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

Honduras: In-depth Assessment of Extension and Advisory Services

Developing Local Extension Capacity (DLEC) Project

March 2017

USAID FROM THE AMERICAN PEOPLE

digitalGREEN

care

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

Acknowledgements

Written by María Auxiliadora Briones Valenzuela and Danilo Saavedra in collaboration with Kristin Davis of IFPRI and Alex Dunlop of Digital Green, this analysis was compiled for the DLEC project under USAID Cooperative Agreement No. AID-OAA-L-16-0002

This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Digital Green and do not necessarily reflect the views of USAID or the United States Government.

ACRONYMS

ANEXHON	National Association of Honduras Exporters
ANDI	National Association of Industries
CARE	Cooperative for Assistance and Relief Everywhere, an International NGO
CATIE	Tropical Agricultural Research and Higher Education Center
CELAC	Community of Latin American and Caribbean States
CENITA	National Center for Technical Innovation in Agri-food
CNPA	Promotion Center for Agricultural Businesses
COHEP	Honduran Council of Private Companies
COMRURAL	Project to Improve Rural Competitiveness in Honduras
CONACTA	National Council for Agricultural Science and Technology
CONFOCIT	National Council for the Promotion of Science, Technology and Innovation
CREAR	Connect, Reflect, Excite, Activate and Feedback
CURLA	Central University of the Atlantic Coast
DLEC	Developing Local Extension Capacity Project
DICTA	Agricultural Science and Technology Board
EAS	Extension and Advisory Services
EmprendeSUR	Development and Rural Competitiveness Program for the Southern Region
FAO	Food and Agriculture Organization of the United Nations
FHIA	Honduran Foundation for Agricultural Investigation
FIRSA	Trust for the Reactivation of the Agri-food Sector
FIDE	Foundation for Investment and Export Development
FOPRIDEH	Honduran Federation of Development NGOs
FONACTA	Fund for the Development of Research and Transfer of Agricultural Technology
FONTEC	Fund for Agricultural Technology Development
FPX	Honduras Agriexport Federation
FTAs	Free Trade Agreements
GDP	Gross Domestic Product
GFRAS	Global Forum for Rural Advisory Services
IADB	Inter-American Development Bank

ICT	Information and Communications Technologies
IFPRI	International Food Policy Research Institute
IHCAFE	Honduran Coffee Institute
IHCIETI	Honduran Institute of Science, Technology and Innovation
INFOAGRO	Agro-food Information Service
INFOP	National Institute for Professional Formation
IICA	Interamerican Agricultural Cooperation Agency
NGO	Nongovernmental Organization
PROMECOM	Rural Economic Competitiveness Improvement Project in Yoro
PRONAGRI	National Program for Rural Irrigation Agriculture
PRONAGRO	National Program for the Development of Fishing and Aquaculture Training
RELASER	Latin American Network for Rural Extension Services
REPACE	Agricultural Production Reactivation Education Centers
SAG	Agriculture and Livestock Secretariat
SENACIT	National Ministry of Science, Technology and Innovation
SDGs	Sustainable Development Goals
SDE	Secretariat for Economic Development
SEDUCA	Agricultural Education, Training and Development for Agri-Business Service
SINIA	National Environmental Information System
SME	Small and Medium-sized Enterprises
SMS	Short Message Services
SNITTA	National Research, Investigation and Transfer System for Agricultural Technology
SRN	Secretary of Natural Resources
UNAH	National Autonomous University of Honduras
USAID	United States Agency for International Development

CONTENTS

Figures

Tables

EXECUTIVE SUMMARY

The importance of agriculture to the lives and livelihood of the Honduran people is evident. In 2015, agriculture contributed to 14 percent of Honduras' gross domestic product (GDP), only surpassed by commerce and manufacturing. The sector grew an average of five percent in the last five years, reflecting a continuous growth pattern. Employment in agriculture represents 29 percent of the active economic population, making it the sector that contributes most to the economy. Knowledge about innovations, climate risks, technology, and safe and effective farming and production practices is essential to sustain and improve the livelihoods of the families that depend on the sector. The link between the farmers and sources of relevant agricultural information happens most effectively through extension and advisory services (EAS).

In an effort to raise incomes and increase resilience of smallholder farmers and their families in Feed the Future[1] countries, the United States Agency for International Development (USAID) funded the Developing Local Extension Capacity (DLEC) project. This project is led by Digital Green in partnership with the International Food Policy Research Institute (IFPRI), CARE International (CARE) and multiple resource partners. DLEC works with country stakeholders and USAID missions to scale and improve locally relevant, cost-effective and pluralistic agricultural extension systems that bring together information technologies and community-based organizations. By collaborating with USAID missions, host-country governments, public and private EAS providers, rural civil society organizations and host-country research institutes, DLEC helps extension systems become more effective, accountable, scalable and sustainable. The first stage of DLEC's work includes conducting diagnostic assessments of local EAS contexts and capacities in Feed the Future and aligned countries. This analysis looks at the current situation of agricultural extension services in Honduras, the actors and their capacities. The results of the study will be used to guide actions and investments to strengthen the EAS system.

In Honduras, agricultural policy is guided by two strategic frameworks: the 2004-2021 State Policy for the Agri-food Sector and Rural Areas and the 2014-2018 Government Strategic Plan *El Plan de Todos para una Vida Mejor* (Everyone's Plan for a Better Life). These policies were designed to revitalize the agricultural sector and improve the livelihoods of those who work in the sector. In addition, trade policies were designed with a series of laws and decrees that streamline activities and give farmers access to broader markets. Policies and programs have been developed with strong rural extension and advisory services components; however, implementation has been challenging.

The challenges result in part from the Honduran pluralistic EAS system. For example, the innovation system consists of multiple private, institutional and public actors, including government agencies, educational and research institutions, farmers, and national and international nongovernmental organizations (NGOs). While this diversity provides dynamism and richness in terms of learning and institutional innovations, it has led to fragmented EAS delivery system with little coordination among actors and weak leadership.

Changes in leadership and organization is a common theme in the country when it comes to EAS. Created in the 1950s, the national rural extension and advisory system of Honduras underwent a series of institutional transformations driven both by internal processes and external factors, such as national politics and the economy. In an effort to modernize the system, EAS were decentralized

[1] Feed the Future is the U.S. Government's global hunger and food security initiative. It addresses the root causes of hunger and poverty in the developing world in 19 key countries. https://www.feedthefuture.gov/

and the Agricultural Science and Technology Board (DICTA, for its Spanish acronym) was created to govern, monitor and develop capacities of actors in the system. Although laws to modernize and develop the agricultural sector and decentralize extension services were created, the necessary resources were not provided for implementation, and public and private institutions remain fragmented to this day. Efforts are currently underway to identify new decentralized delivery models, improve overall coordination, and close gaps, thus improving effectiveness of EAS in Honduras.

A majority of organizations engaged in EAS provide technical assistance and rural extension services that focus on developing the capacities of producers, in an effort to enable them to self-manage innovations and improve their own crops. The majority of activities involve income generation and increased food security through technological change and market access. The EAS providers implement approaches based on market demand and gender and youth participation. Some also consider risk management associated with climate change.

The organizations' personnel are, for the most part, well trained. The majority of the staff providing these extension services have degrees in engineering, agronomy and veterinary medicine, and continuing education is provided through a government-sponsored program called the Reactivation of Agricultural Production in Schools (REPACE, for its Spanish acronym) and other programs. Many extension providers are incentivized by their employers to continue their training and keep pace with the latest technologies and methods.

The organizations themselves have quality control systems in place and do what they can with the resources they have. Fifty percent of the organizations surveyed have monitoring and evaluation systems that measure the progress and impact, helping them to design better projects and generate knowledge. Most providers have internet access and local facilities, but only the few organizations with national reach have the physical structures, such as laboratories, and other infrastructure that allow them to develop their work.

The EAS activities used by the organizations are project dependent. Farmer field schools are the most common approach. Providers also use demonstration plots, field days and individual or group visits, among others, to deliver knowledge. In addition, some organizations promote the use of technological validation processes, and others combine field schools with other processes to generate new technological innovations. The organizations primarily target small and medium producers dedicated to commercial production and staple foods. A few EAS providers focus on women, youth and marginalized populations. Most EAS services are provided in group settings, with some one-on-one interventions and limited network approaches.

Most organization do not use information and communications technologies (ICT) tools to deliver their services. While some providers are developing mobile phone applications, most providers do not value ICT as a service delivery platform. There is limited use of mass communication, such as radio and television, and short message services (SMS) texts are occasionally used.

Many EAS providers focus on increasing market access. There is a general lack of knowledge about the market among small and medium-sized farmers. The service providers aim to support producers and other actors to develop skills and knowledge to access markets, mainly accessing information to make decisions about what to produce. However, the content of services needs to be strengthened in demand identification, technical advice on market conditions, linkages with knowledge sharing networks, access to production, marketing and financial services, and training on market-related topics (e.g., tracking, food safety, packaging and post-harvest management).

In general, there are limited guidelines for content generation within the EAS system. Most organizations develop content based on grower demands and opportunities. Many have participatory processes that involve stakeholders to determine the type of content most needed, but this does not happen universally.

Overall, Honduras' EAS system, like most, is a work in progress. The system has a framework in place, but lacks the resources and support to overcome the challenges it faces to deliver innovative, effective extension services in a systematic way. However, the information contained within this document provides a strong starting point to begin bolstering this system to support smallholder farmers in Honduras in their quest to generate more sustainable incomes to improve the lives of their families and communities.

INTRODUCTION

In recent years, extension and advisory services (EAS) in Latin America have experienced deep transformations. In an attempt to modernize, efforts were made to deconcentrate and reorganize the public systems, transferring extension into private hands in most cases. NGOs, companies and private individuals were asked to step into the role of providing EAS. A 2014 report (FAO-BID-RELASER, 2014) found this action resulted in a marked weakening of the ability of public institutions to provide EAS, resulting in a lack of impact and improvement in the livelihoods of the producer families.

Though there was a plan in place to respond to the demands of the populations served in a timely and coherent manner, the expected results of this modernization were not achieved. In many cases, the services provided were not evaluated, and the providers moved on to new learnings, models and methodologies without indication of uptake or success of previous services. Rather than looking at the needs of the sector or the vision of the national governments, EAS in this region was pushed by organizational strategies that focused more on technical and financial constraints. The efforts to open and deregulate markets, the withdrawal of the state from some services and the producer's needs to move forward with more efficient business methods created a complex EAS environment. This complexity resulted in multiple actors with differing strategies providing different services to farmers including government agencies, public universities, NGOs and private companies.

In the 1990's, a new focus on EAS emerged due to the low performance in food security, the stagnation in poverty in some countries, a decrease in economic growth in rural sectors that was reflected in a deterioration of the living conditions in rural communities. In addition, there emerged new challenges such as globalization and climate change that threaten to deteriorate the livelihoods of rural populations. In order to face these new challenges, an effective agricultural extension service needed to be developed with stronger institutions, farmer capacity and adoption of new technologies as well as the social capital to improve productivity, food security, access to market and the wellbeing of the rural families. The goal was to develop the capacity of the actors in the system, both public and private, in order to adequately respond to population demands. Once trained appropriately, extension agents would be able to contribute to the improvement of livelihoods of rural families by:

- Unleashing and transmitting new knowledge and experience to local farmers, allowing them to identify problems and find solutions themselves.
- Improving the existing skills and abilities of the local actors, mainly producers.
- Changing the knowledge, attitudes, practices and aspirations of producers to achieve adoption of new technologies and practices and encouraging the organization of producers in order to sell their products at better prices.
- Promoting and developing new relationships at all levels (i.e., between producers, between other actors and between producers and other actors) to manage knowledge and reduce gaps, which will in turn reduce the cost of learning.
- Offering specialized support to improve the quality of the processes and products.

- Linking the producers with the proper EAS technology to match their needs and providing capacity to manage a strong agricultural ecosystem that uses appropriate tools to strengthen development in rural areas.
- Articulating and developing an information system that captures information on what is lacking for the rural communities in order to facilitate rural development.

This analysis takes a critical and constructive approach to the existing EAS system, its successes, its gaps and how they have affected the outcomes and outputs of agriculture within the country. The study also identifies current and future challenges and opportunities to address them.

CONCEPTUAL FRAMEWORK

The modified DLEC framework (Figure 1) uses the original best-fit framework (Birner et al., 2009) to determine EAS areas to focus on-the-ground activities on within DLEC's manageable interests. The frame conditions (political environment, business environment, civil society/collective/community environment, agroecology and broader agricultural innovation systems) are outside DLEC's manageable interests. The best-fit framework includes certain characteristics of EAS, plus the agricultural innovation system. EAS characteristics within the original best-fit framework include governance and structure, organizational and management capacities and cultures, and advisory methods. The DLEC framework adapted this original best-fit framework and added additional characteristics: market engagement, livelihood strategies and community engagement. The "manageable" outcomes of this framework include the system-level performance areas of access, quality and sustainability. The ultimate impact at the farm household level is outside DLEC manageable interests.

The building blocks for EAS are also useful for framing recommendations for engagement. They are as follows:

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

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

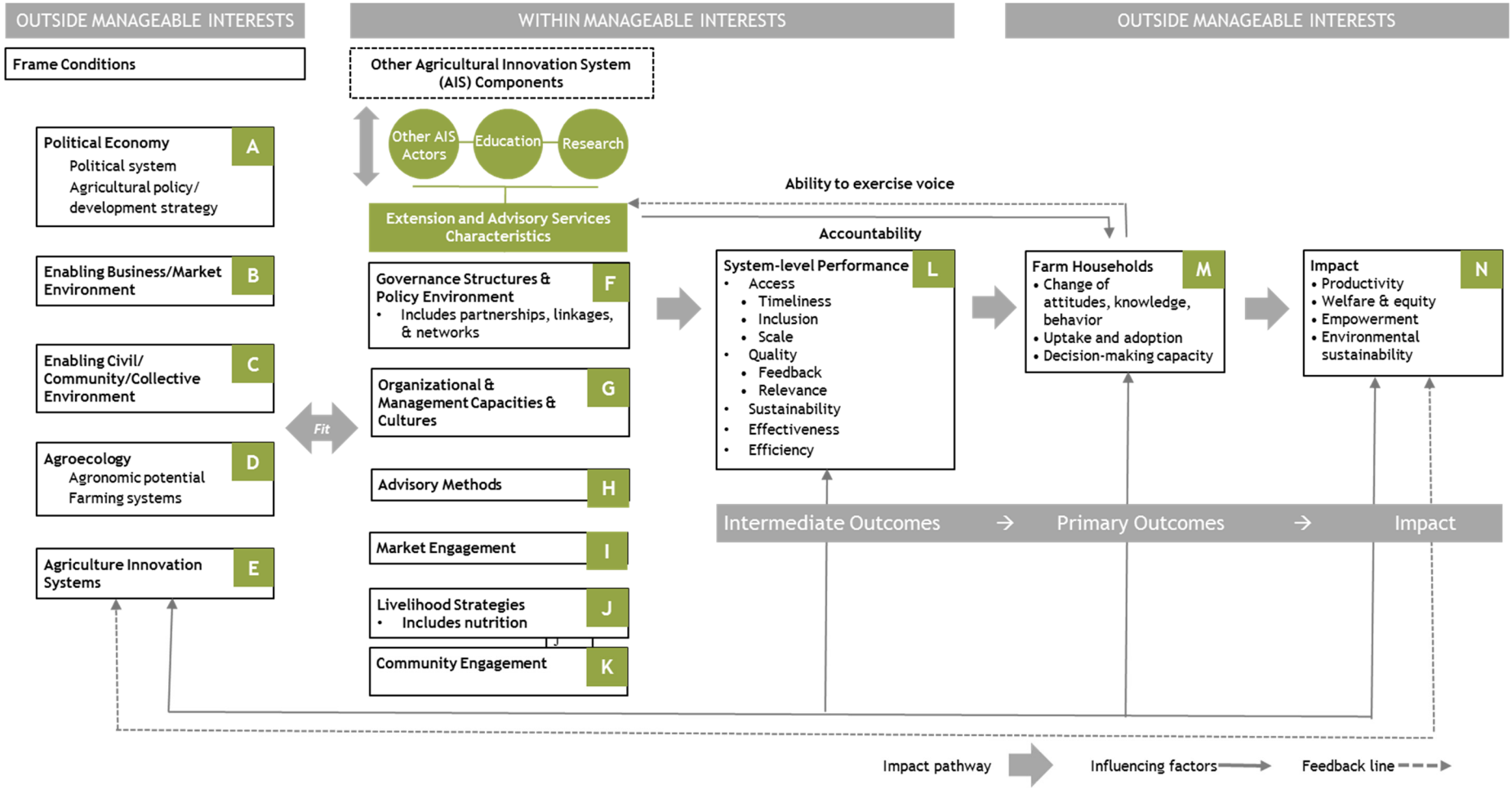

Figure 1. Conceptual Framework for the Study

Source: Adapted from Birner, et al. 2009.

METHODS

This analysis uses the methodology prescribed by IFPRI (IFPRI, MEAS and GFRAS, 2014) within a broader framework of agricultural innovation systems, in addition to some elements developed by the Latin American Network of Rural Extension Services (RELASER, for its acronym in Spanish). The analysis identifies six elements of importance in EAS, including:

1. Governance structures and policy environment (responsibility, coordination, funding, relationship and functions of EAS providers within the system of agricultural innovation, etc.)
2. Organizational and management capacities and cultures (mandate, mission, human resources, performance management, incentives, etc.)
3. Methods used in country extension and advisory services as well as lessons learned from successful cases and their stepping-up from targeting, participation, use of technology and so forth
4. Areas in which extension can effectively use the address the issue of market engagement
5. Areas where EAS can engage with communities
6. Areas where EAS can help producers self-manage livelihood strategies

Recommendations are then given on areas that need to be strengthened to make extension more effective, efficient, relevant, sustainable and scalable.

The methodological process developed to achieve the analysis was conducted five stages:

1. Honduras extension forum participation (September 2016)
2. Stakeholder mapping
3. Collection and analysis of secondary information
4. Consultation with local, national and international actors (guided interviews and surveys)
5. Document analysis, conclusions and recommendations

OBJECTIVES

The analysis will serve to inform the DLEC project, USAID, and other extension stakeholders about the current EAS system in Honduras, its successes and its challenges. These results will inform, influence and strengthen the knowledge base of the EAS sector for Honduras, Latin America and globally with the goal of increasing the resilience of smallholder farmers and their families around the world thereby ensuring better living conditions for rural families and the sustainability of their livelihoods.

BACKGROUND

Defining Agricultural and Rural Extension

Rural extension and advisory services are defined by GFRAS (Christoplos, 2010) as all the different activities that provide the information and services needed by farmers and other players in the innovation system to develop and build their technical, organizational and management capacities, so they can improve their quality of life and well-being. Rural development is multidimensional, so in the rural extension framework there are other players that interact who are not directly part of the production process, but are related to food and market assurance and improving life quality of the population in general. Essentially, the definition of the rural extension system is defined by the needs of the territorial players.

In a globalized world, agricultural output must also be competitive in internal and external markets in addition to providing food. This fact holds true even for the poorest farmers. The contributions of a modern extension service cover a wide range of activities from production to consumption. In this context, extension agents must work as knowledge brokers, so they can facilitate the teaching and learning processes. This new approach requires service that works in a multidimensional mode, and effectively executes knowledge transfer through a set of disciplines. This service must be oriented toward improving production, food consumption and market access, and this facilitation role has a wide range of technical, management and enterprise abilities that are not present in a traditional linear extension programs. (Rajalahti, Janssen, & Pehu, 2008).

EAS may include (IFPRI, MEAS and GFRAS, 2014):

1. Information and technology transfer;
2. Business management, organizational and agriculture exploitation tips; and
3. Rural development and value chain intermediation and facilitation.

Capacity Building

According to FAO (FAO, 2012) building capacity is the process of releasing, strengthening and maintaining the capabilities of the population, organizations and society as a whole, so they can manage their affairs successfully. The real and lasting change in agricultural development, or any other sector, is driven by strong and sustained capabilities. These capabilities must be extended to all government levels and must include other actors, such as civil society organizations, social networks, universities and private sector organizations. In order to achieve this, capacity building must focus on three different dimensions.

- ***The individual dimension*** refers to the knowledge, skills, behavior and attitudes of individuals to understand all sectors' needs and manage timely answers.
- ***The organizational dimension*** refers to the mandates, priorities, processes and structure of public, private and civil society institutions. This dimension includes all public, private, civil society, social networks and organizations where the different actors converge.

- ***The system or enabling environment dimension*** refers to how individuals and organizations work jointly and includes the entity, their power structures, and legal and political framework.

The Agricultural Innovation System

Agricultural innovation systems according to the World Bank (2006 as cited in World Bank, 2012, p. 2) are networks, companies and individuals combining the use of new products, knowledge, processes and forms of organization with current and future institutions and policies to impact behavior and performance. According to a 2014 report (FAO-BID-RELASER, 2014), innovation is a keystone for agricultural development. The ability to harness the potential from agricultural innovation is necessary for all actors to improve connections between generators and users of knowledge. Figure 2 shows the agricultural innovation system, its actors and the policies governing the interactions.

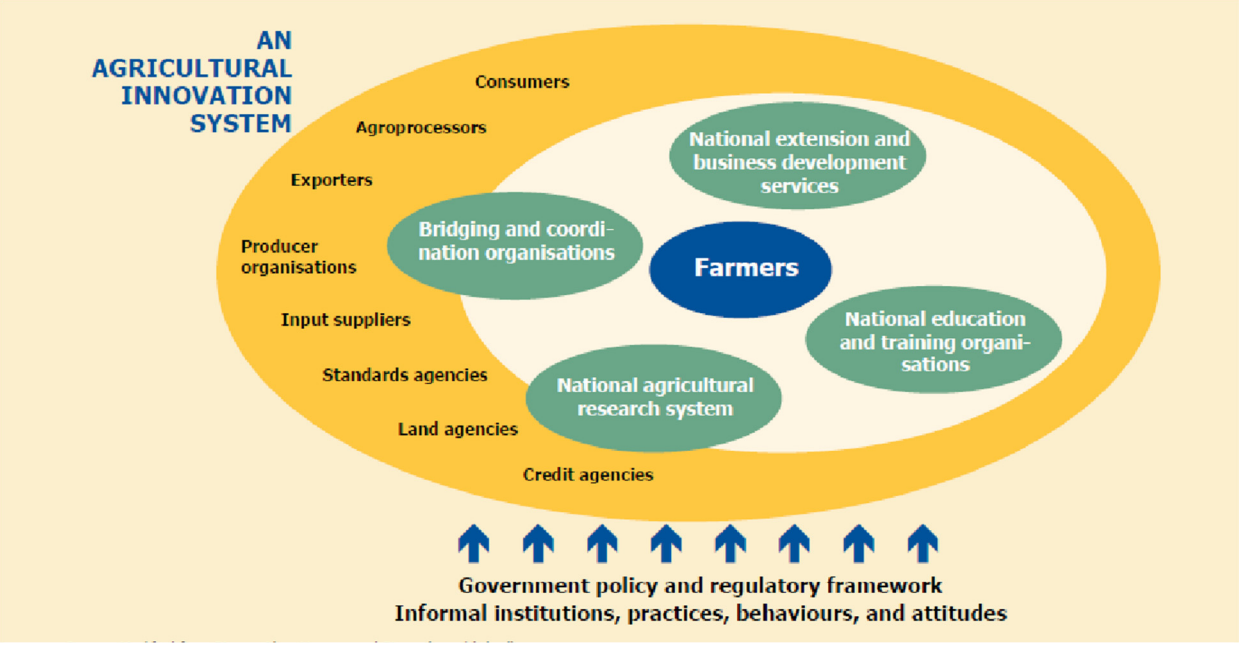

Figure 2. The Agricultural Innovation System

Source: Birner, et al., 2009 (adapted from Birner et al., 2006)

RESULTS

Frame Conditions Related to Extension

The agricultural sector in Honduras contributes substantially to country's economy, making EAS a critical institution for its development. In 2015, the sector contributed to almost 14 percent of total GDP at current prices. The sector is only surpassed by trade and manufacturing sectors and, in the last five years, has grown an average of five percent.

Agricultural value[2] added by workers is estimated US $3,613 per year. In employment, agriculture generates 29 percent of the total employment, being the sector that most generates employment in the economy. The rural population that should be served by extension makes up 45 percent of the total population (World Bank, 2015).

In 2015, total agricultural exports reached US $2,761 million, representing 34 percent of total country exports. Coffee, bananas and palm oil make up 40 percent of the country's agricultural exports. Coffee, in recent years, has been the most popular product. In 2015, there were 7.3 million quintals or 804,687 tons exported. North America is the main export destination at 46 percent, followed by Europe and Central America.

Food production focuses on the staple diet of Honduras corn and beans. In 2015, corn production reached 13.8 million quintals (1.5 million tons) and beans reached 2.45 million quintals (270,066 tons). The economic contribution from both products reached five and almost three percent of the agricultural GDP respectively, contributing directly to food security and the economy of the country. Among the most important products are coffee, staple grains, African palm and livestock.

Figure 3 shows Honduras' agricultural GDP average from 2011-2014.

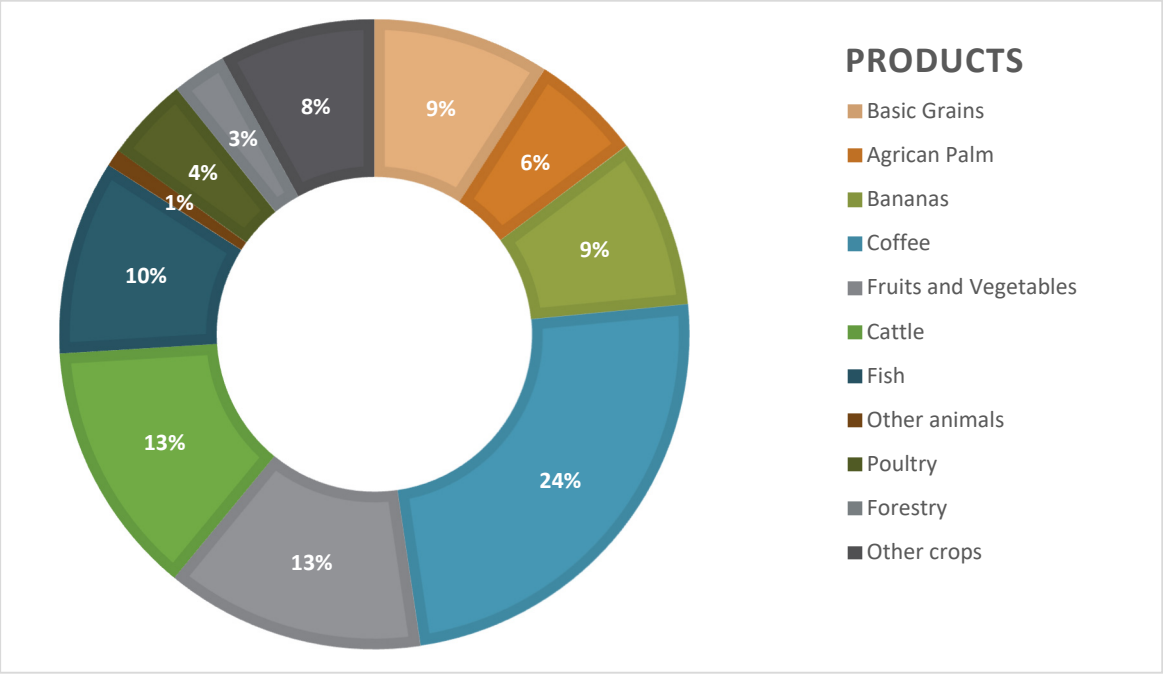

Figure 3. Agricultural Share of GDP

Source: Agricultural and Livestock Secretariat (SAG), 2015

The agriculture sector makes up a significant part of Honduras' GDP and is a source for direct and indirect employment generation. Agricultural extension is a key component to the sustained and continuous growth of agricultural sector and, in turn, the GDP.

[2] Agriculture value added per worker is a measure of agricultural productivity. Value added in agriculture measures the output of the agricultural sector less the value of intermediate inputs. Agriculture comprises value added from forestry, hunting, and fishing as well as cultivation of crops and livestock production. Data are in constant 2010 U.S. dollars.

The Agriculture and Livestock Secretariat (SAG, by its Spanish acronym) mandate is to achieve a national agricultural production system that is sustainable, competitive and able to participate in a global economy, while responding to internal market needs and integrating self-sufficiency, community participation, gender equity and sustainability of natural resources. SAG coordinates, plans and executes public agricultural policies; fulfills state functions directed toward the agricultural production areas of the country; and represents the Honduran agricultural sector regionally and internationally.

Currently, the agricultural sector in Honduras is ruled by two strategic frameworks. The first one is the 2004-2021 State Policy for the Agri-food Sector and Rural Areas, and the second one is 2014-2018 Government Strategic Plan *Everyone's Plan for a Better Life*.

The 2004-2021 State Policy aims to achieve transformation of the agri-food sector in order to increase its contribution to economic growth significantly. The intention of the policy is to implement sustainable resource use, increasing agricultural competitiveness and participation in a global market, while supplying the internal market. The intended result is reduction of poverty, in which a large part of the rural population lives, and improved food security for the country.

To achieve this transformation of the agricultural sector, three strategic steps were defined: i) increase in quality and competitiveness; ii) transformation through product promotion and integration of agri-food chains; and iii) development of smallholder agriculture and gender equity. Figure 4 shows the policy framework.

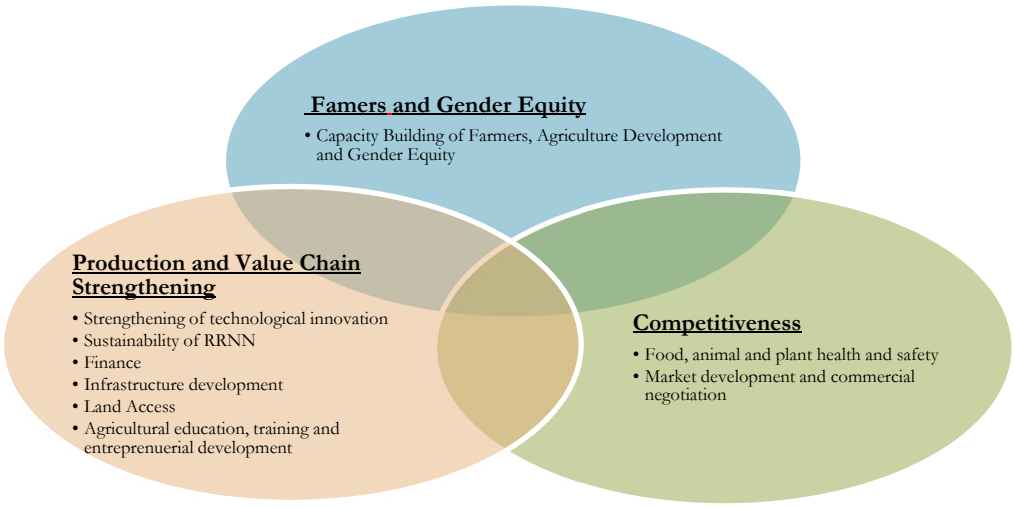

Figure 4. Agricultural Policy Framework

Source: Authors

The policy established a strategic objective to encourage technological innovation by defining incentives and mechanisms to establish technology generation, technical assistance and extension services for public and private actors. The policy also instituted the National Council for Agricultural Science and Technology (CONACTA, for its Spanish acronym) to design and implement a national plan for agri-food technology development and the National Center for Technical Innovation in Agri-food (CENITA, for its Spanish acronym) and the Fund for Agricultural Technology

Development (FONTEC, for its Spanish acronym), which have technology generation, transfer, technical assistance and financing of productive sector projects in their budgets.

The *Everyone's Plan for a Better Life* strategic plan, in turn, has four global objectives:

- To improve human development, equity and social protection
- To improve competitiveness and productivity in a sustainable manner
- To seek peace and eradicate violence
- To promote transparency and state modernization

As part of the first objective, the plan continues to implement rural development actions that reduce vulnerability in the dry zone and income improvement for rural producers. The second objective will establish actions that allow expansion and use of technology and modernization of the agricultural sector to increase production and productivity, competitiveness, employment generation and foreign investments, which will result in a significant contribution to economic and social development in the country. This will be achieved by:

- securing financing through the Trust for the Reactivation of the Agri-food Sector (FIRSA, for its Spanish acronym) of palm oil, sugarcane, pig, poultry, cattle and other livestock;
- strengthening extension of irrigated areas to support production and productivity of agricultural sector;
- promoting the national program for biofuel production; and
- starting a national program for bovine, swine and poultry re-stocking.

The Secretariat of Agriculture and Livestock established three strategic objectives that define its contribution to the sector, and its alignment with national goals, which are to:

- develop skills in production, productivity, trade, competitiveness, health, generation and agricultural technology transfer in the agri-food sector to improve quality of life of producers;
- expand infrastructure for increased production and productivity in the agricultural sector; and
- improvement of phytosanitary systems that guarantee the quality, safety and competitiveness required of the country's agri-food production, that allow access to national and internal markets.

The SAG relies on other institutions to achieve its objectives, such as:

- The Agricultural Science and Technology Board (DICTA, for its Spanish acronym)
- National Program for Rural Irrigation Agriculture (PRONAGRI, for its Spanish acronym)
- National Program for Agri-food Development

- Rural Economic Competitiveness Improvement Project in Yoro (PROMECOM, for its Spanish acronym)
- Development and Rural Competitiveness Program for the Southern Region (EmprendeSUR, for its Spanish acronym)
- Project to Improve Rural Competitiveness in Honduras (COMRURAL, for its Spanish acronym)
- Program for Technical Assistance for Less Privileged Farmers
- Food for Progress Program

The framework of national policies aims to improve the sector in productivity, income, food security and competitiveness. Those improvements will follow the route of technology generation and transfer, development of capacities in farmers and value chain actors, and increase in agricultural assets. The policies' programs and projects for rural development will be financed with public and corporate resources that will be attained through the aforementioned national programs.

Considering Honduras' agricultural sector's vision based on these policies, strategies and objectives, the extension services are a key strategic element to achieve the expected changes. In this sense, the policy framework is favorable to develop actions and strengthen EAS in the country.

The Secretariat for Economic Development (SDE) is in charge of delineating and implementing trade policy and is responsible for export and investment promotion. The Economic Integration and External Trade Sub-Ministry formulates, coordinates, implements and evaluates economic integration policies, including the negotiation, agreement and implementation of regional and multilateral trade agreements.

One of the main objectives of the *Everyone's Plan for a Better Life* strategic plan is the creation of conditions that will allow for accelerated, inclusive and sustainable economic growth to increase employment and poverty reduction. The plan will achieve this through investment, promotion and revitalization of foreign trade and support and development of small enterprises at both the rural and urban levels.

To promote the export of agricultural products, Honduras developed actions to open new markets, or market niches, through new free trade agreement negotiations and the improvement in the administration and implementation of those agreements.

The Program for Export Promotions, under the Sub-Ministry of Economic Integration and Foreign Trade in SDE will use business and trade events to promote Honduran exports. Within the sector, the government promotes exports of agricultural products through its Agribusiness Unit (formerly Promotion Center for Agricultural businesses (CNPA, by its Spanish Acronym)) of the SAG and through the Interinstitutional Commission of Agribusiness, which groups public and private entities. Both structures provide information about the different markets and advice to exporters to facilitate access to markets.

At the same time, the government executed actions projects to support access to national and international markets; strengthen the national phytosanitary system for exports, health and food security improvements; and integrate the value chain with public-private structures, technological innovation and access to agricultural credit.

In the last few years, the government promoted the decentralization of services to the municipalities as part of the plan for efficiency in the public sector. This action is known as Decentralization State Policy for Development. The objective is the modernization of the public sector through the strengthening and capacity building of the municipalities, allowing them to provide goods and services to the communities. By 2038, it is expected that at least 40 percent of public investment will be channeled through the municipalities.

The policy establishes the decentralization of the promotion of economic, social, productive, cultural and environmental development and gives financial resources to the municipality and/or municipal associations for innovation, promotion of economic activities, agro-production, tourism, industry and services that generate local employment.

The decentralization policy is a favorable regulatory framework for the municipal associations and engages local actors to provide support services for agricultural production. Extension could be a service that can be structured and coordinated at the local level, with technical and methodological support from national institutions responsible for the service. This process will require capacity building, financial resources and political will of the local governments. Therefore, it is important to develop incentives that define a path for decentralization processes to shift the responsibility of extension services to municipal associations.

At the national level, Honduras established a policy to support scientific, technological and innovation development. The regulation establishes that the State will create favorable conditions to stimulate scientific and technological development that can be applied efficiently to encourage social and productive transformation for optimal development of the country. The policy's objectives are to:

- encourage scientific, technological and innovative knowledge generation;
- stimulate the innovative capacity of the productive sector;
- provide guidance for selective imports of technology applicable in domestic production;
- strengthen support services to the scientific investigation and technological development;
- organize and integrate the national system of scientific, technological and innovation information; and
- establish incentives for creativity for the improvement of life and culture of Honduran people.

Under this law, the National Ministry of Science, Technology and Innovation (SENACIT, for its Spanish Acronym) and the Honduran Institute of Science, Technology and Innovation (IHCIETI, for its Spanish acronym) were established. SENACIT administers the regulatory framework and IHCIETI is technical and operative arm of SENACIT. The law also created the National Council for the Promotion of Science, Technology and Innovation (CONFOCIT, for its Spanish acronym) to promote dialogue. The SAG is a member of CONFOCIT.

Because these are institutions that support multi-sector innovations, the actions are oriented to technology, the robotic industry, nanotechnology and others sectors, with limited incentives for

technological innovation development in the agricultural and forestry sector. On the other hand, the regulatory framework is favorable to develop actions in the sector if combined with agricultural sector policies. Because the agricultural sector's specific conditions, it is important to develop innovation and extension policies that define the actions of public and private actors, in consideration with national policy.

Honduras does not have a specific extension policy that governs the objectives, guidelines and policy instruments or the role of specific extension stakeholders. The general guidelines used are pulled from section four of the Agricultural Sector Modernization Law, which established the creation of DICTA and its mandate to develop a private system of innovation and technology transfer supported by private organizations. These guidelines were established in 1994, and are due for review and amendment.

The creation of private technical assistance providers generated a need for a certification process that was to be conducted by the college of agronomists and DICTA; however, this process was never enacted. Unfortunately, the lack of national dialog and consistent platforms to discuss extension services and their role in the Government of Honduras strategies and policies has hindered the growth of an extension policy that would define system priorities and enable coordination and effectiveness.

There are many actors that work on innovative processes in Honduras, including universities, the public sector, national and international NGOs, and producer organizations. Every actor has an important role in agricultural innovation management from technological gap identification to new innovation design to technology validations to knowledge transfer processes that reach farmers. To bolster these joint efforts, the creation of a National Research, Investigation and Transfer System for Agricultural Technology (SNITTA, for its Spanish acronym) was proposed. This organization would be made up by CONACTA, a technical division, a planning and project unit and FONACTA, and would be guided by DICTA (Catholic Relief Services, Global Water Initiative and The Howard Buffett Foundation, 2014).

Among the organizations that are generating knowledge and new innovations are the National Agricultural University, the Zamorano Agricultural College, the Honduran Foundation of Agricultural Research, DICTA, the Tropical Agricultural Research and Higher Education Center (CATIE, for its Spanish acronym), the Honduran Coffee Institute (IHCAFE), and the Central University of the Atlantic Coast (CURLA, for its Spanish acronym), among others. Research lines include genetic improvement, new low-cost cultural practices, agrochemical reduction, crops and biotechnological pest management.

While this is a rich set of actors engaged in research, each institution chooses the focus on their own research agendas. In the case of state-run institutions, the major efforts are directed toward basic grains and other national produce, such as cocoa, banana, vegetables and coffee.

National and international NGOs are also important players in the innovation system. In Honduras, there is a multitude of organizations implementing projects with funds from various donors. They offer support services for production, support value chain to market productivity, promote food security, and develop research and many other programs. The NGOs implement support services, like technical assistance and assets for farmers and organizations, that are delivered as public goods. They also offer financial services focused on agricultural production. NGOs play an important role in that they generate new organizational innovations, capture technology innovations and deliver

that knowledge to producers through extension methodologies, such as producer networks, farmer field schools and many other activities that contribute to the improvement of the lives of rural families.

There is some interaction and coordination between NGOs and knowledge generating institutions, mostly to find solutions to specific agricultural problems. In some cases, permanent joint ventures were created for the purposes of implementing development projects. However, although there are relationships, they are not systematic, nor do they fall under an innovation system plan that establishes clear roles and management processes to synchronize the innovation and knowledge transfer.

Farmers' organizations are another important player of innovation system, from base cooperatives to second and third floor organizations that bring together cooperative groups. This segment participates in public policy management, offers technical assistance services, supports the transformation processes and commercialization, and offers financial services for production. They also contribute to the upper level of the value chain, like rice growers and millers that develop agricultural innovations with support from the CGIAR Consortium research institutes.

The public sector participates in generating innovations, but also in extension processes. The SAG does this with its various institutions and their programs, projects and agricultural health services, such as the Agricultural Education, Training and Development for Agri-Business Service (SEDUCA, for its acronym in Spanish) or the Agri-food Information Service (INFOAGRO). These activities are oriented to technical assistance services, training, assets provision, market access, business development and support for social capital. Projects play an important role because they provide many of their innovations to farmers through donations or co-investment. Some municipal associations participate in innovation processes by supporting extension services within their territories. Many of these local bodies communicate directly with NGOs to ensure support for the public services in their regions. All of these activities are executed under the decentralization policy framework.

The formal vocational education sector is an important component of the innovation system as it strengthens the capacities of youth and integrates them into the productive sector. The Ministry of Education regulates a network of 28 technical colleges that offer technical bachelor's degrees. The National Institute for Professional Formation (INFOP, for its Spanish acronym) also trains youth in animal health, horticulture and agricultural machinery operations.

Input suppliers are also important actors in the innovation process in Honduras. In conditions where public extension is limited, input suppliers offer new innovations by contributing directly to technological advancement. This segment includes seed providers, agrochemical and fertilizer providers, equipment vendors and machinists.

Another key component of the system is the technical assistance provided by companies and individuals. Private extension services were incentivized by the creation of the modernization laws to build companies and promote individual entrepreneurship.

The innovation system in Honduras is a multi-player environment that includes participation from NGOs through international bilateral or multilateral-funded projects. While this provides richness in terms of learning and institutional innovations, it is fragmented with limited coordination and

processes synchronization. This situation is due to the lack of leadership from public institutions that could create a functional and efficient innovation system at the local to national levels.

This section set the scene for the frame conditions affecting EAS in Honduras. The next sections discuss the extension system according the to six areas of EAS from the best-fit framework: governance structures and the policy environment, organizational and management capacities and cultures, methods, market engagement, livelihood strategies and community engagement.

Governance Structures and Policy Environment

In the previous section, we looked at the macro level and the enabling environment played by the federal government and policies. This section and the next on organizational and management capacities and cultures focus on the meso level, which links between the policy level and implementation level through governance structures, EAS policies and program management. The first EAS area that we look at includes the governance structures and EAS policy environment. This area also includes the links to education, research, the private sector and farmers.

Derived from the modernization and development law for the agricultural sector (31-92)[3] that establish extension system privatization and technical assistance, the current system has a multitude of technical assistance and rural extension activities across the country from several public and private institutions, both national and international. As noted in the previous section, the government has different normative and planning instruments that establish guidelines for promoting coordinated investment in the sector. However, there continue to be challenges in the system in terms of implementation of both public and private sector investments.

Individual technical assistance projects and programs have developed their own monitoring and evaluation systems. These monitoring and evaluation systems are project-based and measure specific points in the system, but almost none follow up or measure the impact on extension services and the impact on rural families. There is not a systematic evaluation that measures coverage or quality of extension services within parameters of the realities of the country. The different reports are focused on rendering accounts to donors rather than producers and other clientele. The accountability system emphasize counting activities carried out, over analysis, learning and lessons to facilitate the construction of knowledge with the aim to improve public policies and sector activities.

The SAG, through its planning unit, established a monitoring and evaluation system, to measure the results from each activity carried out by different private and public institutions, using an adjustment and implementation process that includes six modules. However, the system is set up to measure goals and products, but not impacts of the extension and technical assistance. The participation of farmers in the process, from formulation until execution, is included, but informally. Only a few institutionalized spaces exist to secure active, informed and consensual participation.

The main public institution involved in research and development in Honduras is DICTA, under the SAG. This organization carries out research-based projects, but does not operate a specific research program focused on extension's demand and development. In accordance with law 31-92, DICTA is

[3] Decree 31-92, The Law of Modernization and Development in the Agricultural Sector, The Government of Honduras, 1992 and its corresponding referendums.

responsible for leading rural extension in the country. The organization assumes the role of facilitator and regulator of extension services that under this same law were transferred to private institutions and companies, with the objective of assuring quality service with wide coverage to producers and their demands.

According to the Modernization and Development of the Agricultural Sector Law, the SAG has under its charge the activities and services from the agricultural public sector. That same law, under the 35th article, created DICTA with the mandate to design, direct and execute generation and transfer programs for agricultural technologies and technical assistance to national farmers. The organization has the responsibility to regulate the transfer and generation technology services with the cooperation of the country's private and specialized institutions, and will promote the creation and operation of private institutions or companies with this purpose. At the same time this law gives DICTA the responsibility to regulate the quality of extension, training and certification services to technical staff in the adoption of new modalities of agricultural exploitations as well as technically and financially promote and support national farmers.

Despite efforts made and the existence of a law (143-2009) that establishes the decentralization of the services and the transfer of the same to private organizations as part of the government's efforts to expand coverage, the extension system remains largely fragmented. There is limited coordination between actors, and strong leadership is needed to guide the system.

There are two aspects that affect the direction of the sector, according to a RELASER study (FAO-BID-RELASER, 2014), first, the vision of the actual government, and, second, the influence of international cooperation agencies. The management of agricultural extension systems in Honduras always depended on the political vision that the government has for the agricultural sector, which was historically based on the production and rural economy model being promoted. Such is the case with the National Rural Extension Program recently created under the SDE. Despite the Secretariat being linked to the agricultural sector by trade, certification and export processing, it has not been involved in extension until now. While influenced by government agencies and NGOs, it is tasked with determining the course, objectives, methods and methodologies used to provide extension services and rural advice. On the other hand, organizations of this type have not always been successful. For instance, SNITTA has not yet managed to establish knowledge management or public policy spaces or guidelines that contribute to improve innovation processes.

A recent RELASER study concluded that the traditional agricultural extension services offered by the State of Honduras in the last 40 years had low coverage, limited success in the adoption of production technologies, inadequate technology supply that does not always meet current demand, insufficient technical assistance to a growing number of producers (small and medium growers), limited collaboration with research and agricultural education centers, and minimal linkage with marketing processes, with the exception of some products destined for national and international markets such as coffee and bananas (FAO-BID-RELASER, 2014).

While the law calls for public and private spaces for dialogue, synergy generation, knowledge management and policy construction, these spaces or platforms have not yet been created. Efforts must be made to establish these spaces and to build a regulatory framework to promote technological innovation processes, especially in extension with wide participation from public and private players within the country.

Formal extension services are provided by five actors in Honduras: i) public sector (DICTA, and programs executed by the SAG and the SDE); ii) international technical and financial support agencies and national and international NGOs; iii) education and research institutions; iv) business unions and associations; and v) the private sector. Figure 5 shows the level of participation of each of the five actors. The municipal associations and municipalities using national funds and external resources are an important actor; however, they do not appear in the chart because so far almost none have formalized EAS services and they have no data to share.

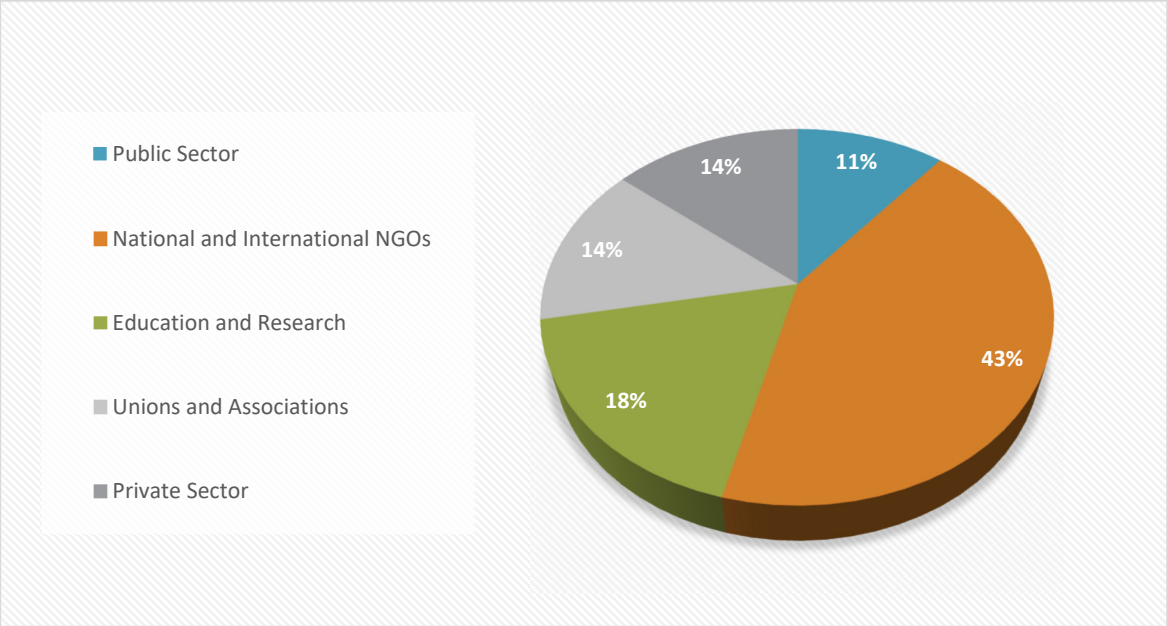

Figure 5. Extension Provider Participation

Source: Authors

In Figure 5, we can see that NGOs are the greatest contributors to the extension system and in giving technical assistance in the country, which is the result of the decentralization of public services and the transfer to private institutions. The next level of contribution comes from research and education institutions. This level consists mainly of colleges and technical schools that provide extension activities based on the specific markets of their region, building capacities focused on crop improvement and knowledge transfer using learning-by-doing methodologies and field schools.

The public sector, under the SAG by law, is authorized to regulate extension services and build capacities within institutions and private companies to improve the quality and coverage of the services, so the public services can be transferred. The SAG is also authorized to provide follow-up to these services, once transferred, and implement certain related projects and activities through DICTA and programs and projects financed through multilateral funding. In August 2016, the President of Honduras launched the National Rural Extension Program under the SDE.

The National Rural Extension Program will implement its first year-long pilot with support from Zamorano, Texas Tech University, the National Autonomous University of Honduras (UNAH) from Catacama, FIRSA and Dairy Consulting. The HNL 50 million (approximately US $2.1 million) project plans to benefit rural families through capacity building, technical assistance, and innovation and technology transfer provided through the participation of seven universities, five agriculture

schools, 27 vocational schools, five state institutions, six private agencies and 50 implementing partners. This project will involve new actors in the system, and in the short term envisions institutional changes, given the possible creation of a Technical Extension Unit in the SDE.

In any case, the municipalities and the municipal associations are making attempts to provide extension services, despite the fact that until now they have been more focused on health and infrastructure services and less on productive sector services and extension, even though these are fundamental structures in community development to ensure a better and more sustainable life for their people. Many of the projects implemented in the communities are supported by agencies, such as FAO, USAID, COSUDE and other NGOs. The decentralization of public services and the capacity building has been asymmetric, partly because there has been no clear direction, but also because partnerships have shaped the focus areas.

Technical and Financial International Agencies, often with national and international NGOs, implement projects with different goals for extension and technical assistance. Some address the topics directly. The majority of the projects do so through government institutions, such as the SAG or DICTA, and/or national and international NGOs, who manage the focus, methodologies and reach of the projects and try to respond to the goals set by the government for increasing productivity, nutritional security, market access and production quality. In addition, they focus on the business management and organizational skills of the producers and building their capacities as service providers.

Education and Research play an important role in capacity development. Through formal and informal education, they ensure service quality, technological innovation, validation and transfer of knowledge to the productive sector through academic extension programs, and they support different actors to improve the methods and methodologies of extension. This segment includes community vocation schools, which play an important role in building the capacity of young people.

Producer Associations provide mainly rural advisory series to members and associates in certain networks. They also provide specialized extension services and some capacity building processes for extension providers and producers. The associations are in the best position, organizationally, to provide these services, although the producers' perceptions about the opportunities and quality of service they provide presents challenges that must be recognized and strengthened before they are recognized in the sector.

Municipal Associations (Mancomunidades) are, according to Municipal Law Decree No. 143-2009, an associative modality. An autonomous community and/or municipal association is defined as a local, auxiliary and territorial entity subordinate to municipalities' members, subject to public law, and exclusively serve as executor and manager by delegation of programs, projects and priority interest services, that allow its members to tackle joint problems that cannot be individually confronted. The municipalities may belong to more than one municipal association according to mutual interest and benefits for the population they represent and their ability to meet financial obligations for their organizations. In Honduras, there are 46 municipal associations, each receiving different support from the central government, from civil society organizations and, directly, from international cooperation agencies.

The Private Sector includes individual consultants and enterprises that offer EAS as a private service. This sector was developed when the national policy transferred the public services to private services. Other agricultural projects financed by other fund have promoted private EAS.

As noted above, all of these actors have the common goal of service delivery to the rural population to improve their way of life, but their methods, methodologies and focus are different and there is little to no communication between them at the national or local level.

There are certain obvious opportunities to organize all of these actors, such as at the municipal association level through the Honduran Association of Municipalities; at the institution and vocational school level through the Network of Community Vocational Schools and at the NGO level through the Honduran Federation of Development NGOs (FOPRIDEH, for its Spanish acronym), who, in addition to bringing together a considerable number of civil society organizations, offer capacity building to municipal associations and implement related projects.

An exercise conducted during the September 2016 Extension Forum in Honduras demonstrates there is not a formal structure that links the different system actors. While some linkages are becoming more robust, many actors still remain isolated.

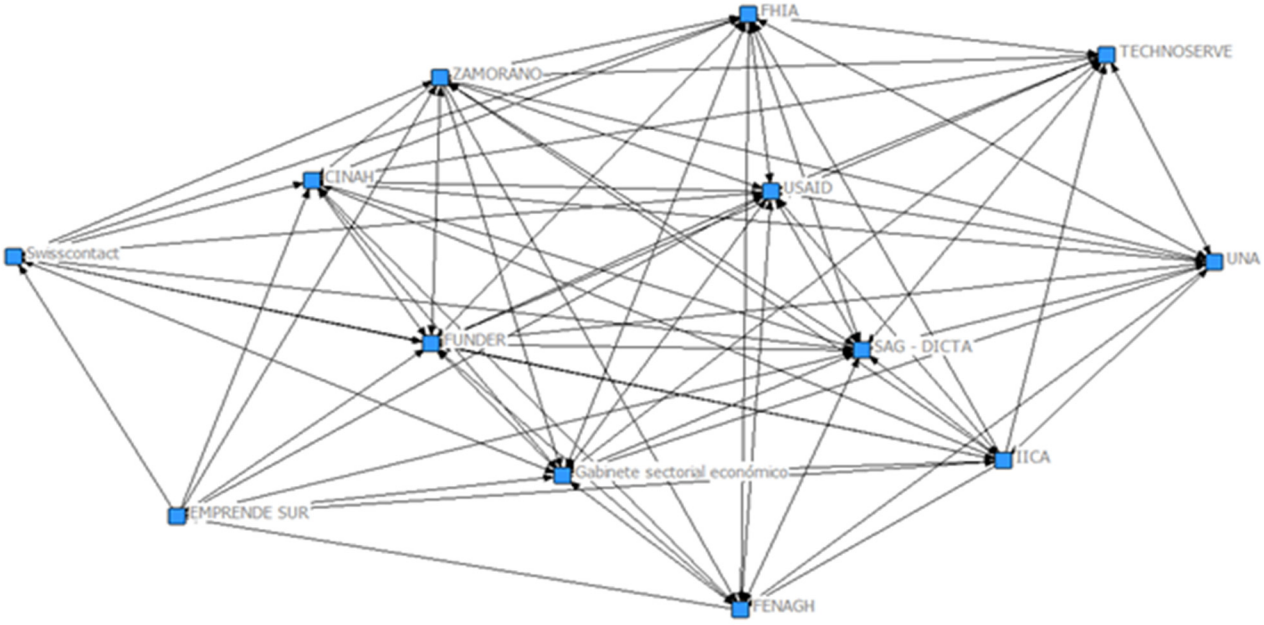

Figure 6. Degree of Articulation Between Extension Actors

Source: Authors

USAID and their Economic Growth Office show the greatest number of linkages with other actors. A growing cohesion among the actors is visible. Sixty three percent of the relationships are between the noted institutions, which shows the degree of interaction between the organizations and the lack of communication, despite the efforts put forth.

According to a recent study on Latin American extension (FAO-BID-RELASER, 2014), EAS system financing in Honduras originates from various sources. International cooperation agencies provide 48 percent of total funds; the national government provides 19 percent; private and research institutes contribute 14 percent; farmers provide nine percent; donations provide four percent and two percent is provided by local government. The money allocated to the public sector to ensure

rural extension activities was reduced in the last two years from HNL 32.8 million (approximately US $1.4 million) in 2015 to HNL 30.2 million (approximately US $1.3 million) in 2016. However, in the second quarter of 2016, the government allocated HNL 50 million (US $2.1 million) for the new National Extension Program.

In 2015, the SAG budget was HNL 1,244 million (approximately US $52 million). Of that amount, HNL 525 million (approximately US$ 22 million, 42 percent) was allocated to the SAG programs, services and projects. The remaining HNL 718 million (approximately US $30 million, 58 percent) was allocated to be transferred to other public and private sector institutions and organizations (Agricultural and Livestock Secretariat (SAG), 2015).

In addition, the SAG implements different national programs, such as PRONAGRI and the National Program for the Development of Fishing and Aquaculture Training (PRONAGRO, for its Spanish acronym). These programs offer significant investments in extension, such as training, knowledge transfer, technical assistance on various topics, and business and organizational development. International cooperation agencies also finance some services, such as the SEDUCA and the Nutrition Coupon (*Bono Alimentario*) for which the government allocated HNL 8.6 million (approximately US $361,000). Because of the disbursement between so many programs, it was difficult to filter out the specific amount of resources intended for rural extension and knowledge transfer.

Organizational and Management Capacities and Cultures

Extension organizations in Honduras providers focus their activities on human development, poverty alleviation, food and nutritional security improvement and income growth. These services aim to build the capacity for decision making in productive processes and the markets for small and medium farmers. The theory of change for most service providers in Honduras seeks to improve incomes and food security through altering technologies and providing market access.

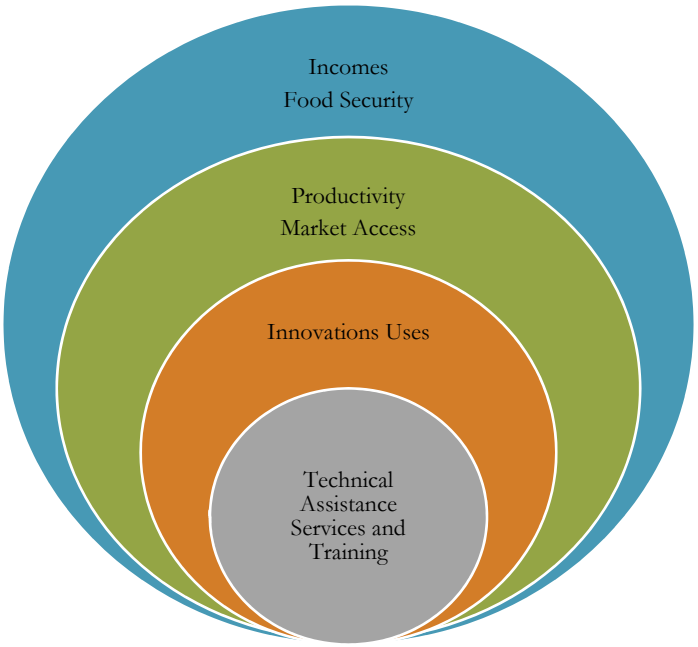

Figure 7. Generic Theory of Change from Service Provider Organizations

Source: Authors

Generally, there are different focuses to technical assistance that providers apply depending on the reach and scope of their projects and programs. These programs include focuses on market demand, market access, gender and youth participation.

The existing human resources for extension organization providers are generally university graduates, generally agricultural engineers. There are graduate-level extension providers with master's or doctorate degrees, but the majority are specialists supporting extension services or working with universities. Based on our survey, only 10 percent of the extension service providers have master's degrees. The rest are engineers or agricultural technicians. Among the service providers there are additional distinctions. The most qualified and most experienced extension provider tend to work for NGOs, mainly because of the higher salaries provided.

Agronomy and veterinary sciences are two specialist backgrounds that most prevail in NGOs. To a minor degree, social scientists, such as anthropologists, socio-economists and social workers also work in the field. Despite the fact that the extension programs use ICT tools, our survey did not find specialists in these areas. The level of development of extension ICT tools is likely the reason for the lack of specialists in this field. Figure 8 provides some insight into the distribution of the educational background of those working in extension.

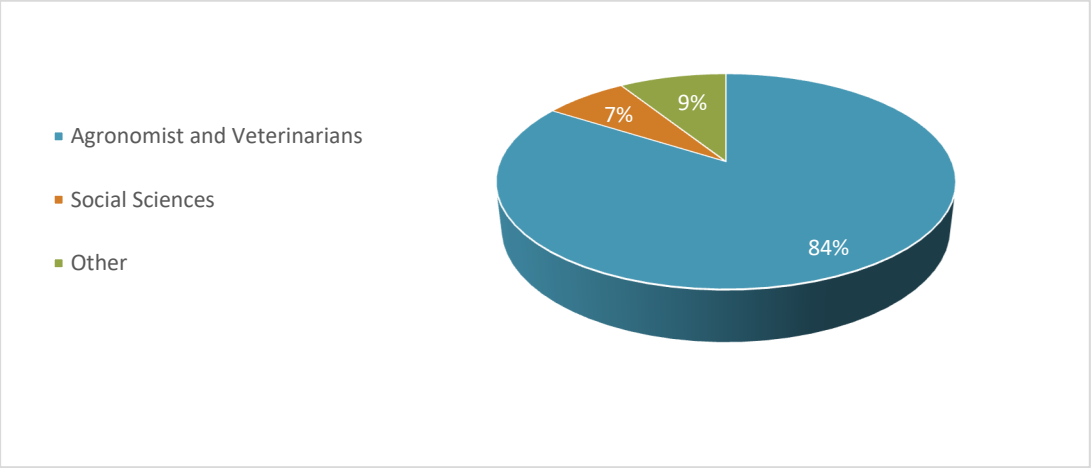

Figure 8. Educational Background of Extension Provider in Honduras

Source: Authors

Continuing education programs are provided by 83 percent of the EAS organizations to their employees. Universities, equipment providers and organizations such as FHIA, CATIE and other regional centers provide additional training. The Agricultural Education Service recently created by the SAG also provides classes. At the municipal level, the Ministry of Education is implementing REPACE centers for this purpose. Cooperation agencies also offer technical and methodological assistance to extension service programs, in addition to offering new technologies, capacity building on extension and helping with the dissemination of innovations to producers.

Topics covered in continuing education include crop management, pest management technologies, animal production and extension methodologies. Specialized trainings in cocoa and vegetables provided by FHIA and supported by Zamorano University helped to strengthen methodologies like

farmer field schools, technical topics, post-harvest management and product transformation. Zamorano developed two capacity building models using hands-on learning methodologies focused on food security and commercial production. In coffee, IHCAFE works in collaboration with universities to provide training on the complete coffee value chain. DICTA works in collaboration with some services providers to create a validation of new varieties of basic grains, providing some capacity building in the process.

There is limited focus on functional skills, such as group development, communication or entrepreneurship. The Global Forum for Rural Advisory Services (GFRAS) called for the development of such skills in extension providers around the world (Davis & Sulaiman, 2014).

Knowledge management and technological innovation are implemented by organizations in two ways. The first is through the institutions that generate the knowledge, such as FHIA, DICTA, universities, and the CGIAR (CIMMYT, CIAT and others). In these cases, there are many interactions between research institution and other private and public extension service providers, and they are done by specific agreement. The second is through the transfer of knowledge, experiences and lessons learned provided by international organizations working in other countries and continents, like Africa and Asia. Some methodologies like Technoserve's connect, reflect, excite, activate and feedback (CREAR, for its Spanish acronym) and farmer field schools were developed on other continents and adapted to the conditions in Honduras.

According to the survey, 66 percent of organizations reward advancement of their personnel through bonuses, perks, salary increases and training. Not all organizations monitor the quality of service delivery, its impact or effects, but organizations like IHCAFE have performance management systems for their employees. The performance management system measures achievement according to outputs, indicators and outcomes established by the project. Some of the most important indicators are project completion, fulfillment of the action plan, capacity building, field visits, and increase in production and productivity.

Fifty percent of the surveyed organizations have a monitoring and evaluation system that allows them to measure progress, effects and impacts, as well as more detailed information that evaluates the theory of change developed during the project design, permitting the generation of lessons learned. In general, these monitoring systems focus on products and results with limitations on their ability to measure effects and impacts. Their priority is on measuring service delivery and the corresponding action plans, trainings and field visits and do not measure much beyond the changes in products.

The monitoring and evaluation systems allow for participation from the farmers during planning, follow-up and final evaluation, which is an important aspect that allows evaluation from the users on services received and results achieved.

National organizations, such as IHCAFE, have their own facilities throughout the coffee areas of the country. The municipal associations have appropriate facilities for extension workers. Projects that work in specific areas have their own facilities and transportation. However, most extension workers use their own personal motorcycle to reach their service areas rather than a car.

Sixty-six percent of the surveyed organizations have internet access, but not all of them have their own Web site. Extension workers, in general, have high internet access, especially those working for

international cooperation agencies and NGOs; however, technical and multifunctional institutes at the community level do not have internet access.

Most extension workers have smart phones, with 66 percent using one of the latest models.

Methodologies Used by Service Providers

Service providers in Honduras use a combination of approaches for extension, including advancing technology transfer, providing technical assistance, using leading producers or promoters, encouraging participatory research and applying andragogy. Figure 9 shows the various methods used to deliver extension.

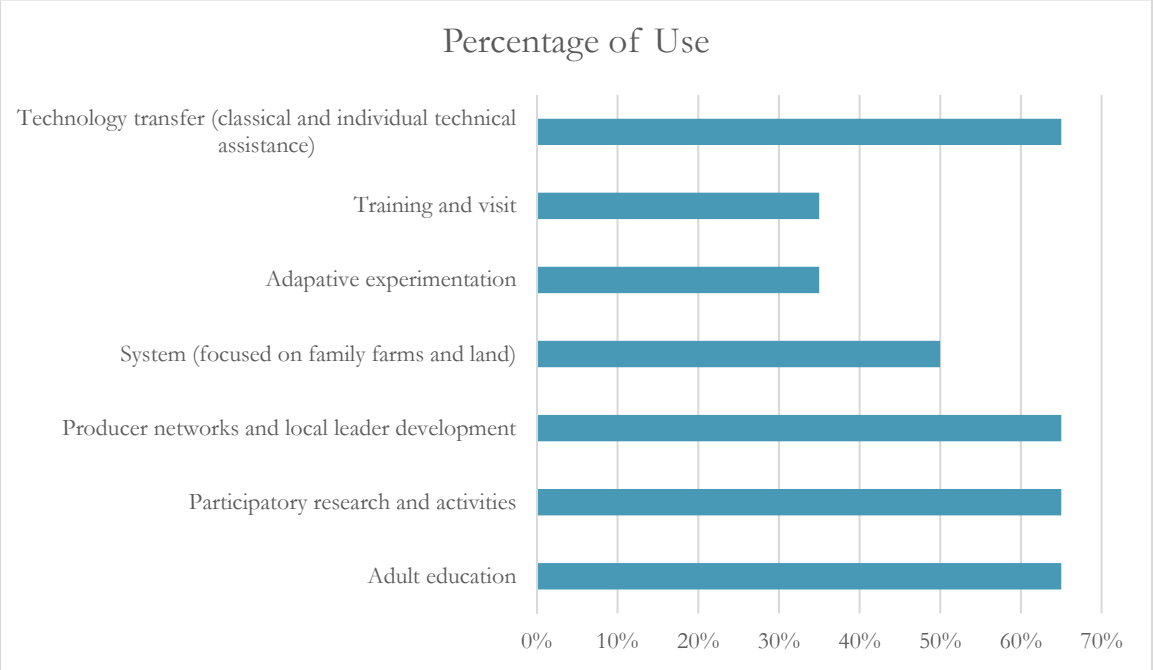

Figure 9. Modalities Used by Service Providers

Source: Authors

The goal of extension in general is to strengthen the decision-making capacities of farmers in the production and market process. In production, the focus is on incorporating new technological innovations and developing knowledge about environmentally-sustainable approaches to integrated crop management. Among the new innovations are irrigation systems, adapted grain varieties, new products oriented to market or for exportation, pest control technologies, home gardens and others. Other projects promote business development at the unit production level, efficient use of assets, records, diversification and financial resources aimed at improving productivity and reducing production cost.

Many service providers use participatory diagnostics during their planning processes to determine their system for demand and service implementation. Zamorano uses a system that establishes farm planning as the basis for services. Other organizations established field schools that use a participatory method focused on the farmer, the environment and the market. Other providers tailor their approaches to the needs of their clients' perspectives, be they men, women or youth, and

address the expectations of the mean population. At the municipal association level, many activities are developed in conjunction with the farmers to raise demand, which determines service planning and interinstitutional coordination

The market approach depends on the end goal of the activities and target population. For instance, services focused on food security are primarily geared toward increasing the availability of food, while those organizations focused on increasing sales will focus on market demand and requirements. In the case of projects that were implemented by Fintrac (a US-based consulting company that develops agricultural solutions to end hunger and poverty), market approach is a topic that is included within their services.

Value chain approaches use extension services to address challenges at all points in the chain from production to market. Service providers focus their efforts on grassroots farmer organizations or cooperatives as well as anchor businesses. In both cases, the objective is to link growers the markets. At same time, under this approach the organization addresses all aspects of business development and social capital as well as the conditions required to work within the value chain.

The application of the approaches depends on the projects, and each of them follow the method they deem most appropriate; however, the field school model is one of the most used forms by service providers. This approach uses demonstration plots, field work days, and individual and group visits as ways to share knowledge. Farmer field school are very much about adult education, building capacity and empowerment. This approach evolved from strictly a production focus to schools that take on aspects of transformation, entrepreneurship and market studies. Zamorano, Fintrac, and other universities use this approach. Demonstration plots, practical demonstrations, farmer exchange and field days are other instruments used in the capacity building process.

Some organizations, such as IHCAFE, Fintrac, FHIA and DICTA, and some projects combine farmer field schools with new generation of technological innovations. Figure 10 shows technological innovation management model of IHCAFE, in which technology transfer is an essential component of the process.

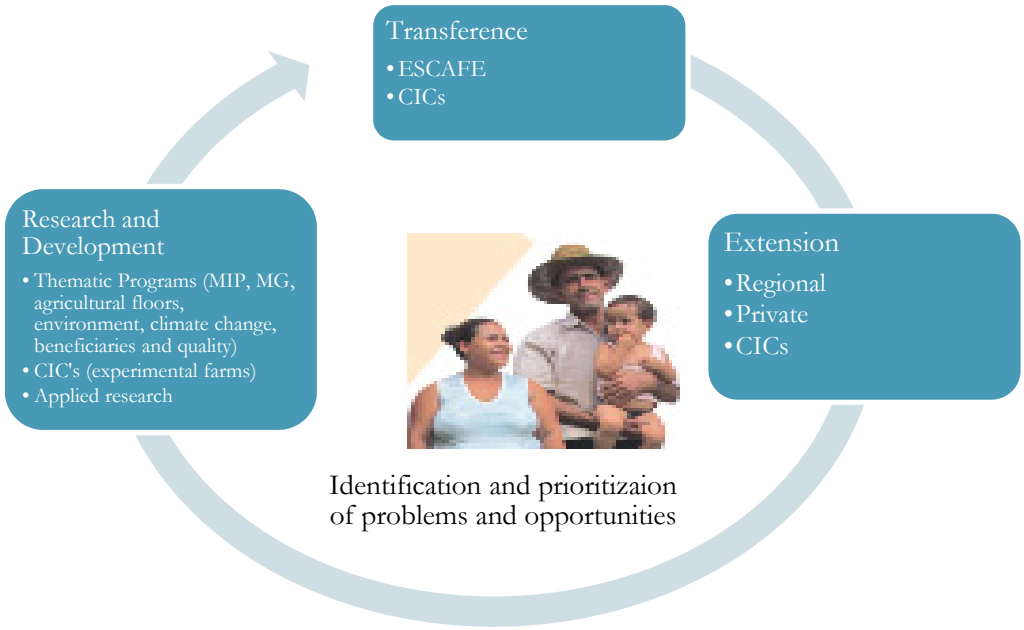

Figure 10. IHCAFE's Technological Innovation Management Model

Source: IHCAFE, 2016

The use of social mobilizers, community facilitators and farmer-to-farmer trainers is another method of improving adoption of technological innovations and increasing the reach of services. Under this approach, the social mobilizer is part of the innovation system and plays the role of change agent in the community with support from extension workers. In some areas, the mobilizers provide support to the extension workers by resolving some producer problems. In the PROSADE-CARE project, each technician serves between 20 to 25 mobilizers, who in turn attends to five clients of their own. The numbers for this method depends on the project, and there is no existing norm (CARE-PROSADE, 2016).

Extension services mainly target small to medium producers dedicated to commercial production and food security, with a secondary focus on women and, finally, on youth. In addition, some projects target grassroots organizations, like agricultural cooperatives and anchor companies that connect farmers to the market.

Group work is the most common form of reaching farmers, making up about 60 percent of extension activities. Only 25 percent of EAS providers conduct individual visits. There is some limited work with networks and local innovation systems. The popularity of the group approach is most likely based on efficiency of service and reach. The lack of work with networks and local systems is probably due to the lack of organizations that mobilize or link these systems.

The division of labor of EAS providers is about 59 percent dedicated to service delivery, 22 percent dedicated to the planning process and 19 percent dedicated to building their own capacity.

Extension workers use printed or online technical material most often as a tool for their work. Less often they use audiovisual material and apps. Zamorano and IHCAFE developed three apps for use in extension work.

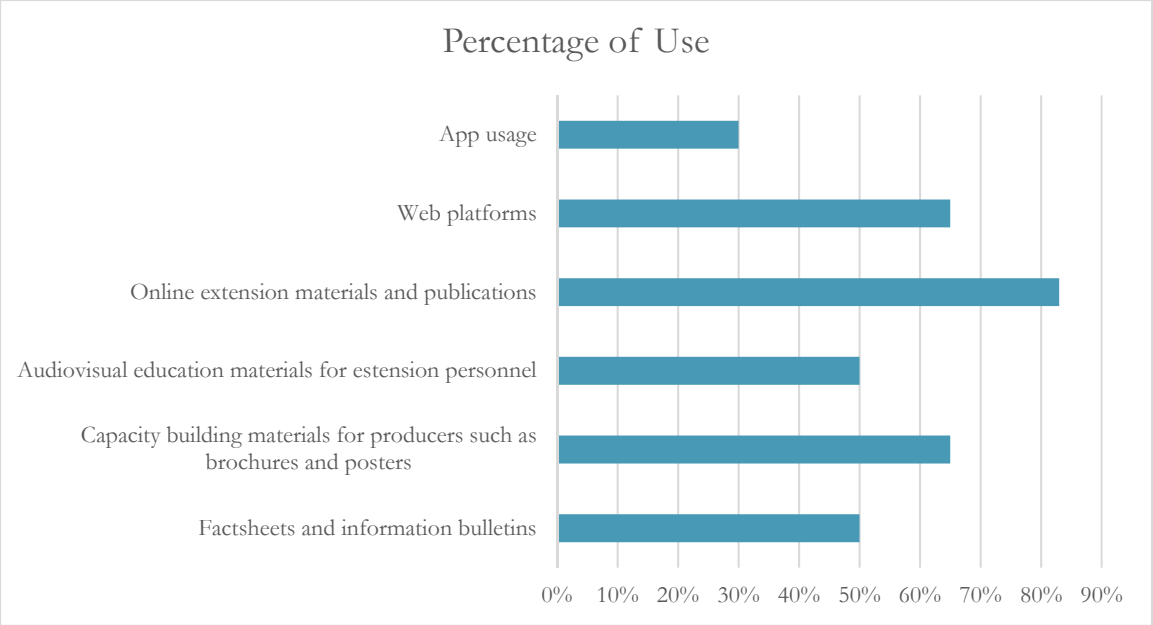

Figure 11. Technical Tools Usage by Extension Agents

Source: Authors

In spite of the fact that overall, Hondurans' access to radio and television is 63 percent and 80 percent, the extension services do not often use these media to provide information or reach more producers. Only 33 percent of service providers surveyed use these media to promote agricultural technological innovations. Cell phone use is a more common method of outreach, as 85 percent of the rural population own cell phones. About 16 percent of EAS providers use SMS messaging or WhatsApp messages to extend their reach; however, 66 percent of organizations use actual phone calls to provide technical recommendations for rising problems for small farmers.

ICT use in agriculture is relatively recent, and mostly occurs in pilot projects in food security as a free service. There have been some advances. Lutheran Relief Services developed an app that provides users with information for cocoa crop management, and other initiatives have activities that use television, Skype, SMS and virtual classrooms. The lessons learned from these projects suggest that the use of ICT presents many challenges, such as cost, cultural barriers, abilities, age and message content. Still, ICT tools can reach large numbers of farmers at relatively low cost per farmer.

Market Engagement

A competitive agricultural sector depends on a technologically advanced system of production that has the necessary technology, services, information and knowledge to produce high quantities and quality of goods, especially those products in demand in the national and international markets. While some of these components do exist in Honduras, they are in the hands of large-scale producers, not in the hands of the small and medium producers, much less those affected by poverty. In order to reach these farmers, the technologies must be adapted to their needs and conditions, so they too can take advantage of the market opportunities and participate in production programs aimed at the market.

Research and development programs must be organized and responsive to the demand of small and medium growers and to both national and international market requirements. As the global demand increases, so does the demand for new, quality products. The global food demand is increasing, but also the demand for new, quality products is growing, which requires countries and their farmers to put forth greater efforts to produce, transform and ensure greater volume for the market.

The agricultural sector in Honduras faces significant challenges, both endogenous and exogenous, to position themselves competitively in markets and take advantage of opportunities presented in terms of products (e.g., new crops, varieties, quality, safety, packaging, post-harvest process improvement and transportation among others) that is essential for long-term growth and sustainability. Climate change represents a major challenge to competitiveness in the sector. This challenge will only be overcome by adapting agricultural production by the introduction of new crops and varieties that are heat, drought, pests and diseases resistant, and introducing efficient and timely warning systems.

The national export policy, plans and strategy all establish the following objectives:

- Increase export volumes by 25 percent by 2018
- Becoming the largest exporter in the region
- Increase the quantity of the 10 main export products
- Diversify export supply by incorporating five new-high value and high-demand products
- Increase export of processed textile goods
- Expand, consolidate and diversify products and markets
- Improve the competitiveness of exporting companies
- Provide strategic information and services to exporters

Since 2009, the Government of Honduras, through the SAG and other institutions, developed a series of programs and facilitation measures to incentivize market access for agricultural products, such as COMRURAL, PROMECOM and EMPRENDESUR (The World Trade Organization, 2016). Following these programs came PRONAGRI, PRONAGRO and a fisheries development project as well as a series of specific projects financed with national and external funds, according to the SAG Annual Report (Agricultural and Livestock Secretariat (SAG), 2015). All of these are aimed at improving market process through the vertical integration of producers and increasing competitiveness of local and export markets through the development of new markets, improved infrastructure, logistics and commercial strategies.

Under the Ministry of Economy and External Commerce, PROHONDURAS is responsible for promoting exports through entrepreneurial and commercial events. At sectoral level, the Honduran government promotes exports of agricultural products through the Agribusiness Unit (previously CPNA, for its Spanish acronym) of the SAG and through the interagency commission for agribusiness, which is made up of public and private entities (Perez, 2014). The unit and the commission provide information on the different markets and provide advice to exporters, facilitating market access.

Other institutions also offer assistance to exporters. For example, the Foundation for Investment and Export Development (FIDE), a nonprofit institution that provides technical advice to exporters

through their *Honduras Si Exporta* (Honduras Does Export) program. Honduras also has several private organizations that help companies to market their goods and services in international markets, such as the National Association of Industries (ANDI, for its Spanish acronym), the Honduran Council of Private Companies (COHEP, for its Spanish acronym), Honduras Agriexport Federation (FPX, for its Spanish acronym), the Honduran Foundation for Agricultural Investigation (FHIA, for its Spanish acronym) and National Association of Honduras Exporters (ANEXHON, for its Spanish acronym).

There are also programs to promote the exportation of goods produced by small or medium-sized enterprises (SME). FIDE, in coordination with foreign trade facilitation offices and national and regional public agencies (i.e., PROHONDURAS, the SAG and the Interamerican Agricultural Cooperation Agency (IICA, for its Spanish acronym)), develop training programs for SME exporters or enterprises with export potential. In addition, the National Program for the Productive and Competitive Development of SMEs incorporates subprograms to strengthen the capacity to export. The objective is to create industrial parks where SMEs, once established, can benefit from economies of scale of packaging, labeling and exportation of goods to markets with preferential access.

SME growers have obvious limitations to access markets, and EAS can play an important role in supporting them to do so. Fintrac (Fintrac/Market Access, 2016) identified the main limitations in both small and medium production, which we have phrased as opportunities:

- increasing volume, quality standards, customer service and market consistency;
- reducing vulnerability of productive systems and the possibility of losing crops due to pests, diseases, droughts and floods;
- dealing with migratory agriculture;
- decision making on what and how to harvest based on intuition and tradition, not market demands (this is an issue of culture and lack of information);
- improving record keeping (no knowledge of costs and absence of business management systems);
- increasing use of technology, productivity and reducing high unit costs;
- improving planning and preparation, technical knowledge, market and financing;
- supporting risk management (market and climate);
- informing on market requirements in terms of health and safety;
- friendly processes to access market; and
- increasing levels of organization and networking.

Faced with these, there are many avenues that EAS have to ensure market access for small and medium growers. Focusing on market access facilitates planning and objective setting and generates a more dynamic construct for the production process and rural business practices. However, to ensure a successful design of rural extension services, other elements must be taken into consideration, such as the organization of complementary public and private services to meet producer needs and the standardization of processes through regional strategic plans.

Rural extension that uses the market approach recognizes that permanent and sustained market participation requires minimum standards to be met. These standards include consistent supply, social network participation, quality levels that attract market agents, presentation and selection, compliance, and a capacity for interaction and negotiation that leads to establishment of prices and basic transaction conditions. These standards make it difficult for the small-scale farmers, who often cannot meet them to reach the levels of quality and scale necessary to take advantage of EAS and to integrate into producer organizations that seek to trade competitive products and insert themselves sustainably into the markets (RIMISP, 2010).

The public and private extension system must support extension staff, producers and other stakeholders with capacities and knowledge to enable market access markets, such as:

1. Identify market demands and producer and extension agent requirements
2. Advise producers to ensure conditions of market demands are met
3. Facilitate knowledge exchange networks for producers and other stakeholders
4. Facilitate the organization of production, market access and other services, such as financing
5. Offer producer training in topics, such as:
    a. Support in infrastructure investment, including production of basic grains, coffee, vegetables, animal production and other items prioritized in the country´s development plan
    b. Marketing
    c. Post-harvest management
    d. Certification systems
    e. Business/finance skills
    f. Natural resources management
    g. Registration, legalization
    h. Business development services
    i. Off-farm business opportunities
    j. Health and nutrition
    k. Gender, nutrition, rural youth and climate change as cross-cutting themes

Livelihood Strategies

The content of extension services is defined using four methodological steps: i) capture of demand and opportunities (participatory diagnostics), ii) adjustment of demand through developing production plans, iii) integration of contents to institutional plans, and iv) development of methodological tools to bring content to producers.

Capture of the demand is through participatory diagnoses, workshops, meetings, periodic evaluations and specific studies. The purpose is to collect the existing problems and opportunities of producers, market analysis and the overall context. This phase ends with the demands prioritized by

the producers, which will be carried out through construction of production plans. Figure 12 shows the different tools used for demand assessment.

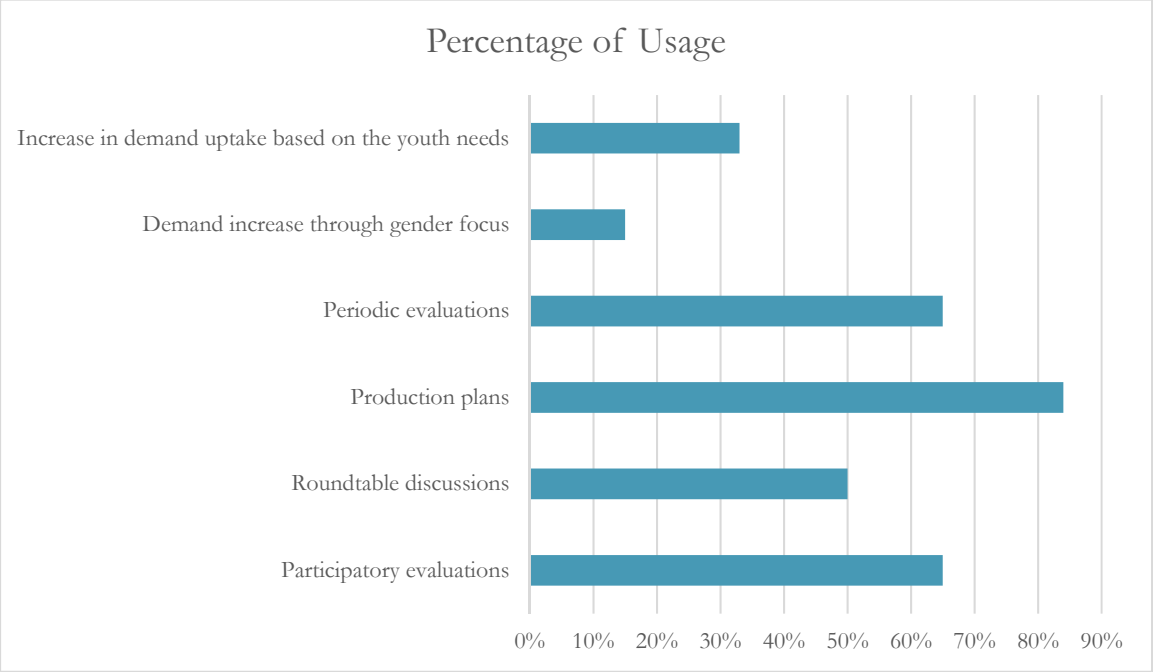

Figure 12. Participatory Extension Tools

Source: Authors

Once the demand is established, the next step is the production plan. The plan is a tool that the extension provider builds in the production unit with the producers. The plan defines the goals in production, productivity and the technological practices that will be applied during the production process. In this step, the producer with the extension provider defines with more detail the contents of the thematic areas to be worked on during the production cycles. In some institutions, such as IHCAFE, the production plans are the basis for program implementation plans.

The process ends with the development of methodological tools to be used in the transfer process, which include dissemination, training, practical demonstrations and integration of technological innovations. In this way, the entire content construction process is integrated into extension services. The process of constructing the contents is show in Figure 13.

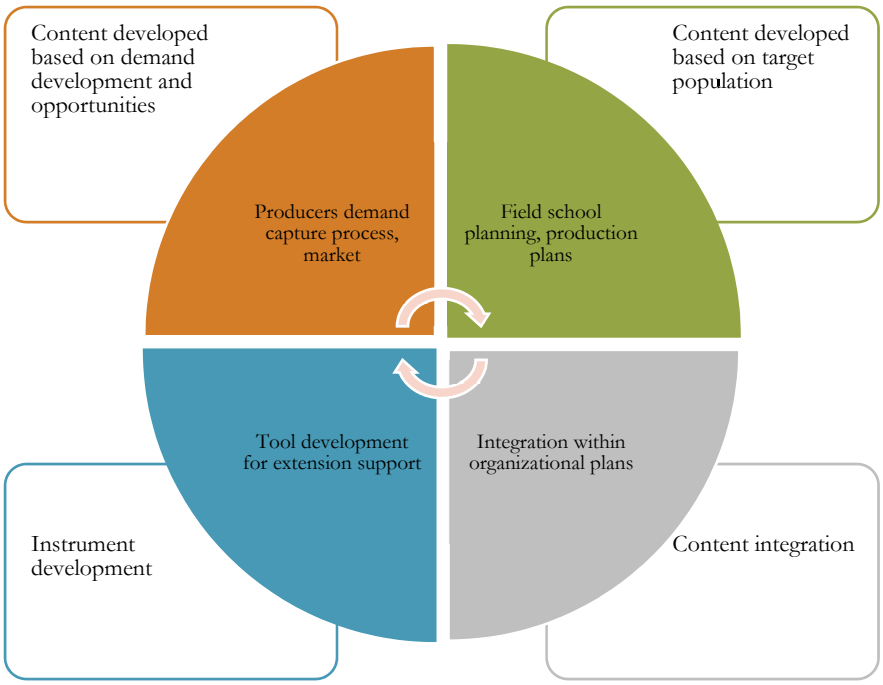

Figure 13. Extension Services Construction Process

Source: Authors

Although there are content development processes that take stakeholder needs, demands and opportunities into account, not all extension providers have standard methods of designing content for their services. This topic needs to be address in order to achieve relevant and effective extension services.

The organizational structure of some extension providers, such as Fintrac and IHCAFE, makes it possible to connect growers with the institutional extension support units that are linked to those most in touch with sector advances in universities and DICTA. For organizations that lack these connections, the linkages are limited and the Honduran extension system appears unstructured and highly dispersed.

According to Fintrac studies, there is an asymmetry in access to services and assets for men and women. Women have less access to natural assets, credit and technical assistance compared to men. Being restricted in access to assets generates marginalization in household economic decisions, and fewer opportunities for women to grow economically and ensure a better life for their families and communities. This lack of access limits women's participation in their communities, relegating their activities to reproductive and domestic tasks in the home.

A focus on gender, youth and marginalized populations are considered cross-cutting themes in some organizations and projects that provide extension services. These organizations focus on provision of irrigation systems, improved stoves, development of dissemination material with a gender focus, development of inclusive family farming techniques, improvement of access to technical assistance services, access to productive assets, promotion of small businesses in areas where women have greater preponderance in the value chain (e.g., seedling companies and grafts), and postharvest (community seed bank) agriculture. In addition, these service providers focus their efforts on building business capacities through business support services.

The policies that focus on gender, youth and marginalized population and provide grants and loans for women's empowerment, youth integration and access for historically marginalized populations are not universal. There is a lack of indicators and goals that would help define a strategy to integrate these cross-cutting issues into activities for extension providers.

Community Engagement

At community level, the NGOs, faith-based and community-based organizations with the greatest local presence are those that work in forest management and water, sanitation and hygiene. These organizations do not have limitations to prevent the expansion of their activities. The catholic and evangelical churches have the greatest reach and operational tools to support social development. Caritas is an example as an organization that implements social projects and food security. The evangelical church supports education, school meals and youth scholarship.

The communities do not have formal systems that allow them to establish community needs. Local governments do have mechanisms to gather information on the needs of the population, but these are led by NGOs. The municipal associations support non-formal community organizations started by health brigades to develop preventative community health actions. There are also similar organizations for water and forest management that are supported by municipalities.

Farmers tend to make decisions about their agricultural production based on information and knowledge provided by the family members, close neighbors and extension workers. In recent years, mass communications methods, such as radio and television, have also been used more often as sources of information.

Producer expectations about extension services are that they would like to have external support that guides and instruct them in new ways of doing things to solve production problems, diversify production, and improve yields and income. Producers' views of how to solve agricultural problems is based on an integration of information from territorial stakeholders, holistic approaches, field schools and participatory research. They perceive climate change as a current phenomenon that requires adaptation and mitigation. They also view the training of youth on the issue as an element of adaptation for the future.

CONCLUSION AND RECOMMENDATIONS

Agriculture is an important sector in Honduras. National policies, strategies and objectives guide all efforts toward competitiveness, food security, productivity and income. On trade, there is a strong emphasis on open markets and access to markets, diversification, export promotion and strengthening the quality and safety of the products. The policies encourage the decentralization of services to municipalities to create a more efficient public sector.

Extension and advisory services are critical to implementation of national agriculture policies. National and sectoral policy frameworks create favorable conditions for strengthening agricultural extension as an important element for achieving national policy goals. There is a normative framework that creates the opportunity to strengthen the local extension system supported by municipal associations, which understand the local problems farmers face; however, there should be a clear path for the associations to resource and provide these extension services. Furthermore, there is a need for specific extension policies as well as national forums to discuss and debate issues in EAS.

The innovation system in Honduras is made up of multiple stakeholders including the public sector, educational and research institutions, producer associations, national and international NGOs and projects supported by bilateral or multilateral organizations, and municipal associations, which provide a wealth of dynamic knowledge about institutional innovations. As a result, the system is in need of coordination, synchronization of processes, regulation, complementary actions and collaboration. Strengthened leadership and capacity of the public institutions is needed to regulate the system in order to determine goals, roles of the different actors and the changes needed to create an environment that permits more sustainable livelihoods for farming families.

International cooperation agencies provide the greatest amount of support for extension, providing much needed resources, but at the same time making the services vulnerable to the exit strategies of these agencies. Sustainability and resources for scaling are needed to influence the impact of the activities implemented by these agencies. Policies and mechanisms are needed to provide more resources, either through direct investments or the state, to promote sustainable extension models.

The mandates of extension service providers are aligned with the national policy approaches of poverty reduction, food security, and increase of productivity and income. Some providers orient their services to the needs of the producers based on primary production and the market demands. Extension workers are mostly university graduates (agronomists and veterinarians), with limited participation of people with other social sciences backgrounds, whose focus is more on productivity. Continuing education is provided to many extension providers; however, functional skills should be improved.

Monitoring systems are more oriented toward verifying project compliance than the efficiency and impacts of the extension. While a few actors have their own monitoring systems there is no system-wide monitoring mechanism that works.

Extension provider organizations use different approaches and methodologies to provide services, bring knowledge and build capacity. Although the diversity of approaches is useful in terms of the best-fit framework, there must be overall strategic orientation and coordination in the methodologies and incentives used for the extension process. The fact that each project or program

designs different forms and didactic tools to deliver support according to their policies sometimes causes message confusion among producers.

The use of ICTs is concentrated on radio and to a minor degree on television. Service providers should take advantage of the wide array of other technologies like cell phones, videos, YouTube, Apps, WhatsApp and others.

Market engagement is an important consideration for EAS to support the government's strategies and policies. In addition to a focus on productivity gains, where EAS tends to focus, extension needs to also help smallholders and SMEs access markets and adhere to standards. For this, a building of the EAS capacity with regard to market issues is also needed.

Some service providers have mechanisms that allow them to develop service content based on demand and opportunities; however, this is not widely used and many organizations still maintain a top-down approach to content development. This inconsistency provides an opportunity for strengthening content development.

Women, youth and marginalized populations are targeted by some service providers through norms, policies and incentives, and others include these groups in their program descriptions. Reviews of program indicators show that impact on marginalized groups are not well documented. The indicator that is seen most often is the percentage of participation of women and youth, which while important, does not by itself show the empowerment, economic participation and social development of these groups.

Based on this review, we can see that drivers for success of EAS in Honduras include:

- Guiding policies and strategies
- Presence of many service providers with accompanying resources, as well as complementary educational and research institutions
- Some monitoring and evaluation tools for EAS
- Adequate technical training for extension agents

Challenges that threaten effective, efficient, relevant and sustainable EAS in Honduras include

- Capacities and resources to fully implement policies and strategies
- Institutional will and mechanisms to coordinate pluralistic actors
- Difficulties in finding tools to monitor and evaluate final impact of programs
- Limited functional skills of extension agents, especially with regard to marketing, livelihoods, gender and nutrition

We thus make the following recommendations to improve the Honduran EAS system by making it more effective, efficient, relevant, sustainable and scalable. Recommendations are grouped according to the six areas of EAS in the conceptual framework (Figure 1). They also include the most relevant actor to do so in parenthesis.

Table 1. Recommendations to Strengthen EAS in Honduras

Area	Recommendation
Governance structures and policy environment	1. Set up a regulatory framework and coordination mechanism that includes a nation-wide monitoring and evaluation system with incentives (e.g. access to funds) for all sectors to engage, in order to improve links and cooperation between public and private institutions (SAG). 2. Institute a national forum on EAS to debate issues, share knowledge, coordinate and advocate for EAS, supported by the Latin America Network for Rural Extension Services—RELASER (SAG). 3. Experiment with models of private or semi-private extension services, using FHIA lessons learned as a model (Perez, Meza, Bientema, & Flaherty, 2015) (all EAS actors).
Organization and management capacities and cultures	4. Develop capabilities and provide mechanisms and tools for both providers and clientele of services to identify demand and assess the quality of extension services (DICTA). 5. Explore ways to increase the responsibility for municipalities and municipal associations to plan, deliver, monitor and evaluate EAS. Consider supporting pilot activities to deliver services through municipal organizations (SAG). 6. Strengthen EAS providers on functional skills, current and cross-cutting issues, such as gender and youth integration, excluded populations, food security, climate change, markets and sustainable production systems (Zamorano and other universities). 7. Build capacity of the Network of Community Technical Institutes for curriculum improvement, youth integration and extension methodologies in selected technical centers (Zamorano and other universities).
Methods	8. Develop virtual knowledge management platforms and ICT tools, such as interactive voice response, radio, video, SMS and mobile applications to support EAS providers in the different areas of production, market, climate and others (all EAS actors). 9. Strengthen capacity of extension providers to use ICTs to share information as well as to monitor performance (Zamorano and other universities).
Market engagement	10. Provide public and private extension staff, producers and other stakeholders with capacities and knowledge to support smallholder access to markets through information about standards, prices and opportunities (Zamorano and other universities).

Livelihood strategies	11. Build capacity for EAS providers to deliver content in line with market demand, such as market guides for extension workers, field schools with market components, participatory rural assessments, and adapted regional approaches that use climate intelligence to achieve greater relevance of services (all EAS actors).
Community engagement	12. Leverage existing faith-based and other community organizations to identify geographic and demographic needs through focus groups and community dialogue for men, women and youth (all EAS actors).

REFERENCES

Agricultural and Livestock Secretariat (SAG). (2015). *Annual Report.* Tegucigalpa: SAG.

Birner, R., Davis, K., Pender, J., Nknony,, E., Anandajayakekerem, P., & Ekboir, J. (n.d.).

Birner, R., Davis, K., Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., . . . Benin, S. (2006). From Best Practice to Best Fit: A Framework for Analyzing Pluralistic Extension Services Worldwide. *Development Strategy and Governance Division Discussion Paper* (p. 37). Washington: IFPRI.

Birner, R., Davis, K., Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., . . . Benin, S. (2009, adapted from Birner et al. (2006)). From Best Practice to Best Fit: A Framework for Analyzing Agricultural Advisory Services Worldwide. *Journal of Agricultural Extension and Education*, 341-355.

CARE-PROSADE. (2016). *Presentation made at the "Sobre Experiencias en Extension Agricola en Hoduras" 20-21 September 2016*. Tegucigalpa.

Catholic Relief Services, Global Water Initiative and The Howard Buffett Foundation. (2014). *Extension Services in Nicaragua, Honduras and El Salvador.* San Salvador: Catholic Relief Services.

Christoplos, I. (2010). *Mobilizing the Potential of Rural and Agricultural Extension.* Rome: FAO and GFRAS.

Davis, K., & Sulaiman, R. V. (2014). The "New Extensionist": Roles and Capacities to Strengthen Extension and Advisory Services. *Journal of Agricultural Education and Extension 21(3)*, pp. 6-18.

FAO. (2012). *Corporate Strategy on Capacity Development.* Rome: FAO.

FAO. (2014). *World Food and Agriculture Status, Innovation on Family Farming.* Rome: FAO.

FAO/IICA. (2013). *Comision Interinstitucional de Agronegocios Consultada.* Retrieved from Agronegocios Honduras: http://www.agronegocioshonduras.org

FAO-BID-RELASER. (2013). *Reformas Institucionales y Presupuestos a los SETTA en Honduras.* Panama: FAO.

FAO-BID-RELASER. (2014). *Institutional Reforms and Budgets of Latin America Extension Systems.* Panama City: FAO.

Fintrac/Market Access. (2016). Experiencias de Extension Agricola en Honduras. *Sobre Experiencias en Extension Agricola en Honduras.* Tegucigalpa.

IFPRI, MEAS and GFRAS. (2014). *Concept and Terms of Reference for Assessment of Rural Advisory Services Systems in Central Asia and the Caucasus.* Lindau: Unpublished.

IHCAFE. (2016). Extension Agricola en Cafe. *Sobre Experiencias en Extension Agricola en Hoduras.* Tegucigalpa.

Janssen W., e. a. (2011). The Evolution to Innovation Systems: Concepts, Roads and Examples. *Seminario Internacional de Gestion de la Innovacion en el Sector Agroalimentario, INNOVAGRO.* Guadalajara: The World Bank.

Perez, J. (2014). *Apoyo del Sector Publico para el Desarrollo de los Agronegocios Incluyentes - Analisis del Modelo Institucional de Honduras*. Tegucigalpa: FAO/IICA.

Rajalahti, R., Janssen, W., & Pehu, E. (2008). *Mexico Agricultural Extension Analysis*. Washington: The World Bank.

RIMISP. (2010). *Rural Extension with Paticipatory and Market Approach*. Santiago: Unpublished.

The World Bank. (2017, February 7). *Rural Population of Honduras*. Retrieved from The World Bank : http://data.worldbank.org/indicator/SP>RUR>TOTL.ZS?view=chart

The World Trade Organization. (2016). *Analysis of Honduras Commercial Policies*. Tegucigalpa: The World Trade Organization.

World Bank. (2006 as cited in World Bank, 2012). Agricultural Innovation Systems. An Investment Sourcebook. p. 2.

World Bank. (2015). *Agricultural and Rural Development Indicator*. Retrieved November 2016, from http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?view=chart