connections between the environment, agriculture, technology, services, and industry. The Songhaï model also links technology and agriculture to the service and industry sectors and addresses challenges posed to the environment. In addition, the model builds on the existing capacity of people, uses local resources, and combines traditional and modern agricultural practices to diversify the economy.

Over the past 20 years, the Songhaï Center has helped to develop green rural cities in each of Benin's agroecological zones. It has shared knowledge and imparted skills through agricultural entrepreneurship, agribusiness trainings, and research to many youth in Benin and other West African countries. The establishment of a guest center is helping to promote agro-tourism, by which visitors learn about the use of local resources and traditional and modern agricultural practices.

Experiences from the Songhaï Center show that young people can be persuaded to change negative attitudes towards agriculture when they feel safe, cared for, and valued. In addition, training that is holistic and links agriculture to other sectors of the economy can better address challenges posed to the environment.

Songhaï Center in Liberia, by Christopher K. Fayia

The Songhaï Center in Liberia was established by the Government of Liberia and is actively supported by local public and private partners and some international organizations. The Center is modelled after the Songhaï Center in Benin and aims to create employment opportunities for young people and reduce the urban migration of rural youth. It trains young men and women to manage commercially viable and environmentally sustainable small- to medium-scale agro-enterprises. To date, the Songhaï Center has trained 150 farmers throughout Liberia on livestock, aquaculture, crop production, food processing and cottage industries, industrial machinery and metalwork, agribusiness and services, as well as leadership and community development. The training lasts for 15 months.

The Songhaï Center in Liberia faces a range of challenges, such as limited resources, lack of water for drinking and irrigation, the absence of microcredit institutions to support learners' proposed agribusiness activities, inadequate accommodation facilities, and lack of electricity and fencing. These challenges notwithstanding, the Center is contributing to the Liberian economy. The beneficiaries, who are mainly women and young people, are engaged in economically viable ventures thereby reducing rural-urban migration. Farmers graduating from the program are producing food and creating employment opportunities that support communities throughout Liberia. The Songhaï Center in Liberia provides a training model that can be replicated anywhere because of the enormous benefits stakeholders gain from its implementation.



Agricultural Extension in Mali: Experience of the Programme National de Vulgarisation Agricole (PNVA), by Bara Kassambara

The Programme National de Vulgarisation Agricole (PNVA) (Agricultural Extension in Mali) was implemented between 1992 and 2000 with support from the World Bank. The objective was to address the weakness of extension services in the country. The PNVA operates at the national, regional, local, and village levels. Training and knowledge transfer under the PNVA are planned, structured, organized, and implemented based on the Training and Visit model of extension delivery. Training schemes include workshops, short courses, and experience exchange visits. Situational analyses are conducted with beneficiaries to identify, select, and prioritize training needs. Such analyses consider factors such as objectives, target audiences, teaching tools, methods, duration, location, funding, monitoring, and evaluation.

Challenges for the PNVA included a lack of well-qualified extension workers and subject matter specialists for livestock, forestry, and farmer organization development. Farmers also lack the funds to implement most of the lessons learned from trainings. Despite these challenges, PNVA has made an important contribution to improving the quality of extension services in Mali. The experience demonstrates the value of integrating development activities (e.g. agriculture and livestock production, environmental conservation) and capacity building (training sessions) for all stakeholders. The diverse, efficient, and continuous training provided by PNVA for its extension agents ensures that the ever-evolving needs of producers could be met.

Forging close links between farmers and researchers in order to respond to the concerns of farmers was also important. The development of joint activities (both research and training) should include a clear indication of the roles and responsibilities of all actors. Involving beneficiaries in program activities and the annual development plan can ensure greater ownership and contributions by beneficiary communities to the program.

Programme d'Appui aux Organisations Paysannes in Mali (PASAOP), by Adama Sidibé

The Programme d'Appui aux Organisations Paysannes (Assistance Program to Farmer-Based Organizations) in Mali (PASAOP) builds on the national extension program of Mali with a main focus of reducing poverty in rural areas. PASAOP seeks to increase the productivity of agricultural and non-agricultural activities, strengthen extension institutions, and involve private service providers and farmer organizations in extension delivery.

Major challenges associated with PASAOP include mobilizing counterpart funding; the low literacy level of beneficiaries; the inability of farmers to share costs of services; and inconsistencies in the implementation of rules of engagement by the Ministry of Rural Development (MRD) service staff. Properly training program managers is key to the success of these projects, as is a clear understanding of project procedures and timely contributions by project partners.

Volunteer Technical Assistance Program: Farmer to Farmer, by Bara Kassambara and Bourama Sissoko

The volunteer technical assistance program – also known as Farmer to Farmer (FtF) – is an agricultural extension technology transfer program that facilitates an exchange of experiences and knowledge between US experts and producers/entrepreneurs in developing countries. Farmer to Farmer is funded by USAID to boost economic growth and address inadequate human resources in agriculture. Development agencies such



as ACDI/VOCA and Winrock International are supporting and promoting the FtF program concept around the world. US experts are volunteers with proven academic and professional backgrounds in targeted agricultural value chains. The volunteers include experienced farmers, specialists in business and cooperative development, university professors, and scholars.

The volunteer assignment in Mali usually lasts two to three weeks and is facilitated by Winrock International. A team identifies the training needs of producers and prepares documents to help potential volunteers understand farmers' problems and capacities and to determine the skills required to solve them. Volunteers are introduced to their on-site partners and discuss training methodologies. FtF volunteers then engage in classroom sessions, field visits, and other practical training methods. After the training takes place, the volunteers present recommendations on how to solve identified problems. Participatory monitoring and evaluation take place six months to a year after the assignment to assess the extent to which the recommendations of the volunteers have been adopted and the need for future technical support.

The greatest successes occur when the FtF program identifies an appropriate host and carefully diagnoses proposed technical assistance projects to ensure their success. Moreover, appropriate solutions are more likely to be found if the volunteers are properly matched with the identified projects. The major challenge for the volunteer assistance program is the cost sharing required of participants. Host organizations are expected to provide training facilities and to pay fees for educational materials. In addition, the technical field staff of host organizations must be available to ensure the sustainability of projects that arise from volunteer recommendations. Notwithstanding the challenges, the programs have made meaningful impacts in terms of knowledge acquisition, the establishment of projects in developing countries, and rekindling the spirit of volunteerism among US professionals.

Community Learning and Information Centers (CLICs) in Mali, by Assa Kanté, Florence Dunkel, Ashley Williams, Sam Magro, Haoua Traoré, and Abdoulaye Camara

The global water crisis affects billions of people. Without access to clean water, individuals often die from water-related diseases. The crisis is also undermining economic growth in developing countries, including Mali. The situation is aggravated by the difficulty of obtaining information that might help to address problems in rural communities, even though global partnership strategies have been developed to encourage the use of information and communication technologies to address rural problems.

The Community Learning and Information Centers (CLICs) were established in Mali as training and information centers for farmers. A typical CLIC has a computer system and CDs with information on agronomic practices, agricultural extension, animal health, and livestock breeding for sharing technical information with farmers. The CLICs also provide information on new technologies to address problems related to water availability and quality. Whether and how such information is used depends largely on the audience's perception and socio-demographic characteristics (Cartmell, Orr, and Keleman, 2006; Bardon, Hazel, and Miller, 2007).

In the Bougoula community in Mali, CLICs have served as an important information source for the rural community. However, villagers rarely used the resources offered by the CLICs, and instead viewed them negatively. The villagers at Bougoula, for example, preferred to receive information on new technologies through interpersonal communication with village leaders, extension agents, and other farmers. Mass media communication channels were less favored.



Gender differences also exist with regard to the sorts of information needed by the villagers. While both male and female villagers were concerned about combating malaria, men wanted information about dams, wells, and bridges whereas females were interested in issues affecting their traditional and daily duties, such as water pumps, access to water, and pesticide pollution.

These experiences revealed that Malians in rural communities preferred information received via interpersonal channels to information from mass media via the CLICs. It is important to understand that knowledge sharing must accommodate the preferences of its audiences if it is to be successful. Gender concerns should be taken into account in addressing water-related issues and how they are communicated in rural communities if clients are to understand and appreciate the need for attitude or behavioral change. It was also recognized that empowering opinion leaders to transmit information to villagers in a context where face-to-face communication was preferred could be effective because of the respect they commanded.

A Comparative Analysis of the Case Studies

The human resource development approaches described in the case studies have brought economic stability and growth to farming communities in West Africa. A comparative analysis of the case studies representing Benin, Burkina Faso, Ghana, Liberia, and Mali provides insights into common features as well as differences in the practices and tools that extension workers use in the field.

The case studies have several elements in common. First, they prioritize the exchange of knowledge and information among people, communities, and organizations (Gwin, 2003; Norris, Mason, Robson, Lefrere, and Collier, 2003; Yuqing, 2010). Second, they involve the transfer of skills, competencies, or experiences to improve the efficiency and effectiveness of learners (Irani, Place, and Mott, 2003; Masood, 2012). Third, several case studies focused on changing the attitudes and behaviors of the learners (Jayaratne, Gaskin, Lee, Reeves, and Hawkins, 2007; Uma, 2010). Fourth, some case studies emphasized the value of linking farmers and advisory service providers, thus establishing and/or improving client-provider relationships (Bagdoniene and Jakstaite, 2009; Madukwe, 2006). Finally, the success of rural and community development initiatives is described in some of the studies (Carson and Koster, 2012; Kock and Turnbull, 2011; Nguyen, Dooley, Shinn, and Robinson 2011).

Knowledge Sharing and the Transfer of Skills

Knowledge is seen as a key to achieving organizational or community goals (Yuqing, 2010). Knowledge sharing that involves the transfer of skills to farmers and across farming communities can lead to effective, efficient, and less expensive farming operations that contribute to food self-sufficiency and assist in alleviating poverty in farming communities in West Africa.

Numerous case studies described knowledge sharing, transfer of skills, and collective learning among farmers and other beneficiaries. Farmers were trained in technology development and managerial practices, enabling them to solve problems more effectively. A couple of programs shared information about market-oriented agriculture with farmers to improve their marketing and negotiation skills. Through dialogue and collective learning, farmers were able to improve their capacity to make decisions, innovate, and collaborate with each other.



The Peace Corps case study in Mali showed the cyclic element of knowledge sharing. Volunteers learned from and about the local community to enable them to share their own expertise and solve problems together. In other case studies, trainings were offered in agricultural entrepreneurship and agribusiness, engaging young people in particular to increase their resourcefulness and ingenuity in the use of local resources. Both men and women acquired skills that enabled them to manage small- and medium-scale agriculture projects and agro-enterprises. Still other programs strengthened the capacity of advisory service providers through experiential learning.

Institutions of higher education were also featured in some case studies as providers of professional capacity development, with evidence of subsequent improvements in the livelihoods of beneficiaries. Many midcareer extension professionals received quality education and upgraded their professional capacities through the SAFE initiative. The incomplete success of the CLIC program revealed important truths about addressing the real rather than perceived needs of farmers and in using information channels that they value (Rogers, 2003).

Changing Attitudes and Behaviors

Many extension training programs are planned without considering the attitudes of the participants (Jayaratne, Gaskin, Lee, Reeves, Hawkins, 2007), yet these attitudes strongly influence the motivation of learners to change their behaviors (Ajzen, 1991). Malcolm Knowles' (1984) and ragogy theory underscores the relevance of adult learners' self-concept, experience, readiness, orientation, and motivation to learn, which influence their attitudes and behaviors.

Greater knowledge alone may not be sufficient to persuade farmers to adopt the new ideas and technologies provided by extension agents. They must appreciate the need to change their attitudes if they are to adjust to the changing circumstances. Rogers' (2003) diffusion of innovations theory posits that potential adopters must value the relative advantage of an innovation over their existing ideas or practices in order to adopt it. For their part, the extension agents themselves must be convinced of the value of the new idea or practice if they are to convince farmers to change their behaviors.

A number of case studies further considered the importance of attitudinal change. For example, the MSPs sought to convince actors along the value chain to view the chain from a holistic perspective, giving due attention to governance, transaction costs, gender equity, public-private partnerships, and sustainability. The CLICs, SAFE, SEPs, and Songhaï Centers also focused on attitudinal change. SAFE's programs, for example, urged flexibility in the design of university training programs, transforming universities and colleges significantly through the addition of practical field orientation and demand-driven initiatives. The CLICs case study found that men and women have different information priorities and noted that such differences must be considered. Also, the preferred information channel of the target audiences should be used if the goal is behavioral change (Rogers, 2003).

Linking Clients and Advisory Service Providers

Building active and successful relationships between clients and advisory service providers is vital for the successful implementation of extension programs. Even good extension agents need healthy relationships with their clients. Ideally, these relationships are designed, supported, and managed jointly.



FFF, REFLECT, SAFE, and other programs acknowledged the importance of the links between farmers and extension agents for enabling community-driven participatory approaches to training and development (Navarro, 2008). As a result, universities and colleges have designed extension degree programs that explicitly and formally foster links with communities. In Ghana, farmers, the Ministry of Food and Agriculture, NGOs, extension officials, and universities work together to design extension programs, making it more likely that they will succeed.

Rural and Community Development

Improving the welfare and livelihoods of people living in rural areas involves a range of activities primarily focusing on community development. Social issues are usually a priority for community development. Other rural development activities focus on improving roads, electrification, and technology. The extension programs in the case studies provided training opportunities and constructed facilities for education, meetings, and accommodation. In addition, extension advisers sought to improve agricultural productivity, build capacity, and promote income-generating activities in host communities.

Nearly all of the case studies were concerned with efforts to improve the quality of life for people in rural communities. Some of the programs placed a strong emphasis on collaborative and participatory activities. For example, one of SAFE's key objectives is to assist institutions of higher education in Africa to collaborate with others in providing education opportunities that support agricultural and rural development.

Finally, even though the case studies indicate a common interest in improving the livelihoods of farmers, the programs have varied areas of emphasis. For example, the MSP seeks to change unproductive market dynamics by taking a broader view of the value chain than captured by the self-interest of individual positions and priorities. The Songhaï Centers promote agribusiness, green cities, and youth development. The FFF empower farmers and uses them as facilitators who share their knowledge with others. The Niètakènès helps farmers to improve their agricultural production practices by demonstrating and providing technologies and equipment that improve grain yields and post-harvest management.

Overall, extension professionals must focus on developing capacities that support field practice. Extension advisory services – whether public or private – need to understand what these capacities are so that they can shape the training for extension advisers accordingly. SAFE's SEP approach, which emphasizes experiential learning, could be leveraged by EAS in the following ways:

SAFE students could be invited to speak at extension training courses, thereby sharing updated content knowledge and expertise;

Extension learners could participate in planning, implementing, and evaluating SEPs under the supervision and guidance of SAFE students, although this might require amending the SAFE curriculum to include pedagogy and youth development.

Such an approach could influence more young people to pursue a career in agricultural and natural resources, including the array of opportunities in EAS. The approach would also create a direct link between the tertiary institutions that host the SAFE programs and are "feeder schools" for students choosing the agricultural sciences as a career. This effort could also increase the intake of future extension personnel, especially females. The AFIMA initiative in Mali, which seeks to increase the number of women in the sciences, could



provide guidance on how to improve female participation in SEP-related activities. The multiplier effects associated with such approaches could be very substantial.

Part III

Summary and Conclusions

The knowledge and skills needed by extension personnel may vary widely from place to place. While basic tools such as technical knowledge and communications strategies will continue to be important topics for human resource development in EAS, HRD programs must be flexible enough to adapt to changing circumstances. Opportunities and options for human resource development in EAS are plentiful. Pre- and inservice training are available from a variety of sources, including academic institutions, on-the-job training, conferences, seminars, workshops, and informal short courses. All have relative strengths and weaknesses and should be considered carefully when examining means of developing capacity in extension. The case studies discussed in this document have highlighted several effective and successful approaches to human resource development in extension. Consideration of the lessons learned from these experiences will provide guidance for decision makers who are charged with setting priorities and allocating resources for the professional development of extension personnel.

Recommendations

The following actions are recommended to guide future practice in human resource development for extension and advisory services. The recommendations are organized into three categories: (1) general recommendations for HRD in extension and advisory services, (2) recommendations arising from the case studies, and (3) recommendations to the Modernizing Extension and Advisory Services project.

General Recommendations for Human Resource Development in Extension and Advisory Services

Human resource development should address the match between an organization's needs and the human resources, knowledge, and skills available.

Learning activities should be practical, experiential, and most importantly relevant to the work and professional challenges of experienced extension personnel.

Training institutions should focus on strengthening the various competencies that extensionists need to perform their duties effectively. In addition to technical knowledge, extension personnel, volunteers, and paraprofessionals need a range of process skills, including the ability to innovate and communicate clearly with all stakeholders; form, manage, and promote the sustainability of community and farmers' groups; provide leadership and supervision; network with extension providers and market actors; and conduct monitoring and evaluation of extension programs.

Educational institutions should address issues related to shifting delivery models for extension services, including seeking means to enhance the performance of extension advisers in such circumstances.

Educational and training entities should synchronize their efforts to deliver formal and non-formal training for EAS through joint strategic planning for the short and long term.



Instructors and trainers of extension personnel should use a wide variety of teaching methods to increase the likelihood of successful learning and cater to the needs of diverse learners.

Recommendations Arising from the Case Studies

Training should include foreign language in the curricula of extension education programs to promote multilingual and cross-border information exchange.

Extension training programs should provide access to audio-visual equipment and other practical teaching aids.

Extension and advisory systems should encourage efforts to increase the number of women in extension education degree programs.

The sustainability of projects, including the SAFE Supervised Enterprise Projects, should be emphasized by mobilizing financial support and community ownership of the projects after the graduation of the students responsible for them.

Targeted communication, cooperation, and planning practices should be employed to increase the likelihood of successful and scalable rural projects such as CLICs.

Complementary measures should be sought to increase clients' access to markets for the sale of outputs associated with entrepreneurial projects in Value Chain Platforms.

Volunteers who assist communities in development should be encouraged to actively learn local problems, cultures, knowledge, and experience to reinforce their collaboration with local partners.

The use of interactive learning strategies in local languages should be promoted, as practiced in the REFLECT program.

EAS should make better use of the indigenous knowledge, skills, traditions, and cultures of host communities. This may require specialized training to help extension agents recognize, appreciate, and use such knowledge in projects and programs.

The FFF approach should be used more widely in extension programs.

Effective communication in FFF's growing networks should be ensured to bridge the information gap, enhance the diversification of business opportunities, and increase operational efficiencies.

The MFR's work-study model, which places learners at the center of their own development, should be supported and replicated to reduce the exodus of rural youth to urban centers, promote women's development, and improve the living conditions in rural areas in other developing countries.

Recommendations to the Modernizing Extension and Advisory Services Project

The capacity of EAS personnel to employ ICTs in their work should be improved.

The development of extension providers' capacity to increase the resiliency of rural communities facing the effects of climate change and help their clients deal with growing threats to biodiversity should be supported.



The capacity of extension providers to empower farming communities to acquire and use environmentally sustainable practices in pursuit of economically viable livelihoods should be improved.

EAS personnel should be better prepared to assess the uncertainties associated with selecting and implementing new entrepreneurial activities and to recommend strategies for mitigating clients' risks.



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