PART 1

Global Assessment of Extension Characteristics

Part 1 focuses on several features of extension services that are referred to as “characteristics” in the best-fit framework ([Chapter 1](#)): governance structures and legal status of providers, capacity in terms of staffing, management, and extension methods and clientele. [Chapter 2](#) presents a global landscape of extension services, followed by a comparison of the best-fit characteristics at country and regional levels in [Chapter 3](#).

GLOBAL TRENDS IN EXTENSION PROVISION, STAFFING, AND METHODS

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2.1 Introduction

This chapter is a landscape view of extension globally. It compares the recent status to the situation several decades ago, when earlier global assessments were conducted. In particular, we look at best-fit characteristics, including legal status and governance of extension providers, staffing, and advisory methods and clientele. We also look at trends and recent developments using the global assessments and recent literature. There have been several major efforts to collect worldwide extension data. Surveys were conducted in 1975 and 1980 by the University of Illinois (Swanson and Rassi 1981). Follow-up work was conducted by the Food and Agriculture Organization (FAO) in 1988–1989, and by the International Food Policy Research Institute (IFPRI) and Global Forum for Rural Advisory Services (GFRAS) in 2009–2012. However, there were never any narrative reports produced or much analysis conducted of this data collection effort. Swanson and Rassi (1981) and FAO (1991) were simply directories. GFRAS (2012) is a database; the only report produced was Swanson and Davis (2014), which was a 14-page document giving some key details on the status of extension by region and with a table providing numbers of agents.

The University of Illinois completed an *International Directory of National Extension Systems* based on a 1980 survey, which was an update of an earlier 1975 survey (Swanson and Rassi 1981). The survey (in English, French, and Spanish) compiled information on extension staff numbers and qualifications, objectives, mechanisms for public participation in governance, and client groups served. The survey covered only public extension organizations whose primary objective was extension; organizations with extension as a secondary objective were not included. The 105 responding countries reported 290,246 extension staff, of which 241,962 were field-level extensionists, split between “extension agents” and “extension assistants” (see [Table 2.1](#) and [2A.1](#) for a summary of the studies and total numbers of staff, respectively).

FAO conducted a worldwide study of extension organizations in preparation for the Global Consultation on Agricultural Extension held in December 1989. The global consultation was conducted to better understand extension systems of FAO member countries, with the view that extension was “a major knowledge and technology transfer system for farmers” that improves productivity and living standards of farm people. The data were collected in November 1988 through December 1989. This study is referred to as the FAO study or the 1991 study (for the publication date). The resulting *International Directory of Agriculture Extension Organizations* was published in 1991 by FAO as a 496-page book. The purpose of the directory was to share information and promote technical cooperation in developing countries. It was also meant as a benchmark to measure future progress and trends in extension and provide basic data and information to compare programs and resource allocation in national extension systems. However, there was no global-level follow-up of this study until 2009.

The FAO study survey followed the Swanson and Rassi (1981) survey methodology. The FAO 1991 data were gathered through mail-type questionnaires sent to 154 FAO member countries. Most of the surveys were answered by the ministries or departments of agriculture, which normally oversee national agricultural extension programs. The questionnaire had three parts: extension organizations and activities; personnel and human resource development, and financial resources for extension. Some 132 organizations in 115 countries responded (Table 2.1). Using the FAO country offices allowed for a greater country response (that is, more countries). The *International Directory of Agriculture Extension Organizations* is the most comprehensive database of agricultural extension organizations ever compiled. However, completeness was variable.

Twenty years later, the “Worldwide Extension Study” effort was undertaken by IFPRI, funded by the United States Agency for International Development and in collaboration with FAO, GFRAS, and regional organizations including the Inter-American Institute for Cooperation on Agriculture and the French Agricultural Research Centre for International Development. Because GFRAS undertook to manage and house the data that were collected from 2009 through 2012, we refer to it as the GFRAS study or the 2012 study. The GFRAS results were never published except as an online database; no analysis was undertaken.

The objectives of the GFRAS study were to assess and provide empirical data on the current status of pluralistic extension systems worldwide for use in planning future efforts to modernize and strengthen these rural extension and

TABLE 2.1 Summary of major global extension studies

Indicator	University of Illinois (1981)	FAO (1991)	GFRAS (2012)
Number of countries	105	115	81
Number of organizations	151 (all public but from various departments)	132 (mainly public)	347 (all sectors)
Number of extension personnel reported	290,246	438,695	1,050,861
Data available	Hard copy in libraries; online at https://pdf.usaid.gov/pdf_docs/PNAAQ985.pdf	Hard copy in libraries	Online at www.g-fras.org/en/world-wide-extension-study.html

Source: Authors' compilation based on Swanson and Rassi (1981); Swanson, Farmer, and Bahal (1991); and GFRAS (2012).

Note: There may be disparities between numbers due to changed country names; some data came in late and were not incorporated for the 1981 survey; and not all data were usable in all the surveys even when reported.

advisory services. The study focused on collecting useful empirical data on the human and financial resources of agricultural extension and advisory systems worldwide, as well as other important data and information, including (1) the primary extension service providers in each country (for example, public, private, and/or nongovernmental organizations); (2) which types and groups of farmers were the primary target groups (for example, large, medium, and/or small-scale farmers, including rural women) for each extension organization; (3) how each organization's resources were allocated to key extension and advisory service functions; (4) each organization's information and communications technology resources and capacity; and (5) what role, if any, different categories of farmers played in setting extension's priorities and/or assessing performance.

Questionnaires were developed in English, French, and Spanish, and sent to key informants (heads of departments) in government extension departments in more than 160 countries. The questionnaires were based on the FAO study but included additional information (Table 2.2). The data were put online on the GFRAS website, and secondary data were used to write up country profiles. Information collected was shared in the form of international directory pages created for each institution (public, private, NGOs, and farmer-based organizations) in each country with 15 or more extension staff members. The names of identified institutions and—to the extent available—their organizational structure, institutional resources, and mandate for providing agricultural advisory services were listed on the respective country pages on the Worldwide Extension Study on the GFRAS website (www.g-fras.org/en/world-wide-extension-study.html).

Data were obtained from 347 organizations in 81 countries (see Table 2.1). Much like the earlier FAO study, the information was not always complete

TABLE 2.2 Data collected by University of Illinois, Food and Agriculture Organization, and Global Forum for Rural Advisory Services

University of Illinois (1981)	FAO (1991)	GFRAS (2012)
Name and [physical] address	Name and [physical] address	
	Legal status	Legal status
	Type of organization [and methods used]	
		Primary management authority [level]
		Primary source(s) of funding for 2009
Clientele served	Clientele served	Clientele served
Distribution of personnel by program area and sex	Human resources (1988) (gender disaggregated)	Human resources (2005–2010) (gender disaggregated)
Size of program staff	Administrators/supervisors	Senior management
Type of position	Specialists	Subject matter specialists
Educational qualifications	Field officers/assistants	Field agents
		Level of education
		Other support staff
		Subcontracts
		Staff performance
		Areas covered by subject matter specialists
Source of financial support	Financial resources (1970–1988)	Annual expenditure (2005–2007)
		Time allocation
		Primary methods used
		Staff working in ICT (information and communications technology)
		Use of mass media and ICT for dissemination
		Internet access by staff
		Preservice training of staff
		Transportation means for staff
		Program planning and priority setting
		Level
		Farmer organization representation
		Percentage of women farmer representatives
		Linkages and partnerships
		Type and number of farmer organizations

Source: Swanson, Farner, and Bahal (1991); IFPRI and FAO (2010).

for all categories, particularly financial information. However, the GFRAS dataset is the most comprehensive global set of information about extension and advisory services since the FAO survey. Working through various partners and personal contacts for the GFRAS study yielded fewer responses from countries (that is, fewer countries but more organizations responding in those countries). Some 66 organizations never responded to the GFRAS survey. The GFRAS webpage has downloadable Excel sheets for those countries who completed the questionnaires. IFPRI has made the master database available online too.

The FAO study was meant as a benchmark to measure future progress and trends in extension. However, the GFRAS data were never compared with the earlier effort by FAO. This section examines and compares the general extension status of 1988–1989 and that of the 2012 study. The additional data collected, the inclusion of more nonpublic extension providers, and the limited centralized data collection resources combine to leave substantial gaps in coverage. The University of Illinois, FAO, and GFRAS study all collected sex-disaggregated data. From 1981, sex-disaggregated data from 57 countries showed 19 percent women staff—41 percent of whom were in home economics extension programs (Swanson and Rassi 1981); 97 of the 115 FAO countries reported personnel data disaggregated by sex. The GFRAS study included sex-disaggregated data for 73 countries.

2.2 Findings from the Data Collection

There are many data results from the global assessments ([Table 2.3](#)). However, for the sake of comparison, we focus on the best-fit characteristics of governance structures and legal status of providers, capacity and management in terms of staffing, and extension methods and clientele.

Governance Structures and Legal Status of Extension Providers

There are many types of extension providers and governance models around the world. Most authors classify the models by provision and financing of extension services, with provision from the public and the private sectors (Hoffmann et al. 2009; Rivera n.d.; Birner et al. 2006). Hoffman and colleagues (2009) talk about the profit-oriented and the nonprofit organizations. Some organizations offer extension services to sell their products and others offer only the services (Hoffman et al. 2009). Rivera (n.d.) shows the different options for funding and delivering extension services ([Figure 2.1](#)); this figure is included with much more detail as to the different types of providers in

TABLE 2.3 Organizational responses received by region, Food and Agriculture Organization, and Global Forum for Rural Advisory Services

Region	FAO (number of organizations)	FAO (number of countries)	GFRAS (number of organizations)	GFRAS (number of countries)
Africa	40	33	155	26
Asia	34	28	28	23
Europe	25	16	18	14
Latin America and the Caribbean	23	23	145	17
Oceania	8	11	1	1
Northern America	2	2	0	0
Total	132	113	347	81

Source: GFRAS (2012); Swanson, Farmer, and Bahal (1991).

Note: Countries follow UNSTATS (<https://unstats.un.org/home/>). There may be disparities between numbers due to changed country names; some data came in late for the 1981 survey; and not all data were usable in all the surveys even when reported.

Birner and colleagues' best-fit paper (2009). The upper-left quadrant is public funding and delivery, which is still very common today, although within a pluralistic environment where the private sector and other nonprofit organizations also provide or finance services. The bottom-right quadrant is purely private funding and delivery, in the case where the public sector withdraws, privatizes, or transfers responsibility for extension services to nongovernmental or farmer organizations.

Neither the FAO 1991 nor the GFRAS 2012 survey provides adequate data on sources of funding for extension to allow allocation of programs across the four quadrants of Figure 2.1. However, the nature of the extension organizations, as reflected in Table 2.4, provides a fair degree of confidence in this. The 1991 survey dealt almost entirely with extension in quadrant 1—government-funded, government-delivery extension. In 2012 this option continued to dominate with nearly 92 percent of extension agents in government, semiautonomous government, research, or university organizations. Some of these—though likely a limited number—may have been government-delivery services privately funded through user fees or commodity levies. Private-delivery, private-funded extension in nongovernmental organizations, producer, and other private organizations accounted for only slightly more than 8 percent of extension agents, although almost certainly some of these would have been government-funded through grants or contracts. The obvious conclusion is that government extension remains predominant. There remains the suspicion that private-delivery, private-funded extension may

FIGURE 2.1 Public sector agricultural extension funding and delivery alternatives

Source: Rivera (n.d.).

be grossly undercounted due to the number and dispersed nature of such activities.

We see a notable difference between the types of providers (indicated as “legal status of extension organizations”) between the 1991 and the 2012 data (Table 2.4). The FAO study covered mainly government-based extension agencies, as these were at that time considered the only significant providers. University-based extension surveyed by FAO was also publicly provided. Only a small number of private, semiautonomous, nongovernmental, or farmer-based providers were reported. The GFRAS study shows a larger variation in types of extension providers, as the growing pluralism in extension was then recognized and is apparent in comparing these two points in time.

A number of factors account for the greater institutional pluralism. Most obviously, perhaps, is that the decline of communism led to private-service expansion in a number of countries (Hoffmann et al. 2009). In the late 1980s and in the 1990s, fiscal realities and pressures from international lending institutions led many countries to reduce public spending. Budget cuts to large

TABLE 2.4 Legal status of extension organizations, 1991 and 2012

Status	1991		2012	
	Number	%	Number	%
Governmental or ministry-based extension organization	108	82	95	27
Semiautonomous governmental extension organization	5	4	70	20
Public research institution with extension unit	0	0	5	1
University-based extension (public)	2	2	13	4
<i>Subtotal (public sector)</i>	<i>115</i>	<i>88</i>	<i>183</i>	<i>53</i>
Nongovernmental organization	7	5	90	26
Farmer-based organization	2	2	43	12
Private-sector organization or firm	8	6	32	9
<i>Subtotal (private sector)</i>	<i>17</i>	<i>13</i>	<i>165</i>	<i>47</i>
Total	132	100	348	100

Source: Authors.

Note: Because of rounding, totals might not add up precisely to 100.

civil service agencies such as extension were an attractive target, since recurrent costs were high, client demand was not well organized, benefits were not immediate, and many of the agencies were already criticized as inefficient and ineffective. In general, development strategies during this period shifted to deemphasize public-sector implementation in favor of a greater role for markets and the private sector. Another contributing factor was that government extension programs had expanded greatly during the 1970–1990 post–Green Revolution period and were at a peak in staffing. Critiques of programs, such as the training and visit system, noted problems of inefficiency, not reaching women, and most of all lack of financial sustainability (Anderson 2007). These criticisms and donor fatigue in funding public extension led international donors to a major shift toward funding private nonprofit and for-profit extension providers. Along with all of this, the growth of commercial agriculture and globalized markets enabled more farmers to finance needed services and led to development of many niche innovation needs that could best be addressed by private service providers. The resulting gap caused by weakened public services and continuing and diversifying need caused nongovernmental and private-sector actors to move in.

Although [Table 2.4](#) indicates general trends, it is far from comprehensive and not fully indicative of overall percentages during the periods. Many of the extension providers are missing because at the time of data collection there was no mechanism to register all the extension providers in a country. The FAO study focused on public-sector providers. For the GFRAS study,

the organizations used snowball sampling and personal connections to obtain much of the data. Thus it may have covered a wider range of providers but was less systematic.

Despite the growing pluralism, the total number of staff working for public institutions was still the majority in 2012 (Table 2.5), thus indicating the continued importance of public extension. The considerable difficulty in identifying and getting numbers from the many small nonpublic institutions providing extension services, such as farmer-based organizations and non-governmental organizations, means that these are chronically underreported. Caution is necessary in interpreting findings for public research and university institutions with extension units due to likely distortions based on the small sample sizes. For smaller organizations and all those whose mandate is not primarily extension, attribution of time for staff working part-time on extension becomes a problem.

The original analysis of the 2012 survey dropped outliers in large institutions from Azerbaijan, Denmark, Norway, Poland, and the Republic of Moldova, as the situation in these industrialized countries appeared to differ from most developing countries and the very large institutions tended to distort findings. Poland, for example, reported 3,805 extension staff in one semiautonomous organization. Denmark and Norway had 3,465 extension staff in two farmer-based organizations. And Azerbaijan and the Republic of Moldova had 1,192 extension staff in two nongovernmental organizations. These do differ but may be indicative of a trend away from government extension in industrialized countries. Both the United Kingdom and the United States may be other outliers indicative of this trend with their drops in reported extension agents (assumed to be government extension) of 99 percent and 81 percent, respectively.

Along with the growing pluralism, governments have been decentralizing extension services, in part to enhance involvement of rural people in these services. This entails transferring control of specific program planning and management functions to the local system levels where extension programs are actually implemented (Swanson and Samy 2004). Many countries have now decentralized their services; however, the jury is still out as to whether this has made the services more relevant, efficient, or demand-driven.

Staffing

Table 2A.1 in the annex gives the number of extension agents in 1981 (290,246), 1991 (438,695), and 2012 (1,050,861). Additional work was done to collect data by Swanson and Davis in 2014, and Davis and

TABLE 2.5 Total staff by type of organization, 2012

Legal status	Total staff	Share (%)
Governmental or ministry-based extension organization	127,342	86.76
Semiautonomous governmental extension organization	6,848	4.67
Public research institution with extension unit	298	0.20
University-based extension	285	0.19
Nongovernmental organization	3,890	2.65
Farmer-based organization	7,007	4.77
Private sector organization or firm	1,112	0.76
Total	146,782	100

Source: GFRAS 2012.

Note: Outliers (organizations from Azerbaijan, Denmark, Moldova, Norway, and Poland) were removed; therefore 304 organizational responses were included here of the total 347 organizational responses received.

Spielman in 2016, thus some of the numbers from the GFRAS study have been updated or gaps have been filled (for example, Zimbabwe and some Central Asian countries were added; numbers were updated for Brazil, India, and South Africa). The updated information included data for China (some 600,000 staff). Again, these should be interpreted cautiously as there are many caveats to the data on number of extension agents; many private-sector institutions are missing, as are regional and departmental numbers. However, general trends can be observed.

The extension staff can be organized by type of organization, type of position, education level, and gender (Figures 2.2, 2.3, and 2.4); however, these data are only available for the GFRAS study (2012). Sixty-one countries have data from both the FAO and GFRAS surveys and, although the many caveats already noted on comparability of data apply, the data suggests continuing importance and commitment to extension. For these countries, extension agent numbers increased 136 percent to 976,393, due mainly to increase in China. Without China, the increase was 23 percent. Twenty-seven countries increased numbers of extension agents, but 34 decreased them. Many industrialized countries decreased extension agents (at least public extension agents), with the United States dropping by more than 12,000. Asian countries, Ethiopia, and Brazil had major increases. The number of extension agents is often expressed as a ratio to numbers of clients. Over the 1989–2012 period the global rural population grew about 12 percent from 2.98 billion to

FIGURE 2.2 Extension staff positions by type of organization

Source: GFRAS (2012).

Note: Outliers (organizations from Azerbaijan, Denmark, Moldova, Norway, and Poland) were removed; therefore, 304 organizational responses were included here of the total 347 organizational responses received.

3.36 billion (World Bank 2019). Many unanswerable questions emerge from these comparisons. For example, did China's commitment to extension contribute to its impressive economic performance? Have extension agent cuts by the United States and other Western countries had any impacts on agricultural performance?

Some clear differences can be observed. Governmental extension systems had a higher proportion (76 percent) of staff in field-level extension positions working with farmers. In this they were exceeded only by farmer organizations (81 percent), presumably because governance by clients themselves places a high priority on field-level services. Specialized agencies had a much smaller proportion of field-level agents. Universities were at the extreme with only 15 percent of their extension staff in field-level positions. There is a strong need for support service staff to ensure quality of messaging and efficiency of extension workers. These training, ICT support, and subject matter specialists may also contribute to innovation in extension. A high proportion of support service to field agent staffing may also suggest greater priority to agendas (for example, research, university programs, profits) other than extension services to clients. Subject matter specialists were found in all types of organizations, but the public research, semiautonomous, and university-based

FIGURE 2.3 Share by education level by organization type (percentage of total)

Source: GFRAS (2012).

Note: Outliers (semiautonomous, farmer-based, and nongovernmental organizations from Azerbaijan, Denmark, Moldova, Norway, and Poland) were removed.

organizations had the highest numbers of specialists for technical support. Nongovernmental and university-based organizations had the highest percentage of senior management. Most organizations did not have staff dedicated to information technology and communications support (indicated as ICT support staff). Governmental organizations and farmer-based organizations perhaps had the most realistic ratio of field staff relative to other staff. However, the other types of organizations tend to be more specialized in particular topics or client groups, which may account for high levels of non-field staff.

Not surprisingly, education levels reflected institutional categories, with research institutions staffing predominantly with advanced degrees. Private-sector firms had a good range of staff between secondary up to MSc-level, with few PhDs. Governments had extension staffing that is predominantly with secondary or diploma qualifications. This also reflects the numbers of staff positions in categories requiring higher education. In general, the education levels of extension staff were surprisingly high. There were a good number of MSc holders in all types of organizations (fewest in government). Not surprisingly, the most PhDs were found in the university-based organizations.

A more relevant comparison may be the educational level of field-level staff. [Figure 2.4](#) shows the educational qualifications of field-level staff disaggregated by gender. This was averaged out across all the reporting organizations

FIGURE 2.4 Average education across sectors of field-level extension staff by gender, 2009

Source: GFRAS (2012).

across sectors. We find a high number of staff with secondary education, two- to three-year diplomas, or even BSc degrees. Very few numbers of field staff held MScs or PhDs, indicating that staff with the higher qualifications tended to be in cities. Women and men tended to have closer ratios at the BSc and MSc levels. Although these data were incomplete or unavailable, educational qualifications for extension staff has increased over time due to greater availability of educational opportunities and greater demands for extension staff with diverse skills to address increasingly complex client needs.

Clientele

The types of clientele depend very much upon the objectives of the extension organization. Many public extension organizations are trying to reach small-scale (often subsistence) farmers. However, farmers have become increasingly commercialized and linked to markets since 1991. Farmer-based extension organization services target their members, often producers of a specific commodity. Members can be small, medium, or large-scale. Some nonprofit NGOs target women or youth. The data are not directly comparable between the two global studies, because they were not asked the same way. The FAO study asked organizations what type of clientele they served. The GFRAS study asked respondents what percentage of their time they spent on precoded categories. [Figure 2.5](#) depicts a word cloud of the extension organization clientele in 1991. Word clouds are an exploratory qualitative method to depict

FIGURE 2.5 Extension clientele word cloud

Source: Created by authors based on FAO (1991).

word frequency visually, giving greater emphasis on the words that appear most frequently (Cidell 2010).

A 1993 publication on agricultural extension and “farm women” in the 1980s is available from FAO. The use of the term “farm women” rather than “women farmers” shows the focus in that decade; indeed, much of the focus was on home economics and nutrition for “farmers’ wives,” indicating that women were not viewed as farmers by many extension services. According to the publication (FAO 1993: 3): “The 1989 FAO survey data show that about 5 percent of all agricultural extension resources worldwide are directed to female farmers and only 15 percent of the world’s extension personnel are female.” Percentage of time and resources allocated to women farmers was

between 1 percent and 9 percent, according to the FAO (1993) publication, based on data from the FAO survey in 1989 (published in 1991). However, women and even “homemakers” featured somewhat prominently in the word cloud in [Figure 2.5](#).

In 2012 we saw an increased percentage of female staff (34 percent in senior management and subject matter specialist positions, and 22 percent field-level staff) (GFRAS 2012). [Figure 2.6](#) shows the average share of women across all types of organizations by position in the 2012 GFRAS study. Note that the highest percentages were in ICT support and senior management. In total, they averaged just under 25 percent of the share of total staff of the surveyed organizations.

In the GFRAS study, respondents indicated that they spent anywhere from 1 percent to 100 percent of time on women (the median was 14 percent and mode was 5 percent). Obviously, some of the respondents specifically targeted women farmers. However, many did not indicate that they spent any resources on women farmers. We can also look at data on time allocation by extension agents in 1991 and 2012. While not directly comparable, they do show some trends, especially with regard to women and youth clientele. [Tables 2.6](#) and [2.7](#) show the time and resources allocated by extension to different clientele groups. FAO disaggregates by region and GFRAS by type of organization. As seen in [Table 2.6](#), commercial farmers received at least 20 percent and up to 69 percent of extension’s time in 1991. Africa had the lowest percentage at 20 percent. Subsistence farmers, not surprisingly, had high levels of time allocated in Africa, Asia and the Pacific, and to a certain extent in Latin America and the Near East, but not in Europe or North America. Landless producers received very little time allocation across the regions (the most in the Near East at 5 percent). Young farmers received quite a bit of attention in North America, no doubt due to well-known programs such as 4-H. Women farmers received quite low attention across the regions, as did home economics (usually focused on women).

The GFRAS study has data on how staff of different types of organizations allocated their time to different clientele groups ([Table 2.7](#)). Respondents were asked to specify the primary group or groups that their organization serves or targets and to indicate the relative importance of each group. If they targeted more than one group, they were asked to indicate the approximate amount of time and effort (as a percentage) that their organization devoted to each group. In general, there is quite even disbursement by the types of organizations (governmental, semiautonomous, farmer based, non-governmental, private sector, public research institution, and university based)

FIGURE 2.6 Share of women in extension positions across organizations (%)

Source: GFRAS (2012).

by types of clientele (large commercial, small/medium commercial, small-scale subsistence, women, young [adult], landless, rural youth, and rural women). Clientele groups achieving the the most service across all providers included the small/medium commercial farmers (37 percent) and the small-scale subsistence farmers (38 percent). However, the university-based and the semiautonomous providers indicated that they spent the most time on this clientele.

Governmental providers were shown to spend the least time of any organization on small-scale subsistence farmers (24 percent). The private-sector respondents indicated they spent 62 percent of time on small/medium commercial farmers and 17 percent on large commercial farmers. They claimed to spend 24 percent of time working with rural women on nutrition, health, and hygiene. These findings are counterintuitive, not what would be expected of typical private-sector extension. Nongovernmental organization staff indicated that they spent 33 percent of their time on women farmers and 20 percent on rural youth. The public research institutes reported that they spent significant time (40 percent) on large commercial farmers. They reported spending the most time of any organization (45 percent) on rural youth. They spent 30 percent of their time on small/medium commercial farmers. Outreach to landless farmers ranged from 10 percent to 17 percent.

Figure 2.7 shows how extension agents across the different sectors and regions allocated time across three major activities in 2009. Note that “extension planning and support activities” included conducting needs assessments,

TABLE 2.6 Percentage of time and resources allocated to clientele groups by extension organizations by region in 1991 (%)

Clientele groups	Africa (n = 38)	Asia and the Pacific (n = 28)	Europe (n = 7)	Latin America (n = 39)	North America (n = 4)	Near East (n = 16)	Worldwide average (n = 132)
Commercial farmers	20	36	69	42	48	31	35
Commodity producers	26	17	5	24	1	34	23
Subsistence farmers	31	28	2	18	1	14	22
Landless producers	1	4	1	2	1	5	2
Young farmers/rural youth	10	8	7	5	16	2	7
Women farmers	7	3	3	5	1	9	5
Home economics	1	2	4	—	9	1	1
Other groups	4	2	9	4	23	4	5
Total	100	100	100	100	100	100	100

Source: Reproduced from FAO (1993), based on Table 4 in Swanson, Farner, and Bahal (1990).

Note: — = no data.

program planning, preparing performance reports, in-service training, program evaluation, and related activities; “educational and advisory service activities” included implementing educational programs such as farm visits, conducting on-farm demonstrations, training courses, workshops, and field days; and “noneducational activities” included carrying out noneducational activities, such as regulatory work, data collection (for example, agricultural census, crop forecasting), working on other government programs (for example, subsidies, credit, input supply), and assisting local government. Nearly 60 percent of time was spent on extension and advisory service activities.

In 2009 respondents were asked “What percentage of all farmers belong to some type of farmer or producer organization in your country?” The average response across all types of organizations was 45 percent.

Advisory Methods

Extension programs use a range of methodologies and approaches suited to differing situations. These have evolved over time, although most extension programs use a mix of varied methods, even when they may emphasize one particular approach. According to Birner and colleagues (2006: 43), methods can be classified according to the following:

- Types of training or technology transfer (demonstrations, field days, week-long courses, farmer-to-farmer exchanges);

TABLE 2.7 Clientele served (targeted) by type of organization in 2009 (%)

Type of organization	Large commercial farmers	Small/medium commercial farmers	Small-scale subsistence farmers	Women farmers	Young (adult) farmers	Landless farmers	Rural youth	Rural women	Women among total staff
Governmental	17	31	24	13	13	12	10	10	21
Semiautonomous	31	49	46	25	13	14	11	24	17
Farmer based	11	44	30	11	11	17	6	8	29
Nongovernmental	15	40	38	33	22	16	20	20	30
Private sector	17	62	34	15	15	10	6	24	29
Public research institution	40	30	38	10	—	—	45	—	20
University based	17	28	57	13	13	10	17	10	24
Weighted average (across all organizations)	21	37	38	15	15	13	12	14	25

Source: GFRAS 2012.

Note: Outliers (organizations from Azerbaijan, Denmark, Moldova, Norway, and Poland) were removed. Some 304 organizational responses were included. — = data not available.

FIGURE 2.7 Allocation of time by field extension or advisory staff, 2009

Source: GFRAS (2012).

Note: Percentages might not add up to exactly 100.

- Number of clientele (individual, group-based, mass approaches);
- Involvement of clients in planning and problem-solving (top-down methods, participatory methods);
- Specificity of content (limited to specific crops/livestock or dependent on needs identified by clients in different fields);
- Types of media used (information and communications technology or ICT, radio, drama, newspaper); and
- Adult education orientation (social learning, humanist, cognitive).

There is a substantial level of continuity in extension methodologies but some obvious evolution between the 1991 FAO study and the 2012 GFRAS study. The FAO study came toward the end of two important trends in extension. The training-and-visit system had been widely adopted by public extension agencies for technology transfer but was poised to begin a decline. The training-and-visit extension model was basically traditional field agent-based extension services with a codified regime of regular farmer training, field visits, contact farmers, farmer groups, and links to research to provide technology for dissemination. One might characterize it as traditional extension with

sound management and discipline. It was criticized for being too prescriptive and top-down, being overly regimented, and having high recurrent costs. Impacts were positive but not up to expectations. With increasing government budget constraints, the high recurrent costs doomed many training-and-visit systems to cancellation or lingering decline. The approach has been somewhat discredited, but many national extension agencies still use a modified training-and-visit approach.

A second trend toward greater client participation in extension programs also undercut the training-and-visit system, even though that system was somewhat participatory in working through lead farmers and farmer groups. Nonprofit NGOs expanded activities through the 1980s and embraced varied mechanisms for increasing client participation in extension planning, implementation, and assessment. Farmer-to-farmer extension, use of lead farmers, farmer members of extension governance committees, and dissemination of traditional knowledge and technologies were common. Farming systems research and extension programs contributed to this by involving farmers in diagnostic analysis of farming systems, developing component technologies and system innovations to improve productivity. Social soundness analysis became important to program designs. All of these innovations in extension were somewhat labor-intensive and suited to NGO programs that usually operated on a relatively limited scale. Although participatory approaches are more difficult to incorporate into the larger national public extension programs, they remain an important emphasis across extension programs today.

Figure 2.8 shows how important the individual approach and the training-and-visit method was at the time of the FAO study. Farm visits, radio, and group approaches were also important. One can also see the integrated agriculture development programs showing strongly as well, as many of these were part of or an offshoot of integrated rural development programs that were common through the 1980s. Many of the traditional technology transfer methods remain common. Demonstrations, field days, farmer training courses, radio, and print media remain tools of most extension providers. Training courses may be less formal and shorter in duration. Group-based approaches may have increased but remain as part of an overall mix with individual and mass media approaches. Technology transfer remains the objective for most extension, and adult education strategies underpin some programs but do not get heavy emphasis.

The farmer field school approach had become widespread by the time of the GFRAS study. This approach—not unlike the training-and-visit system—is based on regular training (experiential learning sessions) for farmer groups

FIGURE 2.8 Methods used by extension organizations, 1991

Source: Created by authors based on FAO (1991).

Note: IRD = integrated rural development; TandV = training and visit. IADP = integrated agricultural development program.

facilitated by an extension agent or lead farmer. The experiential field learning is based on a fairly regimented methodology developed to promote integrated pest management. This draws on some of the strengths of the training-and-visit system but incorporates greater farmer participation and flexibility. Widespread adaptation of the farmer field school approach to different situations has led—for good and bad—to major deviations from the original model. The farmer field school approach aims for cost-efficient implementation, often emphasizing use of lead farmers for the experiential learning groups. Quality may depend heavily on the technical support and planning for learning sessions and the quality of the field school leader. The approach fits well with nonprofit NGO extension programs and remains influential as a model for extension generally.

Lead farmers, as in the case of farmer field schools, are important in many extension approaches. Their use serves to make up for lack of adequate numbers of extension agents, to expand reach of programs, and to limit costs. Issues of appropriate support and remuneration arrangements are worked out on a case-by-case basis. In countries where there is limited support from extension agents and the community, studies show limited coverage and outreach by lead farmers (see [Chapter 7](#) on Malawi). Increasing evidence shows that lead farmers are complements of, and not substitutes for a well-functioning public extension system.

Another significant change is in extension content that now often emphasizes facilitation approaches. Under these programs, agents organize with clients to identify and address problems and opportunities, and develop linkages to other actors in the agricultural value chain to obtain needed support—financing, inputs, markets, technologies, or services. This shift to facilitation services stems from increased commercialization and specialization of farms, more diverse products and market demands, and greater capacity of farmers themselves. Such facilitation approaches are well suited to private NGOs and producer group extension services and can be effectively provided by consultant extensionists. Public extension agencies struggle to have the flexibility needed to provide such services but may be forced to move in that direction in the future.

A potential game changer for extension, as well as for the rest of the world, has been the emergence of new information and communications technologies (ICTs). Obviously, capabilities and use of ICT and digital data are tremendously different from 1991. Traditional ICT methods such as radio remain important and perhaps predominant. These and print media may reach more farmers, who may be better educated and more able to access such media. Many Internet, video, and cell phone–based applications are being developed and tested for disseminating extension messages, accessing specialist support, and analyzing data to improve recommendations to clients. Reaching resource-poor farmers, many of whom are illiterate, and those outside of ICT service areas is still a huge challenge.

Thus, although many traditional extension methods remain important, there are key changes. Participatory and facilitation approaches involve clients to a greater degree and help tailor services to their specific needs. Other changes with greater emphasis on group-based, mass media, farmer leaders, and ICTs replace a reliance on face-to-face extension outreach by agents. These may be motivated in part by need to reduce costs. Whether they are equally effective in serving clients may still be a relevant question. Trends in

extension approaches contribute to greater diversity in methodologies and align well with the increasing institutional pluralism and private-sector provider roles in extension.

More and more field staff have access to the Internet. [Figure 2.9](#) shows the relatively high access to the Internet by field staff in 2012. Although having distributed surveys by email may have introduced some sort of bias, the question was specifically about access by field-level staff. This cannot be compared to the FAO data since the Internet was not widely used at the time.

Other Trends and Differences

Other important trends are affecting the world of extension, related to the issues discussed above but with additional implications. Many of these relate to targeting clients and their differential needs.

Coordination mechanisms. These are needed more than ever due to the increased pluralism of extension providers. One major element in coordination is that between public and private extension. Beyond that the large numbers of private providers—many with relatively small programs—can benefit by increasing efficiencies with better coordination. Coordination committees and innovation platforms exist in many countries, but there is room for more innovation and introduction of new mechanisms for coordination. Commitment by public extension services to provide support, as “wholesalers” of extension services delivered by private providers, may be a key means of improving efficiencies. Quality control, as requiring registration or oversight, may also be an important public service for private extension (see [Chapter 3](#) for further analysis regarding coordination).

Decentralization reforms. Reforms are in place or being implemented in many countries, generally shifting responsibility for extension to subnational government units at the provincial, state, or district levels. These reforms greatly complicated data collection for the GFRAS study, as information on public extension had to come from multiple decentralized offices, rather than one national agency. Decentralization reforms are initially quite disruptive of extension planning, financing, and implementation. They tend to take years to implement and adapt operating procedures and policies. Decentralization offers benefits in moving extension closer to the farmer clients, but extension can get lost in the overall local government agenda, and funding provisions can be particularly problematic.

Gender considerations. Gender is increasingly considered in most extension programs. Extension methodologies are adapted to better serve women farmers, and the number of women extension staff has apparently increased

FIGURE 2.9 Share of field extension workers with Internet access in their offices, 2009

Source: GFRAS (2012).

from 15 percent to 22 percent (at the field level; management and subject matter specialists were both 34 percent in 2012). Despite these efforts, it is not clear that changes have been nor will be fully effective, and women continue to be chronically underserved by extension. More attention is needed to assess and implement extension program reforms to reach women clients with relevant services.

Youth. Younger folks are increasingly recognized as an important target group for extension, although most extension programs struggle to reach youth, who are generally not the major decisionmakers for farm households. This presents a serious challenge for extension over the coming decade. Extension programs promoting youth entrepreneurship may be an ideal means to engage youth in modernizing agriculture and to give them opportunities they desperately need for productive jobs.

Markets. Markets are now frequently and appropriately the focus for extension activities. However, farmer clients bifurcate into two groups: commercial farmers engaged in and wanting to expand production for more demanding markets versus resource-poor farmers concerned with more diverse livelihood issues, production for home consumption, and building household resilience. This is nothing new. Both need markets, but capabilities differ; extension needs differ; and relevant extension methodologies, providers, and mechanisms may differ.

Urbanization. This continues, especially in transforming middle-income countries. Urbanization reduces the constituency for rural extension services and raises the question as to the need for urban and peri-urban extension. Urban and peri-urban agriculture is important in some places and, because of environmental and health issues, if not farmer productivity, warrants attention.

Agricultural research. Research is also changing, with new technologies and globalized research networks. Research-extension linkages are needed to give research feedback on farmer needs and to facilitate uptake of research findings. These linkages have not always been very effective. There is now need for such research linkages to both public and private extension.

The common thread running through these issues and those noted throughout the comparison of the 1991 global study versus the 2012 one is that of increasing extension complexity, as a diverse system. This can be a real strength, with different providers serving different client groups with different services using multiple approaches and methodologies. All this functions within the overall national agricultural innovation systems or agricultural sector value chain. But benefits are most likely with strategic partnering and interlinkages among providers and clients. Coordination of such systems is thus becoming both more challenging and more necessary.

2.3 Conclusion

This chapter has provided a landscape view of extension globally, comparing the recent status to the situation 20 to 30 years ago, when similar global assessments took place. The analysis uses components of the best-fit framework, including governance structure (and legal status) of extension providers, capacity (focusing on staffing), and advisory methods and clientele. It shows that extension and advisory services have become much more pluralistic. There are greater numbers of extension agents today (more than one million); however, they belong to a variety of different types of organizations from the private, nongovernmental, and public sectors, and even include farmers groups and volunteer farmer extension agents. More methods are available today, especially digital ones. Private-sector extension and the use of volunteer farmers is advocated and used worldwide as a complement for the traditional methods.

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Annex 2A. Additional Data

TABLE 2A.1 Numbers of extension staff by country, 1981, 1991, and 2012

Country	University of Illinois (1981)	FAO (1991)	GFRAS (2012)
Afghanistan		750	915
Algeria		1,400	835
American Samoa	14		
Antigua	28		
Argentina	555		1,500
Armenia			15
Australia	1,422		
Austria	414		
Azerbaijan			350
Bahamas	29		10
Bahrain	9	11	
Bangladesh	7,816	16,397	14,035
Barbados	11		6
Belarus			8
Belgium	461	160	
Belize	48		40
Benin		2,565	517
Bermuda	11		
Bhutan		250	500
Bolivia	158	118	
Botswana	388		
Brazil	11,567	4,740	24,000
Burkina Faso	1,210	1,803	684
Cambodia			1,244
Cameroon		5,218	2,389
Canada	978	380	
Central African Republic	922		66
Chad			3
Chile		799	493
China	121,865	617,706	
Colombia		1,512	3,191
Comoros	93		
Congo		261	

Country	University of Illinois (1981)	FAO (1991)	GFRAS (2012)
Cook Islands		46	
Costa Rica	310	601	500
Côte d'Ivoire		1,427	
Cyprus	192	354	
Democratic People's Republic of Korea	7,648	7,979	4,584
Democratic Republic of the Congo	11	769	
Denmark	954	1,750	3,198
Dominica		45	
Dominican Republic	14	850	913
Ecuador	264	274	
Egypt		4,926	7,421
El Salvador	480	446	28
Estonia			144
Ethiopia	826	6,584	45,812
Fiji	213	169	
Finland	662	710	
Gabon	93		
Gambia	823	215	
Germany	5,440**	5,810	
Ghana		2,752	1,244
Greece	1,564		17
Grenada	52		
Guadeloupe	58		
Guatemala	551	4,889	
Guinea	2,754		1,538
Guinea-Bissau		350	
Guyana	124	252	80
Haiti	224	670	
Honduras	399	504	35
Hungary		415	
Iceland	57	57	
India	99,395	65,957	90,000
Indonesia		29,957	53,949
Iran			6,497

(continued)

TABLE 2A.1 Continued

Country	University of Illinois (1981)	FAO (1991)	GFRAS (2012)
Iraq	1,085	195	
Ireland	813	650	
Israel	520	342	150
Jamaica		428	231
Japan	16,328	12,400	8,228
Jordan	188	95	84
Kazakhstan			55
Kenya			5,488
Kuwait	10		
Kyrgyzstan			38
Lao People's Democratic Republic	157	38	752
Latvia			330
Lebanon	74	54	67
Lesotho	298		7
Liberia	726		134
Lithuania			307
Madagascar			104
Malawi	1,882	2,304	3,054
Malaysia	4,804	3,391	1,216
Maldives	13		
Mali		1,757	1,129
Malta	39		
Mauritania		97	
Mauritius	78	68	
Mexico	2,094	7,916	5,836
Mongolia			1,100
Montserrat	12		
Morocco	5,340		7
Mozambique		351	1,304*
Myanmar		5,668	4,534
Namibia	24		
Nepal	5,368	2,207	2,606
Netherlands	1,194	650	
New Caledonia	126		

Country	University of Illinois (1981)	FAO (1991)	GFRAS (2012)
New Zealand	280	250	
Nicaragua	85	682	
Niger		682	847
Nigeria	2,295*		7,000*
Norway	1,289	1,500	267
Oman		117	
Pakistan	2,621	3,962	9,749*
Panama		693	
Papua New Guinea	1,785	1,788	34
Paraguay	136		16
Peru		1,623	253
Philippines	19,020	15,444	25,000
Poland			3,803
Portugal	633	1,480	
Qatar	10	12	
Republic of Korea			4,584
Republic of Moldova			918
Romania			860
Rwanda	417	2,537	1,244
Saint Kitts and Nevis	5	23	24
Saint Lucia		64	45
Saint Vincent and the Grenadines	46		24
Samoa		33	
Saudi Arabia	699	392	
Senegal	1,163	427	500*
Seychelles	18		
Sierra Leone		1,369	702
Singapore	0		
Solomon Islands		250	
South Africa	1,672		2,210
Spain	2,808		
Sri Lanka	3,022	4,528	568
Sudan		456	656
Suriname		137	
Swaziland	120		

(continued)

TABLE 2A.1 Continued

Country	University of Illinois (1981)	FAO (1991)	GFRAS (2012)
Sweden	1,573	710	12
Switzerland	650		104
Syria	211	2,208	
Taiwan, China	17,825		16
Tajikistan			420
Thailand	7,486	20,622	16,986
Timor-Leste			452
Togo	212		16
Tonga	77	44	
Trinidad and Tobago	146	190	100
Tunisia	15	2,431	854
Turkey	5,523	16,067	14,644
Ukraine		89	
United Arab Emirates	63	89	
United Kingdom	0	1,703	19
United Republic of Tanzania		5,752	10,891
United States of America	24,102	15,141	2,900
Uruguay	290	157	183
Vanuatu	49	47	
Venezuela	1,271		118
Viet Nam	68	30	13,185*
Yemen	50	126	1,438
Yemen	123***		
Former Yugoslav Republic of Macedonia			155
Zambia			908
Zimbabwe	1984		6,159
Total	290,246	438,695	1,050,861

Source: FAO (1991); GFRAS (2012); Davis and Spielman (2016); Swanson and Davis (2014).

Note: * Some of these figures have been updated via the following sources: Mozambique (Cuangara and Thompson [2018]); Nigeria (Huber and Davis 2017); Pakistan (M. Ali, personal communication); Senegal (Franzel, Ndiaye, and Tata [2018]); Viet Nam (Ngan and Babu [2018]). In 1981, Nigeria data were partial for a few states. ** West Germany. *** People's Democratic Republic of Yemen.