ENABLING THE BUSINESS OF AGRICULTURE | 2015

Progress Report

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Foreword

At the dawn of the 21st century, the agriculture sector faces major challenges globally.

There is a growing consensus that a preeminent challenge facing the international development community is feeding the world’s population, which is expected to top 9 billion by 2050. We need a food system that can feed every person, every day, in every country. Meeting this challenge directly will require farmers to increase agricultural and food production by at least 50 percent.

Agriculture and poverty are interlinked. Over three-quarters of the world’s poor people live in rural areas and depend on farming for food, income and jobs. It is a major source of food, income and nutrition security. Agriculture is also the most sensitive sector to climate change; production increases must not come at the cost of dwindling and finite natural resources such as land, water, and biodiversity.

Even as world food prices increase and grain stocks decline, farmers are responding to the economic opportunities offered by higher prices and are continually challenged to produce more to cater to rapidly rising food demand. However, farmers are held back by poor policies, weak agriculture-related institutions, water scarcity, land degradation, and increasingly, extreme weather events linked to a changing climate. To address these challenges, we need a food system that adequately responds to both food production imperatives and environmental protection needs.

Seen against this backdrop, the world needs to eliminate hunger and poverty. A well-performing agriculture sector is essential for achieving this goal. Unless smallholder farmers and operators of commercial farms are able to participate fully in satisfying the rapidly rising demand for food, and small farmers dramatically increase yields on their farms, many will remain trapped in poverty.

The World Bank Group’s Enabling the Business of Agriculture (EBA) pilot project focuses on measuring regulations, policies and infrastructure that affect the business of agriculture and its key players. By identifying and monitoring relevant regulations and policies, EBA seeks to provide policy makers with an evidence-backed tool that can be used to foster an enabling environment for local and regional agribusinesses to take root and thrive.

This progress report contains initial results from a pilot data collection and analytical effort spanning 10 countries. While the results are preliminary, the ultimate goal is to support policy makers’ drive to prime the agriculture and food sectors and enable informed, factually correct comparisons of different agribusiness climates at the national level.

The EBA pilot project is a work in progress. In the spirit of open disclosure and transparency, the World Bank Group EBA team is presenting these early results from the pilot phase with a view to focus international attention on the findings, spur debate, and hopefully catalyze robust.
evidence-based approaches to advance policy dialogue and support sound policy making.

Our goal is clear. Farmers—small scale, medium and large—need to gain access to emerging lucrative market opportunities. Understanding the enabling environment in which agribusinesses operate is essential for reducing, and where possible, eliminating the binding constraints that are limiting growth of this vital sector. The global community is within reach of ending extreme poverty in a generation. Across the developing world, experience shows that vibrant agriculture and food sectors can create beneficial ripple effects—more growth, more food, better jobs and a better environment. The EBA project marks a solid first step in better understanding the regulations and policies affecting the agricultural and agribusiness sectors.

By placing the results from this first-of-its-type research and analytical effort in the public domain, the World Bank Group seeks to transform the agriculture and food sectors as major forces in the fight to end poverty and boost shared prosperity.

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Executive summary

Enabling the Business of Agriculture 2015 is a pilot assessment report on the agribusiness sector enabling environment in 10 countries. This progress report covers the methodology, key insights and lessons learned from the pilot effort. Enabling the Business of Agriculture 2015 is a first step toward identifying areas and data sets that can be used to build indicators in subsequent phases of the project; the indicators will measure and monitor policies and regulations that impact how markets function in the agricultural sector. Ultimately, by allowing policy makers to compare their country’s agribusiness climate with that of others, the project aims to inform and encourage changes that support inclusive participation in agricultural value chains and thereby foster an environment that is conducive to local and regional businesses in agriculture.

Underlying this initiative is the growth of global food demand, driven almost exclusively by urban centers in developing countries. Current food production and access issues, along with the expected population increase and changing diets, call for strategic and concerted action. Climate change and related pressures on natural resources impose challenges that need to be overcome by more effective, efficient and profitable agricultural value chains worldwide and more diverse participation of stakeholders within them. Smart and balanced regulations and policies, along with responsible investments, will be crucial if the needed food supply is to be sustainably produced and distributed. Accurate, evidence-based tools can measure and support the responsible management of the business climate of agriculture far more effectively than perceptions and assessments that have often tended to drive agricultural policy development.

During this pilot phase, the project team consulted with stakeholders, including civil society organizations, partner institutions, practitioners, public and private sector representatives, researchers, and technical experts. Discussions focused on the relevance and measurability of different aspects of the enabling environment. Agricultural value chains need to become stronger and more participatory if growing global food demand is to be met in a sustainable manner. Country visits to collect data helped the team to gain fresh insights on how to develop a methodological approach, identify key respondents, and refine the questionnaires.

The data collected and analyzed in this progress report represent an initial but vigorous step in the development of a potentially powerful tool that can be used to inform reforms of agricultural policies and regulations worldwide. The methodology applied and refined during this pilot year builds on other World Bank Group products that have proven useful in developing indicators and encouraging public debate, particularly the Doing Business program and the Agribusiness Indicators initiative.

During the project’s first-year initial phase, data were collected in 10 countries on 9 different topics. The 10 countries represent a range of geographic regions in different stages of
Enabling the Business of Agriculture breaks down the agricultural value chain—the full range of activities and services needed to bring a commodity or product from production to sale in the final market—into different topic areas. Six of these topics were selected for study during the pilot year—registering agricultural land, accessing financial services, strengthening seed systems, improving fertilizer supply, transporting agricultural goods, and selling agricultural goods. Another three topics were chosen for initial testing: contracting agricultural production, electrifying rural areas, and connecting farmers to information.

The initial data collected for topic areas present a number of differences found among countries’ regulatory frameworks. The data are purposefully presented without attributing any caveats. For the sake of further analysis, a scoring methodology is currently being developed to aggregate these and other data points during subsequent phases of the project, incorporating good practices. Next, the team will conduct additional research to assess the relevance and usefulness of each data point to ease regulatory burdens in the topic areas, taking into account empirical evidence, expert feedback and whether the data point is actionable by government. This process will eventually lead to an approach that allows for specific targeted indicators and a solid analytical framework. A typology developed in the past year clusters countries according to their stage of agricultural transformation and is helping to facilitate analysis and comparison of the enabling environment for the business of agriculture.

In 2014/15, the team plans to scale up its analytical efforts to cover 30 more countries and expand the list of topics to include issues related to environmental sustainability, gender, livestock, and water. The project will also build the capacity of African government institutions working on agricultural issues by forming partnerships with local organizations for data collection and the refinement of indicators to be used at the regional level.

Feedback is welcome on all aspects of the report and methodology, and can be provided through the Enabling the Business of Agriculture website (eba.worldbank.org).
Introduction

By 2050 the world’s population is projected to exceed 9 billion (figure 1.1). Global food demand will increase by an estimated 63%, propelled not only by the expected population growth but also by an ongoing evolution of diets worldwide. A steady growth in kilocalories per capita is expected at the global level, along with rising consumption of resource-intensive commodities—higher value crops, animal protein and processed foods—driven by the increasing affluence and richer diets of urbanizing populations in developing regions.

The growth of urban centers in the developing world is a fundamental part of the story. As the population of these areas swells and more people see gains in income and in access to food choices, demand will grow for a range of agricultural products. At the same time, urban markets will need to provide staple foods at sensible prices for the growing numbers of poor people who will live near them. Indeed, the expected growth in global food demand will be driven largely, if not exclusively, by growth in urban food demand in developing regions. This demand is projected to nearly double in 40 years—increasing by an estimated 78%, far more than the modest total increase expected in developed regions. In Sub-Saharan Africa, for example, growth in urban food demand during this period could exceed 300%, and in India, 200%.

While demand for more and better food is growing, supply is increasingly fragile. It is well recognized that crop production is very sensitive to climate change, making food provision in the next decades especially challenging. Climate change by 2050 could reduce crop yields by an average of 17%, when compared with a scenario with unchanging climate, and lead to an increase of 20% in crop prices. The tropics—where many developing countries are located—will be hit hardest by rising temperatures, less rainfall and higher sea levels. Impacts...
are likely to be most severe in countries with high transportation costs, where adapted varieties are unavailable and, based on global nitrogen availability simulations, where nitrogen fertilizer use is low. In highly vulnerable regions, where incomes are meager and most rural households depend on agriculture for their food and livelihoods, more people will face hunger as a result of climate change.

Add water and land scarcity to this scenario. An increasing number of countries are reaching alarming levels of water scarcity; 1.4 billion people live in areas with sinking ground water levels. Water scarcity is particularly pronounced in the Middle East, North Africa and South Asia regions and is likely to worsen as a result of climate change in many regions. Burgeoning populations mean more demand for land at a time when large parts of all continents are experiencing land degradation, resulting in water and wind erosion, loss of organic matter, topsoil compaction, salinization and soil pollution, and nutrient loss. Other countries are extremely land-scarce, and much of the potential land is suitable for growing crops that are not in high demand. To produce the food and other agricultural products that the future’s population will demand, more productive and sustainable use of limited, highly demanded natural resources needs to be ensured across the entire agricultural production chain.

Nations need to be prepared to address this compelling prospect. The growing demand for food calls for enhancing agricultural output, efficiency, and distribution, all while advancing sustainability and making the agribusiness sector more inclusive. Increasing food production in the face of deteriorating soils, scarce natural resources and climate change is, in itself, an enormous challenge. To this must be added the need to connect producers and the urban market over increasing distances. Postharvest processes—encompassing transport, standards implementation, food safety and market knowledge—will become increasingly critical to a successful market process for agricultural products. The required food supply increase can be achieved if the necessary investments are made and adequate regulations and policies are put in place.

Efforts to meet growing food demand cannot be separated from the ongoing battle to eradicate poverty, particularly in rural areas. Agriculture-led growth offers an unusually powerful vehicle for a broad reduction of poverty. The agribusiness dimension of rural development—particularly in agricultural marketing and agroprocessing—often prove critical to successful agricultural growth. Without well-functioning agricultural markets, farm productivity gains lead to temporary production surges and price collapses. Better access to markets is needed to maintain production incentives and permit households to specialize and enable them to move to high-value products and value-added activities.

A pivotal role for smaller-scale producers

Smaller-scale producers can play a pivotal role in increasing food production and availability, as they command large areas of land, especially in developing countries, where they provide most of the food supply. Up to 70% of the population in many countries of Asia and Sub-Saharan Africa form part of smallholder farm households, both consuming the food they produce and selling their marketable surplus. In the European Union, 70% of the almost 12 million farms are less than 5 hectares. Globally, smallholder farms are estimated to number around 500 million, typically ranging between 0.5 and 10 hectares in size and averaging less than 2 hectares.
Yet most smallholder farms don’t meet their potential. In the developing world, where smallholder farmers make up the vast majority of agricultural producers, the smallest producers have a very difficult time shifting from subsistence to commercially viable farms. A relatively small share, mostly those on the medium-size to large end of the smallholder spectrum, produces most of the food that moves through markets. Even in Europe the ability of smaller producers to supply large markets depends critically on market links, such as the 4,000 cooperatives in Spain that bring together more than a million farms, most of them under 5 hectares.

Ensuring the participation of local, smaller-scale producers in agricultural value chains is critical to countries’ future ability to feed their growing, urban and increasingly wealthy populations. Effective policies can help support a strong, competitive domestic food supply base—one that largely includes a population of local, smaller scale producers. Without effective policies, growing market opportunities can easily be lost to imports and the development of the agroprocessing sector will remain limited.

**Policies, regulations and an enabling environment**

The prospect of continued growth in food demand calls for greater attention to agribusiness policy and regulations that balance the competitiveness of the agricultural market with efforts to enable more inclusive national, regional and global markets. Transparent and well-implemented policies, laws and regulations can foster active, competitive agricultural markets—benefiting input providers, market outlets, service providers and, above all, producers. Key to creating such an enabling environment is a rules-based legal and regulatory system that avoids excessive burdens for businesses, while still enforcing proper quality, food safety, and sanitary and phytosanitary rules along the entire agricultural value chain.11

In this process, governments play a critical role— in setting and enforcing standards that promote responsible food production, facilitating access to agricultural inputs and markets, regulating competition, encouraging competitiveness in agribusiness and supporting greater inclusion of smallholders and rural workers. With markets becoming more and more global, inward-looking policies—including forced localization—will need to be handled carefully so that they do not pose a threat to agricultural development and food security. Governments are instrumental in laying out enabling policies that address the global context of agricultural markets.

**Benchmarking as a way to foster change**

Every country can foster a more enabling environment for agricultural producers. Benchmarking is a tool that has proved effective in guiding policy makers.12 Systematic comparison is a long-standing practice in agriculture, which can be traced back to the late 19th century and continues to be developed today. Indeed, its value in agriculture was recognized in the 4th century BC by the Greek historian Xenophon:

> You [Socrates] have discovered the reasons why some farmers are so successful that husbandry yields them all they need in abundance, and others are so inefficient that they find farming unprofitable. I should like to hear the reasons in each case, in order that we may do what is good and avoid what is harmful.13

Benchmarking has been helpful in identifying best practices and improving performance in agriculture. But literature suggests that it can also be useful for fostering policy learning and
change in the sector. The development and dissemination of benchmarking indicators can play a part in both promoting policy learning and effecting policy change and an opportunity to “make ideas circulate.”\textsuperscript{14}

International influences, such as the actions and experiences of other countries in making policy changes, play a critical part in catalyzing policy shifts—while domestic influences, such as local conditions and the views of stakeholders, are more important in influencing the specifics of policy changes.\textsuperscript{15} By allowing cross-country comparison of practices and conditions, benchmarking indicators can point to issues in a country’s enabling environment for agriculture, helping to raise awareness among policy makers and other stakeholders. In fact, the more that cross-country benchmarking reveals weaknesses in domestic policies—often through quantitative indicators exposing poor performance in international rankings—the less difficult it is for reform-oriented policy makers to justify the need for change.\textsuperscript{16}

At times, benchmarking indicators may serve as a source of negative feedback, by measuring poor performance by a country in certain areas—but they also offer prospects for positive feedback as performance improves. Both types of feedback can be important in spurring recognition of the need for policy change. Moreover, benchmarking indicators provide a ready source of information on viable alternatives, another aspect shown to be essential in encouraging policy change. And by virtue of their design, the indicators help create a consistent language for conveying this information.

**A tool for policy and regulatory analysis**

Enabling the Business of Agriculture is designed to help policy makers strengthen agribusiness globally. Its aim is to identify and monitor policies and regulations that impact the functioning of markets within the sector, allowing policy makers to compare their country’s agribusiness climate with that of others. In doing so, the project is intended to inform and encourage changes that support inclusive participation in agricultural value chains and foster an environment conducive to local and regional business in agriculture.

The project is expected to help improve the agricultural sector’s overall functioning, benefitting a range of players along the value chain. However, in doing so, some emphasis will be placed on policy and regulatory opportunities and constraints that are binding for smaller producers. Ultimately, rules and regulations that affect the profitability of small and medium-size producers also have an impact on medium-size to large businesses—and these too are essential for a competitive agricultural market to function well. These enterprises create jobs, provide access to foreign markets, investments and technology, and can accelerate agricultural development.

A value chain—the full range of activities and services needed to bring a product from conception to sale in the final market—involves different topic areas and an entire network of actors in input supply, production, processing, marketing and consumption. To facilitate data collection, analysis and reporting, Enabling the Business of Agriculture breaks down the agricultural value chain into different topic areas. Six of these topics were selected to be studied during the pilot year—registering agricultural land, accessing financial services, strengthening seed systems, improving fertilizer supply, transporting agricultural goods, and selling agricultural goods. Another 3 were chosen for initial testing: contracting agricultural production, electrifying rural areas, and connecting
farmers to information. More topics will be incorporated in time.

In each of these areas, Enabling the Business of Agriculture recognizes the need to craft balanced regulations that foster well-functioning markets while ensuring transparent and strong protections for consumers. Selling agricultural goods data, for example, measure the procedures, time and cost to comply with phytosanitary requirements in the trade of agricultural goods. The design of the data sets recognizes the need for transparent regulation and good institutional capacity to ensure proper plant health and the trade of safe agricultural products. Data also are collected on the existence of sanitary and phytosanitary rules and an institutional framework that supports proper implementation of the rules.

In another example, strengthening seed systems data focus on policy and regulatory factors that can enable or constrain the timely introduction of high-quality commercial seed varieties and their market availability. As a primary input for agriculture, seed policies and regulations need to be up to date and based on science. The data focus on 5 areas of seed regulation to help in assessing where countries are following international best practices and where they are not, and where excessive costs or requirements may reduce the private sector’s incentives to introduce varieties in a country. The data also show which quality control mechanisms countries have in place and which legal mechanisms they use to reduce the propagation of fake seed.

Ultimately, the lessons drawn from benchmarking very much depend on a country’s context and its stage of agricultural development. Enabling the Business of Agriculture has developed an agricultural transformation typology that builds on the World Bank’s World Development Report 2008 and enables countries to be clustered into cohorts according to their stage of agricultural transformation. This typology is achieved by relating agriculture’s contribution to a country’s GDP to the percentage of its work force engaged in agriculture. This process allows for more coherent benchmarking and insightful learning, as countries can have a sense of their relative position in this change process and can compare themselves with countries in the same cohort.

This report, a synthesis of the project’s pilot phase, summarizes the team’s effort to generate data—that are evidence-based and directly actionable by governments—on the agribusiness enabling environment. The report describes the development of a new methodology that builds on other World Bank Group products that have proven useful in encouraging public debate or in measuring challenges for agriculture, particularly the Doing Business report and the Agribusiness Indicators initiative. During this initial pilot year the project has focused on developing and testing a methodology for gathering essential information—information that has otherwise been unavailable or uncollectable—to be used in designing and building key indicators for next year and detailed in the chapter describing our methodology. Country visits were critical in gathering information on the availability of secondary data sources, on the standardization of these statistics across countries and on issues faced by key sector players such as producers, businesses and governments.

The report shares the information captured in this pilot experience. Data collected in the 10 countries are presented in the last chapter on pilot data tables. No indicators have been developed yet. The findings will be used to refine the project’s methodology and the design of its indicators in the second year of the project, inform other organizations and initiatives, and trigger consultation and feedback.
Notes

2. FAO 2012c.
7. FAO 2009.
8. Ibid; IFAD 2012.
Building a methodology

The Enabling the Business of Agriculture methodology aims at identifying, measuring and examining key policy and regulatory factors that have an impact on agribusiness activity. To meet the project’s objectives, the methodology is directed toward complementing standardized measures of laws, regulations and institutions with other variables. This approach is meant to provide a broader picture of a country’s agricultural climate and to help identify key issues to improve the environment along the agricultural value chain. By beginning to collect data and identify differences in different topic areas, a methodological approach went through initial testing during the project’s pilot phase and is in the process of being refined. The final outcome of such a process will be the building of several synthetic indicators that, in subsequent project phases, will include scoring and aggregating data sets that refer to different elements of the project topic areas.

During the project’s first year, pilot data were collected over 6 months, from 10 countries and on 9 different topics. The data describe each country’s legal and regulatory system, such as whether there are regulations to facilitate contract farming or to support access to financial services for agriculture. The data document the complexity of regulation, such as the number of procedures required to obtain a license for transporting agricultural goods or to register a plot of agricultural land for the first time. They quantify the burden of regulation compliance, such as the procedures and cost to register a new seed variety. They specify whether the government has an official policy or strategy to guide the development of critical areas, such as the provision of extension services or increased fertilizer use. And they describe the market structure as set out by policy design, practice and performance. The data are current as of March 31, 2014.

How the data are collected

The data are collected in a standardized way to ensure comparability across countries and over time. To start, the project team conducted a thorough literature review and held discussions with technical experts and representatives from donor agencies, civil society organizations and partner institutions. This process led to the identification of key legal and regulatory issues, as well as policy and market variables relating to a country’s agribusiness environment in each topic area. Questions were formulated for each topic with the aim of ensuring the relevance, measurability, variability and statistical robustness of the resulting data points. Questions relating to regulatory processes were developed around standard case studies with assumptions about the legal form of the business, its size, its location and the nature of its activities.

To facilitate understanding and avoid misinterpretation, questionnaires were translated into each country’s most spoken local language and
administered to more than 800 local experts, including public sector representatives, private sector respondents, farmer organizations, specialists from academic or research institutions, and other informed contributors. The team often held several rounds of interaction with these experts, involving conference calls, written correspondence and country visits. To fill any data gaps, questionnaires were supplemented by desk research that drew on studies, research papers and official sources (laws, regulations, policies and official statistics).

**What topics and countries are covered**

Six core topics were selected for the project’s pilot phase (table 2.1) and 3 other topics were identified for initial testing. Several others will be tackled in year 2 of project implementation.

The project’s coverage is expected to expand to about 80 to 100 countries during the next 3 years. The aim is to select countries in different stages of agricultural transformation (see Annex to this chapter). The project developed a country classification based on agriculture’s role in the national economy and workforce, as follows:

- **Agriculture-based countries**—where agriculture employs more than 50% of the workforce and agriculture value added contributes more than 25% to the GDP.
- **Pre-transition countries**—where agriculture employs more than 50% of the workforce and agriculture value added contributes less than 25% to the GDP.
- **Transition countries**—where agriculture employs between 25% and 50% of the workforce and agriculture value added contributes less than 25% to the GDP.
- **Urbanizing countries**—where agriculture employs between 10% and 25% of the workforce and agriculture value added contributes less than 25% to the GDP.
- **Developed countries**—where agriculture employs less than 10% of the workforce and agriculture value added contributes less than 10% to the GDP.

Ten countries were selected for the pilot phase of the project that represent a range of geographic regions and stages of agricultural transformation (map 2.1).

**How the pilot data are classified**

The pilot data that were collected can be classified into 3 categories: measurements, descriptive data, and referential data, as follows:

1. **Measurements** are variables that are quantitative (numbers) or can be

<table>
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<tr>
<th>TABLE 2.1: Topics covered by the project</th>
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<td><strong>Core topics</strong></td>
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<td>Registering agricultural land</td>
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<td>Selling agricultural goods</td>
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expressed quantitatively (by being scored or assigned a value) and are statistically robust and comparable across countries. The data points will be used as the basis for developing aggregate indicators in the future. This category includes different kinds of data; some emerge from a reading of the laws and regulations, while others attempt to measure market prices, available infrastructure or the implementation of services related to the topic area. Still others reflect the regulatory system efficiency—for example, the number of procedures and the time and cost to complete a process, such as certifying seed for sale in the domestic market. Data of this type, critical to understanding key processes in the agribusiness sector, are built on legal requirements, and cost measures are backed by official fee schedules when available. Time estimates often involve an element of judgment by respondents who routinely administer the relevant regulations or undertake the relevant transactions. To construct the time estimates for a particular regulatory process, such as completing the requirements to import fertilizer, the process is broken down into clearly defined steps and procedures. The time to complete these steps is verified with expert respondents—through conference calls, written correspondence and visits by the team—until there is convergence on a final answer.

2. **Descriptive data**, while statistically reliable, include information that is contextual and serves only to describe elements of a policy and regulatory environment. These data do not represent factors that are necessarily more or
less conducive to an enabling environment for commercial agriculture and, therefore, are not meant to be compared. The data include, for example, the source of financing for land registry operations and the type of government agency in charge of issuing phytosanitary certificates needed for the trade of agricultural products.

3. **Referential data** are data points that are considered of interest, and are often important, but are not statistically robust—typically because they are not derived from a representative sample or because they are based on opinion or experience. Even if not statistically reliable, the data can be used as reference points in ongoing efforts to develop and refine the project's methodology. Examples include the percentage of farmer-saved seed and the reasons for the poor quality of roads.

**What are the lessons learned**

Among the main goals of the initial pilot stage have been to develop, test and refine the data collection methodology. Interaction between some of the steps—consultation of literature and experts, field experience, review of the questionnaires—has led to a learning and growth process that has proved to be invaluable while working toward the project’s objectives (figure 2.1).

This process can be seen in the work done to determine the design, contents and scope of the questionnaires—all critical in ensuring the robustness of the data collection. The questionnaires were revised and transformed over the course of the country visits, as follows:

- Questionnaires addressing legal and regulatory issues were integrated with those measuring policy- and market-related variables, resulting in a single

**FIGURE 2.1: A learning and growth process**

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and consultation on key constraints in enabling environment for agriculture</td>
<td>Consultation with technical experts to develop questionnaires</td>
<td>Round 1 data collection in Guatemala</td>
<td>Round 2 data collection in Morocco, Rwanda and Ukraine</td>
<td>Refinement and review of questionnaires</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Round 3 data collection in Ethiopia, Mozambique, Nepal, Philippines, Spain and Uganda</td>
<td>Data verification through follow-up and extensive research</td>
<td>Data analysis and report writing</td>
<td>Consultations on main findings and methodology</td>
<td>Implementation of suggestions on report analysis and methodology for second-year data collection</td>
</tr>
</tbody>
</table>
questionnaire for each topic. In addition, data points were reexamined in light of the initial experience in collecting data and questions were consolidated. The outcome was a questionnaire that could be more readily administered to contributors and that provided better integration between the 2 types of data being collected.

- A single master questionnaire for each topic was customized for each type of contributor—public sector representatives, private company managers, association officers, academic faculty, and farmer organizations. This method reduced the number of questions for each contributor and simplified the survey process.

- In light of a closer examination of issues and data, and an assessment of the measurability and robustness of each variable, the data points collected were classified into the 3 categories described above: measurements, descriptive data, and referential data.

- The data set obtained from the questionnaires for each topic was sorted and studied. Data points in each category were then tagged by priority level on the basis of their relevance, the feasibility of their collection, their variability, and the integration between them. The outcome of these steps has resulted in questionnaires that are more focused, organized and succinct—and data sets that can be more easily managed and presented. The questionnaires and data sets form a solid foundation for the building of indicators and upcoming data collection in the next phase of the project.
Annex A: A transformational framework

Figure A2.1, below, relates agriculture’s contribution to a country’s GDP to the percentage of its workforce engaged in agriculture.

Figure A2.1 demonstrates that as countries become less agriculture-based, the relative importance of agricultural GDP diminishes. Transformation typically follows a pattern of reduction in the numbers of people directly employed in farming, along with a decreased but continuing decline in the size of the primary agriculture sector’s GDP in relation to the rest of the economy. There are, however, significant differences between countries.

This typology can be used to examine a broader raft of metrics in countries that are at different points of agricultural transformation. One metric that seems fundamental is the relative importance of the agribusiness sector. In an agriculture-based economy, for every dollar generated on the farm, another 56 cents of value is added in the agribusiness sector. In countries in the transition stage, the value added in the off-farm sector and particularly in the input and output sector, will have doubled to about 1.06 dollars. This increase may indicate that the relative importance of the agribusiness GDP grows along the transformation process (figure A2.2).

Another set of metrics that can be compared across this categorization relates to the projected growth of food demand in cities, with a

**Figure A2.1: Country segmentation based on agriculture’s role in the national economy, 2012**

Source: Economically active population in agriculture data from FAOSTAT for 2012; agriculture value-added data from UN national accounts for 2012.
compound annual growth rate (CAGR) in the urban market, ranging from an estimated 3.89% in agriculture-based countries, to 0.67% in developed countries. Agricultural export per capita, especially for processed agricultural products, typically takes off in urbanizing and developed stages.

Five of the pilot countries studied in the past year—Ethiopia, Mozambique, Nepal, Rwanda, and Uganda—have primarily operated as agriculture-based countries. Uganda has most recently entered the pre-transition cluster of countries. Agriculture in Guatemala and the Philippines is now at the mid-point of the transition stage, while Morocco has just moved into an urbanizing stage. Ukraine is on the cusp of moving out of the urbanizing phase to becoming a developed agriculture sector country. During the last three decades, Spain has changed from an urbanizing country into a developed country.

Table A2.1, below, presents general trends in agricultural GDP, agricultural employment, and capital investment per farm worker for the 10 pilot countries. The numbers highlight the lower relative importance of agribusiness in Ethiopia, Nepal and Uganda, as well as the high projected increase in urban demand in Ethiopia, Rwanda and Uganda.

Notes
The underlying research and design of the Agricultural Transformation Framework benefited from valuable input provided by Sanjib Choudhuri.
<table>
<thead>
<tr>
<th>Country</th>
<th>Agriculture value added (% of GDP)&lt;sup&gt;a&lt;/sup&gt;</th>
<th>EAP in agriculture (% total EAP)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Agriculture value added/EAP in agriculture (US $/person)&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Estimated future urban food demand (% CAGR)&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Agriculture value added to agribusiness (ratio)&lt;sup&gt;e&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ag based (n = 26)</td>
<td>40%</td>
<td>72%</td>
<td>$1,410</td>
<td>3.89%</td>
<td>1: 0.56</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>46%</td>
<td>76%</td>
<td>$1,025</td>
<td>4.15%</td>
<td>1: 0.25</td>
</tr>
<tr>
<td>Mozambique</td>
<td>30%</td>
<td>80%</td>
<td>$630</td>
<td>3.82%</td>
<td>1: 0.51</td>
</tr>
<tr>
<td>Nepal</td>
<td>36%</td>
<td>93%</td>
<td>$892</td>
<td>3.06%</td>
<td>1: 0.33</td>
</tr>
<tr>
<td>Rwanda</td>
<td>35%</td>
<td>89%</td>
<td>$933</td>
<td>4.34%</td>
<td>1: 0.53</td>
</tr>
<tr>
<td>Pre-transition (n = 18)</td>
<td>11%</td>
<td>59%</td>
<td>$1,575</td>
<td>3.57%</td>
<td>1: 0.87</td>
</tr>
<tr>
<td>Uganda</td>
<td>24%</td>
<td>74%</td>
<td>$732</td>
<td>5.50%</td>
<td>1: 0.40</td>
</tr>
<tr>
<td>Transition (n = 35)</td>
<td>12%</td>
<td>40%</td>
<td>$5,965</td>
<td>1.96%</td>
<td>1: 1.06</td>
</tr>
<tr>
<td>Guatemala</td>
<td>11%</td>
<td>38%</td>
<td>$3,639</td>
<td>3.13%</td>
<td>1: 1.02</td>
</tr>
<tr>
<td>Philippines</td>
<td>12%</td>
<td>33%</td>
<td>$2,801</td>
<td>2.32%</td>
<td>1: 0.85</td>
</tr>
<tr>
<td>Urbanizing (n = 27)</td>
<td>9%</td>
<td>19%</td>
<td>$14,784</td>
<td>0.99%</td>
<td>1: 1.17</td>
</tr>
<tr>
<td>Morocco</td>
<td>14%</td>
<td>24%</td>
<td>$7,460</td>
<td>1.67%</td>
<td>1: 0.83</td>
</tr>
<tr>
<td>Ukraine</td>
<td>9%</td>
<td>10%</td>
<td>$12,501</td>
<td>-0.17%</td>
<td>1: 0.66</td>
</tr>
<tr>
<td>Developed (n = 50)</td>
<td>2%</td>
<td>4%</td>
<td>$31,268</td>
<td>0.67%</td>
<td>1: 1.90</td>
</tr>
<tr>
<td>Spain</td>
<td>2%</td>
<td>4%</td>
<td>$42,864</td>
<td>0.66%</td>
<td>1: 1.28</td>
</tr>
</tbody>
</table>


Note:
- b. Economically Active Population (EAP) in Agriculture from FAO for 2012. EAP in Agriculture includes the labor force in agriculture, both employed and unemployed.
- c. Agricultural Capital Stock (Ag Cap Stock) for 2007 from FAO (2012b).
- d. Compound Annual Growth Rate (CAGR) = (ending value/beginning value)^(1/years)−1. Data for calculations are based on FAO estimated and projected urban population growth from 2007 to 2050, and the expected average change in world diets is expressed in kilocalorie consumption (Alexandratos and Bruinsma [2012]). The CAGR measures the population growth rate taking into consideration the beginning of every year, not only the initial population, but also the growth that has been experienced until that moment.
- e. The agriculture value added to agribusiness ratio is calculated as the share of GDP in US dollars, based on input-output tables created for 130 countries. The methodology was adapted from Pior and Holt (1999). Data for the input-output tables were obtained from the Global Trade Analysis Project (GTAP) 2011, Purdue University.
Registering agricultural land

María Heredia, a farmer in Spain’s Andalusian province of Almería, has a one-hectare greenhouse in which she grows high-end “raf” tomatoes. Her grandparents were landless peasants in the nearby province of Granada at the turn of the 20th century; they moved to Almería because of a land reform and colonization program that provided them with farmland. One of the least developed parts of Spain at the time, Almería now boasts one of the highest levels of income per capita among Andalucía’s provinces. Its smallholders have invested in their land to become market leaders in vegetable production—growing peppers, squash, tomatoes, zucchini and other vegetables in the hundreds of greenhouses they have built since the 1960s. The province ships fresh produce to markets across Europe. The land reform that allowed smallholders to register their rights to farmland is perceived to be one of the critical factors in the development of this successful agriculture-based economy.¹

Farmers seeking to enter the commercial market need secure access² to specific plots of land,¹ whether the access is long term (through individual or collective freehold property rights,⁴ customary rights⁵ or long-term leases⁶) or for a predetermined period (through medium- and short-term leases⁷). The guarantee of access or tenure security⁸ provides incentives to invest in land to make it more productive, such as by adding irrigation systems.⁹ Tenure security also creates incentives to provide good stewardship of natural resources that are essential to sustain farming. And tenure security serves as a form of collateral, which most banks require for lending to farmers.¹⁰

Many studies have shown the importance of secure land and property rights for farmers. The World Bank’s World Development Report 2008: Agriculture for Development illustrates their importance using an example of female farmers in Africa. With insecure property rights, the female farmers tend to produce less than their asset base could otherwise support because they fear that if they are more productive, men in the community would probably take control of their land. If the women had secure land tenure, it is estimated that their crop yields would increase by as much as 20–30%.¹¹

As noted by the Food and Agriculture Organization’s Voluntary Guidelines on the Responsible Governance of Tenure, a key first step in achieving tenure security is the recognition of legitimate statutory and customary land rights in the national legal framework.¹² Evidence shows that development does not happen without legality.¹³ The Rights and
Resources Initiative, a coalition of organizations working on land and forest policy reforms, further develops this idea by making the case that countries need to recognize legitimate property rights to drive economic development such as that experienced by Brazil, China, or the Asian tigers. Where economic systems are driven by resource extraction and commodity exports, the economy may be more vulnerable to external shocks and nations may experience a higher incidence of poverty, inequality, political instability, and internal conflict. This is the case in Liberia, where the government has given out up to two-thirds of the country’s land as concessions for large-scale agriculture for export commodities such as rubber and timber, according to some accounts. However, this does not have to be the outcome if there are institutions encouraging transparency and supporting inclusive sustainable development such as in Switzerland, where legitimate individual and collective rights coexist in rural areas.

A second step toward tenure security is providing people with the ability to register or record their land rights once they have been recognized in the national legal framework. Along these lines, the FAO’s Voluntary Guidelines on the Responsible Governance of Tenure recommend that “States should strive to ensure that everyone is able to record their tenure rights.” The perceived value of these rights can change at any time, such as when there are large-scale land acquisitions for agriculture or when agricultural land is eyed for a different use, such as for a dam or mine or for urban expansion. When these changes occur, the ability to formally register legitimate land rights becomes critical to secure the livelihoods of farmers.

A recent World Bank study of the effects of large-scale land acquisitions for agriculture in developing countries found that laws and policies surrounding land acquisition were often ambiguous, incomplete or contradictory. The implementation of the legal and policy frameworks appeared to be inconsistent, often hurting those who were already vulnerable—especially those using land that was not demarcated or registered or those whose resource rights were unregistered. Similar findings are reported by other studies of large-scale land acquisitions in developing countries.

The ability to register land rights is a key enabling factor not only for farmers wishing to grow into the commercial sector, but also for those wanting to exit agriculture. In urbanizing countries, farmers seeking to expand will want to buy or lease land rights from others who are looking to exit farming. Without accurate and reliable property rights information, these land transactions will be slower or even blocked in the formal sector, and land markets will be unable to fulfill their function of allocating land efficiently. In today’s economies, land registries are usually best equipped to provide this information (box 3.1).

**What registering agricultural land data measure**

Registering agricultural land data measure regulatory constraints in land registration or in recordation processes as well as limitations in registration or in recordation institutions that affect the security of tenure that the legal system offers. The data focus on registration or recordation institutions because these are the most efficient instruments known today for securing land rights and for providing accurate and relatively low-cost information on these rights.

Data are collected in 5 topic areas, as follows:

1. **First-time registrations of private land for individuals**: These data assess whether
due process is followed during first-time registrations of freehold rights on agricultural land in countries with private ownership.

2. Procedures, time and cost for first-time registrations of private land for individuals: These data measure the number of procedures, time, and cost that it takes to register a plot of agricultural land for the first time at the land registry in one of the main agricultural areas of the country. See the Data notes for the details of the case study that is measured.

3. First-time registrations of leases of public land for individuals: These data assess whether due process is followed during first-time registrations of state-owned land that is given out to individuals on a leasehold or concession basis.

4. First-time registrations of land for communities: These data assess whether due process is followed during first-time registrations of customary rights.

5. Land registry and registered land rights: These data examine whether the land registry follows practices in its legal design that enable the registry to provide legal certainty to individuals and institutions wanting to make use of the registry’s information when engaging in property transactions to reduce risk and avoid or minimize land conflicts. Covered practices can include: the registry’s ability to certify the information in its records; whether the registry provides compensation for mistakes in the information it certifies, when this erroneous information leads to losses to transacting parties; and whether the registry and the courts link their information on the status of land rights and rights-holders. Other issues that are explored include how registrars are selected and the mechanisms used to guarantee the integrity of the registry’s records.

For the first 4 topic areas dealing with first-time registration, specific due process issues that are analyzed include the following:

- Whether neighbors and other parties with potential interests and rights over the land subject to the application are informed of the first-time registration application;
- Whether affected parties can voice their concerns with the first-time registration application; and
- Whether affected parties can appeal the decision to proceed with the first-time registration, if they disagree.

What the initial pilot results show

Who may register land rights, and how, are critical issues that a land registry needs to decide from the outset. The answers to these questions will determine farmers’ access (or lack of access) to the institution that usually provides the strongest legal protection of land rights. The system for access needs to be flexible enough to allow the registration of rights that have not been previously documented, while providing the necessary safeguards to guarantee that only the people with rights to the land in question are allowed to register those rights.

Three scenarios—with commonalities and differences across countries

Through the registering agricultural land data, Enabling the Business of Agriculture analyzes
BOX 3.1: What is the role of a land registry—and why is it so important?

In theory, the secure property rights needed to support investment or trade in land could be achieved through either formal or informal systems. But informal property rights systems can be efficient only when the parties involved in a land transaction know each other or when they both know a third party whom they trust to ensure their compliance. Today, where most transactions take place between parties who do not know each other, countries need formal systems to establish the necessary trust.

Institutions that provide secure and verifiable property rights play an essential role in economic development. As one study argues, “People prosper when investors feel secure and are therefore willing to invest in productive activities. But they prosper even more if they can trade beyond their personal circles of known people.” Secure property rights that can be transacted in a reasonable time frame form the basis for low-cost functioning of both land and financial markets.

Secure property rights and speed in secondary transactions are best achieved through formal institutions such as land registries or registries of deeds when these institutions offer the right incentives to landowners and parties to land transactions. Among the main incentives they offer is their ability to reduce transaction costs for contracting parties by identifying the registered property owner. It is no surprise that all 10 pilot countries have a land registry or registry of deeds where land rights can be registered or recorded.

Once such an institution is established, critical questions become which rights to recognize and register or record, and what strength to give these rights once they are registered. Other important issues in designing a land registration or recodification system include determining what guarantees are given to registered or recorded transactions, and establishing an organizational structure that can deliver quality registration services.

3 different scenarios in which a farmer or farming community could request the registration of rights for a plot of land for which there has been no prior registration of land rights, as follows:

- Scenario 1: A farmer or a farmer and his or her family have farmed a plot of land for more than 30 years but have never registered their individual rights to the land.
- Scenario 2: A farmer seeks to obtain the right to use a plot of agricultural land that belongs to the public sector.
- Scenario 3: A farming community seeks to register collective rights to a plot of land that has been collectively used by the community according to customary practices.

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a. The definition of a formal system that is used in this chapter is a legally and socially accepted system that provides for the registration of recognized and legitimate land rights in writing in a systematic way. The definition of an informal system that is used in this chapter is a legally and socially accepted system that has no systematic written records.
c. This chapter defines a title registry as a land registry that records changes in holders of rights or title to a specific plot of land. This means that the registry is able to provide conclusive information on title owners. Please see the chapter on registering property in Doing Business 2012 for a more detailed discussion on this topic.
d. This chapter defines a registry of deeds as a land registry that records the transfer of deeds. These registries do not provide conclusive information on title owners. Please see the chapter on registering property in Doing Business 2012 for a more detailed discussion on this topic.
e. Aruña 2012, 58, FAO 2013c.
**Scenario 1: First-time registrations of private land**

All 10 pilot countries allow the first-time registration of private land by individual citizens who have been using the land informally and in good faith for years—and all have regulations in place to process applications for these registrations. Traditionally, this mechanism has allowed access to the registry for land plots on a case-by-case basis. Reasons for seeking first-time registration could include an irrigation investment that makes agricultural land more valuable, the need for a mortgage that requires the registration of land before it can be given as collateral, or a large-scale project that could result in the expropriation of the land from the farmer. Cases such as these can be seen in most of the pilot countries.

In Rwanda, for example, the authorities decided that it would be best to undertake a systematic process to register all land in the country. All land has been mapped within the past decade and has been or is in the process of being titled (box 3.2).

The application process for first-time registrations is more burdensome in some countries than in others. In Nepal, an initial step that requires the government’s consent usually blocks the entire process. In Mozambique, a farmer must complete 10 procedures when seeking to register the land that he or she has been using.

**BOX 3.2: Getting to scale in Rwanda**

In Rwanda, land fragmentation was typically a disincentive for the agricultural economy, as multiple plots of land were used in an inefficient manner and various crops were grown on a minimal scale. Thus, the need to achieve economies of scale so as to increase the output of specific crops, the productivity of farmers, and the overall competitiveness for the product in question, led to a land policy that promotes the implementation of the consolidation of land use.

The Ministry of Agriculture and Animal Resources (MINAGRI) and the Rwanda Agricultural Development Authority (RADA) undertook land use consolidation to facilitate greater agricultural yields and to promote the efficient and sustainable use of land resources, while still maintaining the rights of smallholder farmers. Under the land consolidation policy, farmers in an area maintain their individual land rights to their specific plots of land, but they consolidate the use of their land by planting the same crop, thereby increasing output and productivity. The land consolidation policy is aimed at enabling and encouraging greater economies of scale, with regards to seeds, fertilizers, and mechanization services, as well as at allowing opportunities for integrated solutions for transport and storage of agricultural goods once they are harvested.

As land use consolidation is difficult to achieve if clear property rights have not been formed, the registration of all agricultural land in Rwanda aims to underpin this policy. The completed reform process of land registration was executed with the support of the World Bank and DFID, and included far-reaching legal and institutional reforms, including modifying both the Constitution and the Inheritance Law, and passing the 2004 Land Policy and the 2005 Organic Land Law. The ensuing program of land tenure regularization based on these pieces of legislation included the recording of all legitimate informal rights and issuance of new titles.
informally and in good faith; the process takes over a year and costs 36.5% of the property value. So in Mozambique not just the length of the registration process but also the cost can be obstacles to registering land. In Ukraine, by comparison, the process takes 7 procedures and 150 days and costs just 0.1% of the property value (figures 3.1, 3.2).

In a majority of the pilot countries, including Guatemala, Mozambique, Spain and Uganda, the relevant authorities make the registration

**FIGURE 3.1:** Total cost of first-time registrations is less than 2% of the property value in the majority of pilot countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent of property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukraine</td>
<td>0.1</td>
</tr>
<tr>
<td>Spain</td>
<td>0.1</td>
</tr>
<tr>
<td>Guatemala</td>
<td>0.2</td>
</tr>
<tr>
<td>Rwanda</td>
<td>0.4</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.7</td>
</tr>
<tr>
<td>Uganda</td>
<td>1.7</td>
</tr>
<tr>
<td>Morocco</td>
<td>2.1</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>6.4</td>
</tr>
<tr>
<td>Mozambique</td>
<td>36.5</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.
Note: Nepal is not included as it is a no practice country.

**FIGURE 3.2:** Total time to complete first-time registrations of land is equal or less than 200 days in half of the pilot countries

<table>
<thead>
<tr>
<th>Days</th>
<th>Number of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;200</td>
<td>4</td>
</tr>
<tr>
<td>101–200</td>
<td>2</td>
</tr>
<tr>
<td>51–100</td>
<td>2</td>
</tr>
<tr>
<td>&lt;50</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.
Note: Nepal is not included as it is a no practice country.
application public, ensuring that neighbors and other interested parties can be informed about the application. Countries that make the application public also include a public hearing in the registration process, allowing consultation of interested parties on the applicant’s property claim. Once a decision is made to approve the application and the name of the applicant is made public, they allow all affected parties to appeal the decision.

**Scenario 2: First-time registrations of leases of public land for individual use**

All the pilot countries allow individual citizens to register for use rights of public land, but the process tends to differ from that used for first-time registrations of private land. In particular, the safeguards of the process differ. While the process for registrations of privately-owned land typically includes informing and consulting neighbors and other interested parties about the application, the process for publicly-owned land involves less consultation of other parties who could be affected. In Spain, for example, the process does not include consulting third parties.

**Scenario 3: First-time registrations of land for communal use**

All the pilot countries except Nepal, Rwanda and Ukraine allow the registration of collective customary rights to land (box 3.3). But the legal structure required for the community and the type of legal rights given to the community differ across countries. In Spain, for example, collective community land rights are given to the municipality and the land is considered public land. In Guatemala, the land assigned for community use is currently also public land, but it is assigned in the form of a concession that includes certain performance requirements. Guatemala is now working on registering community rights on private land for the first time. In Mozambique, all land belongs to the state, and the community is given a collective use right.

**Land rights are inheritable – but do not necessarily include the land’s natural resources**

The bundle of land rights that are recognized in a country’s legal and regulatory system can include the right to: transfer the rights by sale or inheritance; lease the rights to a third party; mortgage the property; the soil and the subsoil; and any other natural resources on the property. Whether farmers have these rights matters, because these rights create incentives—and their lack of availability disincentives—to invest in farmland.

Registered rights to a plot of land can be inherited in all the pilot countries. But land rights do not necessarily include the right to the subsoil. They do not include this right in Guatemala and Nepal, for example. In Mozambique and Spain, land rights include the subsoil, but they do not include any other natural resources that might be on the property or the subsoil, such as mines or water aquifers; these are considered public property. In addition, in Ukraine, registered rights to a plot of land can be inherited and do include the subsoil, as stated in the Subsoil Code of Ukraine. However, to use certain types of mineral resources, a special permit is required, of which the individual may not concede or sell.

**The spectrum of coordination among land registries, mapping agencies, and mining institutions**

Land rights can be registered in one institution or in multiple institutions. In most countries the same land registry covers both urban and rural areas. But not all land registries coordinate their
BOX 3.3: The importance of delimiting land

Dr. Elinor Ostrom, winner of a Nobel Prize in Economics, noted that communities that have successfully managed collective resources over a long period all share some things in common. One commonality is clearly defined boundaries for the communal property.

In many countries, however, the boundaries of communal property and public lands have not been defined and registered. It is assumed that communities know where the boundaries are. But when the land suddenly increases in value, the lack of delimitation poses a risk of encroachment on public land.

This situation happened in Spain in the 1960s, when tourism started to develop at an unprecedented pace in coastal areas. Rural coastal properties suddenly became very valuable. Under Spanish law, certain coastal areas are public land. But in the absence of clear registered boundaries, public land was encroached on by private individuals and developed for tourism.

To avoid a similar outcome, the Navarra region in northern Spain is working to register public land, especially public land that is communally owned. This development is especially important in Navarra, where 42% of the land is still held collectively by rural communities. Why is there a high percentage of communally-owned land in Navarra? Property rights reforms that occurred in Spain in the 1800s, which transformed land held by rural communities into private property, were not extended to the region.

Interestingly, National Institute of Statistics of Spain data show that Navarra is also among the Spanish regions with the highest standards of living and lowest income inequality. Of course, a high standard of living and communal land complement each other only when the necessary conditions are in place. The allocation of land parcels must be aligned with a strategy that advocates for the protection of natural resources.

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information with other registries, such as the registry of mines, or with forest or conservation concessions. Only in Spain and Ukraine does the land registry, in providing information about a plot of land, also include information about the existence of mines or other concessions on the property. Knowing this information is important; in Mozambique, for example, the right to a mine extinguishes the right to the surface land.

All the pilot countries have a cadastre or surveying authority, but they vary in whether this institution uses the same identification number for land parcels as the land registry does. In Guatemala and Ukraine, for example, the land registry and cadastre maintain different identification numbers for each parcel. In Uganda, by contrast, the land registry and cadastre use the same identification number. And in Spain the land registry includes the cadastre’s identification number in its records for each parcel, in an effort to coordinate their databases.

The relationship between erroneous land information and monetary compensation

The ultimate goal of a land registry is to provide the most accurate information possible on land rights. This information undergirds not only the real estate market, but also the financial market and the overall economy. The greatest legal
security is provided by registries that are able to certify their information and that compensate parties that incur losses as a result of errors in registry-certified information (Table 3.1).

In Spain and Ukraine, compensation is generally made available to parties that have incurred a loss as a result of engaging in good faith transactions that rely on registry-certified information that is later proved to be wrong. In Guatemala, Mozambique and Nepal, however, registries do not provide compensation in these cases.

**Next steps**

This chapter presented the initial results for a data set that measured policy and regulatory constraints and good practices in registering agricultural land that can impact the agricultural sector. After analyzing the data collection results, the team narrowed the focus to 30 data points by identifying those that were relevant, measurable and collectable. While this data set will be narrowed down to cover the most critical issues in the topic area during the upcoming year, after further consultations, additional measurements may be considered. Some measurements that could be developed include, but are not limited to, the following areas:

1. **The issues of access to registered rights** and the security provided by registration services have proved to be critical in all countries. The process followed for first-time registrations has also been a conflict resolution and prevention mechanism. For the next data collection round, issues that will be addressed in building registering agricultural land indicators include developing lists of procedures for first-time registrations of customary land to complement the current procedure list of first-time registrations of individual land rights.

2. **The pilot results underscore the importance of the land registry structure and its coordination with other institutions in determining the reliability of the information that it provides on land rights.** With this experience, the team will be refining the language used in the legal questions that examine the registry structure so that they are understandable in all countries.

**TABLE 3.1: Where land registries provide compensation in the event of errors**

<table>
<thead>
<tr>
<th>Country</th>
<th>Does the law provide for compensation to parties who engage in a good faith transaction and incur losses due to erroneous information certified by the land registry?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>No</td>
</tr>
<tr>
<td>Guatemala</td>
<td>No</td>
</tr>
<tr>
<td>Morocco</td>
<td>No</td>
</tr>
<tr>
<td>Mozambique</td>
<td>No</td>
</tr>
<tr>
<td>Nepal</td>
<td>No</td>
</tr>
<tr>
<td>Philippines</td>
<td>Yes</td>
</tr>
<tr>
<td>Rwanda</td>
<td>No</td>
</tr>
<tr>
<td>Spain</td>
<td>Yes</td>
</tr>
<tr>
<td>Uganda</td>
<td>No</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.
Notes

The underlying research and design of the registering agricultural land topic benefited from valuable comments provided by Hans Binswanger, Karol Boudreaux, Federico Bustelo, Klaus Deininger, Thea Hilhorst, Jonathan Mills Lindsay, Frederic Meunier, Jorge Munoz, Nicolas Nogueroles, Enrique Pantoja, Robin Rajack, Nayda Almodovar Reteguis and Victoria Stanley.

1 Rivera Menéndez 2000.
2 Land access in this chapter is understood as physical possession of the land plot. The term access does not refer to World Bank land redistribution projects for landless peasants.
3 Rights and Resources Initiative 2013.
4 The definition of freehold used in this chapter is ownership of property for life with the right to pass it on through inheritance. This right can be given to an individual or to a community, in which case the freehold right would be of an individual or collective nature, respectively.
5 The definition of customary rights used in this chapter refers to the land tenure norms used by a given community, which are based on their history and customs, and may or may not be recognized by a written and official legal instrument.
6 A lease is a contract whereby the owner of a plot of land cedes the right to use the land and benefit of its proceeds to another party in exchange for a payment. The definition of long-term lease used in this chapter is that of leases of over 10 years.
7 The definition of medium-term lease used in this chapter is for leases of 3 to 9 years. A short-term lease is considered to be from 1 to 4 years.
8 The definition of tenure security used in this chapter is a relationship to the land that is legitimate according to the national legal framework, socially accepted, and enforceable for a pre-established period of time that is known by all parties and stakeholders.
9 FAO 2012b; FAO 2013c; Yoo and Steckel 2010; World Bank 2007; Deininger 2003.
12 FAO 2013c.
13 De Soto 2013, 13.
14 Rights and Resources Initiative 2013.
15 FAO 2013c.
16 FAO 2013c, par. 17.3.
18 For example, Cotula and others (2009), and Aresh, Deininger and Selod (2011).
20 FAO 2013c..
21 Aruñada 2012.
22 Thirty years was included as a reference point because it was the highest minimum required time among the pilot countries that allowed for adverse possession.
23 For specific assumptions used to calculate these figures, please refer to the Data notes.
24 By public, this paragraph is referring to notices that are put up in public areas relevant to the location where the plot of land is situated. This process usually takes the form of public notices on the local government bulletin board or in the institution where the first-time registration process is taking place, for example, at the court building in the case of a court proceeding. In some countries, public notices are placed in official gazettes or newspapers.
Accessing financial services

Tsehay Farmers' Cooperative Union is an Ethiopian farmers’ union with more than 38,000 small farmers who produce mainly barley, chickpea, teff, and spices in the Amhara region of Gondar. Farmers typically had to travel long distances to reach larger towns and cities if they wanted to access basic financial services. Getting a loan was also burdensome as banks usually required as collateral immovable assets that the small farmers rarely owned. However, some recently-adopted regulations have helped to overcome these constraints and are promoting financial inclusion through innovative delivery methods of financial services. Thanks to the Proclamation to Provide for a Warehouse Receipts System enacted in 2003, farmers can now store their crops and use them as collateral to obtain loans from banks. Similarly, mobile and agent banking services regulation has enabled banks to offer a range of financial services—such as bill payments and transfers—that farmers can access through their mobile phones without having to travel to a bank branch.

Agriculture depends on a well-functioning financial system. More advanced segments of the sector need the support of a strong financial system to compete globally, while less developed segments need its support to transition to modern production methods.

Farmers and rural agricultural enterprises need better access to a range of financial products. Smaller farmers need credit to purchase inputs and to finance harvesting, processing, marketing, and transport activities. Among smallholder farmers, the demand for credit was recently estimated to be nearly $450 billion worldwide—a demand that is largely unmet and steadily growing. And both farmers and enterprises need access to affordable financial services to take better advantage of new and expanding market opportunities. The need is not only for loans but also for savings, credit, and payment services—to help smooth volatile income flows, better allocate risk and unlock the development potential of agricultural activities.

But rural and agricultural finance—among the most challenging fields of banking—have been lagging behind developments in the rest of the financial system. The more dispersed production, lower population density and less developed infrastructure in rural areas lead to higher transactions costs. The seasonality in agriculture and the often highly covariant nature of production activities mean higher risks as well. As a result, banks and other traditional financial intermediaries tend to concentrate in urban locations, where they can operate at
lower cost and benefit from larger loan sizes to cover fixed transactions costs. Even when financial services are available in rural areas—whether from traditional lending institutions or from traders and agricultural processors offering input credit—they tend to be relatively costly and with rigid terms.

To support agricultural development, a financial system needs to provide affordable and reliable financial services that can benefit even asset-poor and remote farmers and agricultural enterprises. This type of system requires a diverse mix of financial institutions—with appropriate standards and oversight—as well as wholesale and partnering relationships to support innovation and expanded rural reach. While commercial banks can provide strong balance sheets and managerial capacity, financial cooperatives, credit unions and microfinance institutions can offer rural reach and local knowledge. And alternative delivery platforms—agents, mobile banking—can increase the financial inclusion of more isolated clients.

Regulations are needed to ensure that financial systems function well. Prudential rules such as capital and liquidity requirements help prevent financial institutions from taking excessive risks when investing their customers’ savings—which is particularly important for agriculture, where risk tends to be higher and highly covariant. Consumer protection rules help safeguard smallholders when they access formal financial services for the first time or when they use services provided through new channels such as mobile phones or agents. Finally, good regulations can provide for consistent and predictable outcomes in the areas of secured transactions, branchless banking, and warehouse financing. By helping to build trust, they encourage the adoption of new delivery models that are more accessible to farmers’ agricultural enterprises.

Regulations also need to support innovation. In many parts of the developing world, financial liberalization and the closure of agricultural development banks have led to a contraction of agricultural finance; innovation in the design and provision of financial services is crucial to fill this gap. Smart regulations ensure stability without imposing an excessive burden on financial institutions or limiting the innovation space for financial products. Traditional banking regulations need to be adapted to allow banks, microfinance institutions, mobile operators and retailers to experiment with new partnership models while still protecting the integrity of transactions and the safety of customers’ deposits.

**What accessing financial services data measure**

The accessing financial services data measure constraints in the regulation of a set of financial services that can foster financial inclusion and the development of agricultural enterprises and households.

Data are collected in 4 topic areas, as follows:

1. **Branchless banking.** These data assess how laws regulate the provision of financial services through channels outside conventional bank branches. The data focus on the possibility of agent banking—banks hiring correspondents to conduct operations on their behalf; cover regulations that apply to financial services provided through cellular phones (mobile banking); and measure consumer protection rules specific to these delivery channels.

2. **Nontraditional collateral.** These data focus on provisions that regulate the use of categories of collateral that are
especially relevant for agricultural enterprises and smallholders. In particular, the data examine if tangible movable goods, leased and future assets, and the proceeds and transformations of all such assets can be used as collateral.

3. Warehouse receipts. These data measure the existence and scope of rules establishing warehouse receipt systems. The data cover licensing and insurance requirements as well as the type and coverage of warehouse receipts.

4. Prudential regulation. These data focus on the regulation of financial institutions. The data cover capital requirements, risk weights, and provisioning rules for commercial banks as well as microfinance institutions.

What the initial pilot results show

Regulatory frameworks for financial systems vary across countries. Smart regulation can promote innovative financial inclusion practices, thus better enabling the financial system to serve the agriculture sector. An assessment of regulatory coverage for branchless banking helps to identify good regulatory practices in this new arena. Moreover, as secured transactions laws and registries improve small and medium-sized businesses’ access to credit, the specific impact of such provisions on smallholder farmers deserves further attention. In addition, the emergence of warehouse receipt financing requires the establishment of a tailored regulatory framework to promote the development of this new—but effective—financing tool for smallholder farmers. Last but not least, prudential regulation and supervision of different financial institutions involved in agricultural lending can help to ensure their smooth operation and stability.

Regulated branchless banking in all pilot countries except Morocco and Mozambique

Branchless banking—the delivery of financial services through retail agents or information and communication technology—has enormous potential to reach farmers with financial services, thanks to its low transactions costs and innovative channels (box 4.1). Seven countries—Ethiopia, Guatemala, Nepal, the Philippines, Rwanda, Spain and Ukraine—have laws regulating agent banking activities. Some, such as Uganda, have specific guidelines for agent banking; the Monetary Board in the Philippines issues circulars relating to the outsourcing of banking functions. Among these 7 countries, Ethiopia, Rwanda and Ukraine allow both commercial banks and microfinance institutions to hire agents, while the rest allow only commercial banks to do so (table 4.1).

Agent banking can mean higher operational, credit and liquidity risks because agents often operate in riskier environments and lack adequate internal management processes and trained staff familiar with banking activities. Therefore, eligibility rules and due diligence tests are needed to ensure that agents are able to provide professional customer services, keep records, handle cash and manage liquidity efficiently. Data measuring eligibility standards show that no country sets minimum standards on interoperability between agents and financial institutions, though most have requirements relating to an agent’s previous financial performance. While real-time connection to the bank reduces the risk of fraud and the costs of information exchange, only Ethiopia and Rwanda require this for agents.

Agents may be able to perform a wider range of services when regulations ensure their reliability and competence. Among the countries with
BOX 4.1: Overview of the branchless banking operation

Branchless banking is defined as the delivery of financial services outside of conventional bank branches. It consists mainly of agent banking and mobile banking, and provides cost-effective solution to promote agricultural financing from both the supply and demand sides. On one hand, it lowers the cost to banks by avoiding providing physical banking infrastructure to unbanked areas; on the other hand, it provides farmers with more economical options of getting access to financial services as they do not need to spend out-of-pocket to reach a bank branch.\(^a\) However, regulation development has not caught up with the rapid spread of branchless banking activities. A lack of legal certainty, transparency and openness impedes the market from thriving.\(^b\) An issue for governments is to design a regulatory environment that encourages market players to innovate so as to achieve financial inclusion, while concurrently protecting consumers and the financial system integrity.

Agent banking is a model of partnering with a retail agent (or correspondent) to extend financial services in locations for which bank branches would be uneconomical.\(^c\) For instance, KCB Rwanda, a subsidiary of the Kenya Commercial Bank (KCB) Group, delegates its retail outlets to conduct basic transactions for clients such as deposits, withdrawals, and fund transfers.\(^d\)

Mobile banking refers to financial services that are delivered via mobile networks and performed on a mobile phone. Mobile banking models mainly fall into the two categories, namely the bank-led model and the mobile network operator (MNO)-led model. Under the bank-led model, banks make some services available through the use of a mobile device to increase customer convenience while reducing institutional costs.\(^e\) Under the MNO-led model, the MNO acts as the de facto “bank” with limited or no involvement of the financial institution.\(^f\) The customer’s “money” is recorded in a virtual account on the MNO server, and the customer can use a mobile device to make or accept payments (mobile money). However, often the regulations demand that the MNO store all deposits in trust accounts at a financial institution.\(^g\)

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\(^a\) Jayanti 2012.
\(^b\) Kumar et al. 2006.
\(^c\) CGAP 2010.
\(^e\) USAID 2012.
\(^f\) Memit 2010.
\(^g\) Tobbin 2011.

rules on agent banking, the Philippines and Ukraine allow agents to provide only limited services. The Philippines allows agents of commercial banks only to conduct know-your-customer (KYC) procedures. Ukraine permits agents only to provide transfer, e-money and currency exchange services, though a list of other financial services that can be offered by agents is pending approval. Ethiopia, Guatemala, Nepal, Rwanda and Spain allow agents to conduct a wider set of operations on behalf of banks, including cash-in and cash-out services, money transfers and bill payments. Ethiopia and Spain also allow agents to open accounts for new customers. Spain is the only one allowing agents to process loan documents.

The rapid expansion of mobile phone coverage has provided a new financial infrastructure, capable of reaching even the most rural communities in developing countries. Ethiopia, Guatemala, Nepal, the Philippines, Rwanda and
Uganda have specific laws regulating mobile banking (table 4.1, box 4.2) and allow banks to provide money transfer, bill payment and loan repayment services through mobile phones. Ethiopia, Nepal, Rwanda and Uganda also allow microfinance institutions to offer financial services through this technology.

**Continuing constraints on the use of nontraditional collateral**

Many farmers, particularly smallholders, lack immovable assets such as land, making it difficult for them to secure loans. Yet many own movable collateral—such as agricultural machinery, products, or receivables; livestock; or warehouse receipts. Bankstend to be hesitant to accept such movable assets as collateral, however, especially where the legal system governing the use of collateral is dated.18

In all 10 countries, the law allows businesses and smallholders to use tangible movable property (such as agricultural machinery, crops and livestock) as collateral to secure loans (figure 4.1). But in Ethiopia, Morocco, Mozambique, the Philippines, Spain and Uganda, the law does not allow eligible borrowers to describe their tangible movable collateral in general terms in the security agreement and when registering the security. This can create a barrier for smallholders, since their collateral tends to be a pool of assets—such as agricultural products or livestock—and the exact makeup changes as a matter of daily business.19

When borrowers lack traditional collateral, leasing may offer an important alternative, especially in countries with weak creditors’ rights and inadequate collateral laws and registries.20 Leasing arrangements allow the use of leased assets as collateral for financing the purchase of the assets. For smallholders, leases can be more affordable than bank loans because they involve smaller down payments than banks demand and seldom require additional collateral.21 Leasing also offers advantages for the lessors, allowing them to retain asset ownership and making it easier to repossess the collateral in case of default. Only Guatemala,
Morocco, Nepal, Rwanda, Spain and Ukraine have collateral laws allowing the use of leased movable assets.

The ability to pledge future assets (such as crops to be harvested) as collateral is another important way to improve access to finance for smallholders. Six countries—Guatemala, Morocco, Nepal, Rwanda, Uganda and Ukraine—have collateral laws allowing pledging future assets as collateral. Also important is the ability to pledge the products, proceeds and replacements of the original collateral. Smallholders and businesses need working capital to process crops into higher value products. A law that prevents the use of such transformed products as collateral chokes the supply of working capital.22

In countries with registries for movable collateral, firms have greater access to bank finance and lower interest rates. Registries also benefit firms with few assets that can be used as collateral, as is the case for many rural enterprises.23 Among the countries with a secured transactions law that allows such a registry, not all have a functional registry.

**Great potential for the use of warehouse receipts**

Warehouse receipts can be an effective tool for increasing access to credit for farmers.24 When supported by an appropriate legal framework, warehouse receipts can serve as collateral. Six countries have a specific law on warehouse receipts; the exceptions are Morocco, Mozambique, Nepal and Spain.

To be effective, warehouse receipt systems need to reduce uncertainty for banks so as to increase their willingness to accept the receipts as collateral. One key aspect is easy enforceability of the security.25 Another is insurance against risks that arise from natural disasters or operators’ actions.
Good management practices, regulatory supervision, and performance guarantees ensure a high level of protection for bank collateral. Performance guarantees—which safeguard against fraud and provide compensation if stored goods do not match what is specified in the receipt—can help encourage farmers to store their goods in warehouses as well as increase banks’ willingness to accept the receipts as collateral. Ethiopia, Guatemala, Uganda and Ukraine require warehouse operators to insure the warehouse against fire, flood and earthquake damage. These countries also require the operator to obtain a license before storing goods and issuing warehouse receipts.

When receipts provide full information on the warehouses and the commodities stored, they reduce transactions costs for financial providers. All 6 countries with a specific law on warehouse receipts—Ethiopia, Guatemala, the Philippines, Rwanda, Uganda and Ukraine—require that receipts specify the location of the storage and the amount stored, and Ethiopia, Guatemala and Ukraine also require information on the year and type of harvest. But none requires information on performance guarantees. Moreover, only Ethiopia, Uganda and Ukraine require that receipts include information on security interests over the goods. And only Guatemala and Uganda require insurance coverage information.

While both paper-based and electronic receipts can be used, experience shows that electronic receipts offer additional advantages. Electronic receipts eliminate the need to handle, store and safeguard paper documents and avoid the costs and delays associated with their physical delivery. Only Ethiopia, the Philippines and Ukraine allow electronic receipts. Guatemala, Rwanda and Uganda allow only paper-based receipts.

**Expansion of microfinance necessitates better regulatory frameworks for financial institutions**

Microfinance institutions have increased their coverage exponentially, from 10,000 poor people in 1980 to more than 150 million in 2012. Among those benefiting have been smallholder farmers, for whom access to microfinance has boosted productivity by enabling better use of fertilizer, seed and hired labor.

The expansion of microfinance has led to a growing need to adapt regulatory frameworks to these institutions. While microfinance institutions handle much smaller financial volumes than commercial banks and thus pose a lower risk to the financial system, they still require prudential rules. But some argue that minimum capital requirements for microfinance institutions should be kept lower to reduce entry costs. Among the countries that require minimum capital to establish a microfinance institution, the amount is always less than that for a commercial bank.

Another key issue in regulating and supervising microfinance institutions is the mobilization of deposits from the general public. Microfinance institutions may have various funding sources, and licensing requirements need to be in place if the funding generated through retail deposits hits a certain threshold. Six countries have set up a regulatory framework allowing microfinance institutions to mobilize deposits from the public and have specified licensing requirements.

Setting a required minimum capital adequacy ratio is a common regulatory measure for ensuring the safe operation of financial institutions. This ratio measures a bank’s core capital as a percentage of its risk-weighted assets. While excessively high requirements create obstacles for financial institutions,
**BOX 4.2: Uganda’s new mobile money guidelines**

Mobile phone use has spread throughout the developing world—by the end of 2011, 79% of the population had mobile phone subscriptions.a The vast network of coverage creates opportunities for expanding financial services to smallholders in remote areas. But mobile banking remains relatively new, and many countries have no laws for its regulation.b Establishing smart regulation and supervision to enable the sound growth of mobile banking services is becoming increasingly important for governments worldwide.

Uganda has taken steps aimed at providing clear regulation of mobile banking services, through the Mobile Money Guidelines issued by its central bank as of October 1, 2013. The guidelines differentiate the 2 mobile banking models by classifying mobile financial services into 2 categories: mobile banking (bank-led model) and mobile money (MNO-led model).

The guidelines set eligibility and technology standards for mobile money service providers that respond to the operational and security risks in mobile banking. To protect consumers, the guidelines establish requirements on handling transactions, transparency, data protection, and complaints, and stipulate supervision and reporting processes for different regulators. These measures address the possibly higher risk of consumer rights violations in the convergence of financial services and mobile technology.

Licensing requirements do not create insurmountable barriers to launching mobile banking services, but efforts can be made to streamline and improve the efficiency of any licensing process.c Uganda’s guidelines outline the approval procedure for license applications and list the documents required. No legal framework for issuing decisions on applications is in place yet, however.

As mobile banking services continue to expand, the issue of interoperability—the ability to transfer e-money from one mobile banking service to another—is likely to become increasingly important. Governments can set standards for the interconnection of mobile banking platforms or attempt to mandate interconnection. But the potential complexity of encouraging or mandating interoperability needs to be weighed against the risk of stifling innovation and investment.d Uganda’s guidelines require mobile money service providers to use systems capable of becoming interoperable with other payment systems in the country and internationally. But no concrete standards or work plans to promote interoperability have been specified.

While a more comprehensive regulatory framework is needed, Uganda’s guidelines reflect the government’s effort to provide clarity and certainty in the regulation and supervision of mobile banking activities. Its efforts are sending positive signals and serve as an interim measure for enabling the market operation and growth.

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a. ITU 2012.
b. IFC and GPRI 2012.
c. Hernandez, Bernstein, and Zirkle 2011.
d. Ibid.
ratio, 3 countries (Mozambique, Nepal, and the Philippines) allow a lower risk weight for loans to small and medium-size enterprises that meet specific conditions than for general commercial loans.\(^{37}\) This process can encourage loans to agricultural enterprises, many of which are in this size category.

Loan classification and provisioning rules protect financial institutions from potential loan default risks.\(^ {38}\) Standards for loan classification and the corresponding provisioning rates are similar across countries. But rules for computing the provision amounts differ. In Guatemala, Morocco, Mozambique, Rwanda, Spain and Ukraine, the collateral value is deducted from nonperforming loans when calculating provisions, while in Ethiopia, Nepal, the Philippines and Uganda, provisions are calculated on the full amount. Moreover, Ethiopia, Guatemala, Morocco, Rwanda and Ukraine have specific—mostly more stringent—provisioning rules for microfinance institutions.\(^ {39}\) For example, Ethiopia requires a higher provisioning rate for substandard loans of microfinance institutions than for those of commercial banks. Guatemala, Morocco and Rwanda require microfinance institutions to apply shorter periods in arrears when classifying loans.

With the aim of ensuring adequate credit for agricultural activities, some governments require financial institutions to allocate specific percentages of their loanable funds to agriculture. While these measures might help channel extra finance to agriculture, they tend to have distortive effects on the financial sector in the long run.\(^ {40}\) They are particularly problematic when they involve subsidies paid out of the state budget, which may not be sustainable or may create perverse incentives in the country at large. Only Nepal and the Philippines impose such lending requirements on commercial banks, microfinance institutions or cooperative financial institutions. The Philippines requires all banks, including rural and thrift banks with microfinance operations, to set aside 25% of their loanable funds for the agricultural sector.

**Next steps**

This chapter presented the initial pilot results of the measurements of policy and regulatory constraints related to financial channels outside of conventional bank branches, categories of collateral especially relevant for agricultural enterprises and smallholders, warehouse receipt systems, and regulation of financial institutions. The data collection conducted in the first 10 pilot countries served as a base to better understand how differently the same issues can be regulated across the globe.

The next steps consist of building and deepening the scope of indicators in those areas where high diversity across the economy is expected and there are significant potential benefits from benchmarking. Indicators will cover key areas that impact the operations of a range of financial intermediaries, especially those that are more relevant to smallholders. This pilot covered regulations related to microfinance institutions under the data sets on prudential regulation, which will be further developed. A regulatory framework with a tiered approach will be expanded so as to be suitable for different types of financial intermediaries such as: (i) supervised financial intermediaries (e.g., microfinance institutions); (ii) nonsupervised financial intermediaries (e.g., nongovernmental organizations) and (iii) financial cooperatives. Indicators will examine if such institutions are allowed and how strictly they are regulated and supervised. Overly restrictive ceilings on individual loan size and on total loanable funds are examples of common regulatory measures that can limit the rural outreach of financial services.
While the current pilot covers regulatory frameworks for branchless banking, such as agent and mobile banking, the next pilot will add an indicator set on electronic money. This data set will complement the mobile banking data already collected and expand the scope by looking at the rules that businesses must comply with to issue electronic money through mobile phones, prepaid cards or through the Internet.

As the project expands its coverage to more countries, efforts will be made to find good practices in warehouse receipt systems—an emerging area for agricultural financing. Based on attributes of successful warehouse receipt systems, data will be further refined to formulate indicators. On the use of nontraditional collateral, the current accessing financial services subtopic includes a data subset that the Doing Business Getting Credit-Legal Rights Indicator measures. Hence, for the next round of pilots, the team will coordinate with the Doing Business team in integrating some key questions in the current Getting Credit-Legal Rights indicators that are of particular relevance for smallholder farmers.

Notes

The underlying research and design of the accessing financial services topic benefited from valuable comments provided by Carlos Cuevas, Gisela Davico, Renate Kloeppinger, Heather Anne Miller, Ajai Nair, Roy Parizat, Shalini Sankaranarayan, Paula Savanti, Makiko Toyota and Panayotis Varangis.

1. Dalberg, Citi Foundation and Skoll Foundation 2012.
2. IFC and GPFI 2012.
4. Covariant risk refers to risk that affects many farms or households in one area at the same time. Typical examples of covariant risk are natural disasters, epidemics and price shocks.
6. CGAP and IFAD 2006.
7. IFC and GPFI 2011.
11. Alexandre, Mas and Radcliffe 2010.
12. Alvarez de la Campa 2011
15. CGAP 2011.
17. CGAP 2011.
20. IFC and GPFI 2012.
24. Coulter and Onumah 2002. Warehouse receipts are issued by warehouse operators as evidence that the person or firm they name has deposited commodities of a specified quantity and quality at a particular location.
26. IFC 2013. Performance guarantees mainly refer to bonds, indemnity, insurance policy, and so on.
29. World Bank 2013f.
32. Ledgerwood and White 2006.
35. Please note that the capital adequacy ratio is very different from the capital minimum requirement to start a financial institution. It is the ratio of a financial institution’s core capital to the its risk-weighted asset. Core capital consists primarily of common stock and disclosed reserves (or retained earnings), but may also include non-redeemable, non-cumulative preferred stock. Risk-weighted asset is a bank’s assets or off-balance-sheet exposures, weighted according to risk.
37. The definition of small and medium-size enterprise loans varies across countries. Conditions to qualify for lower risk weight include diversification, warranting, and low individual value standards.
38. Lemieux and Spong 1992. Loan classification reflects the risk associated with the performance of specific loans. Provisioning rules establish the resources that financial institutions must set aside to cover potential losses from nonperforming loans.
39. Credit institutions in Ukraine decide for themselves on a plan to form reserves—which cannot exceed 10% of the aggregate debt—and classify the debt using different criteria.
40. IFC and GPFI 2011.
Strengthening seed systems

A farmer in northern Rwanda’s Gagenke district, Mugawaneza, has grown maize on her half hectare of farmland for more than a decade. Two years ago she persuaded other farmers in her village to consolidate their land and participate in the National Crop Intensification Program. Mugawaneza and the other farmers were given improved seed and fertilizer as well as training in good agricultural practices. Thanks in large part to the improved maize variety, their production rose substantially—and now the farmers are able to sell more than half their harvest in the local market. Before, they only occasionally had surplus to sell after feeding their families. The improved variety also needs less rainfall and can be harvested in 90 days rather than the traditional 120 to 150 days.

Improved seed increases agriculture productivity and profitability. Among other benefits, improved seed offers farmers better quality production and resistance to plant pests and diseases. And its use can account for up to 50% of the potential increase in crop yields. Agronomic practices, including irrigation and fertilizer, account for the other half.

Increasing the availability and use of improved seed among smallholder farmers remains a major challenge, however. In Sub-Saharan Africa, where agriculture is the main source of income for roughly two-thirds of the population and 80% of farmers are smallholders, many countries have almost no area under improved varieties. Access to improved seed is crucial to enable smallholders in the region to move from subsistence-level farming to market-oriented production—able to supply food to the growing urban market while generating needed income for small producers.

Seed accessibility and availability to farmers are determined by many factors including a country’s crop breeding systems, institutional and organizational arrangements, as well as the socio-economic conditions of farmers. In addition, studies identify multiple policy and regulatory obstacles that contribute to the low usage of improved seed by farmers. Among them are the seed sector’s lack of competition; burdensome financial and infrastructure requirements for new seed companies; excessive evaluation and registration requirements; and the lack of regional harmonization standards or participation in international agreements. These regulatory failures reduce the availability of improved seed varieties to farmers, raise the cost on those varieties that do enter the market, and prevent future innovation by new domestic firms in the sector.

Governments have often exercised an unusual degree of control over the seed industry,
justifying this as a way to ensure that farmers have access to seed. However, too often the public sector continues to play a dominant role in developing and maintaining varieties, and tightly controls aspects of variety registration and seed certification. Studies have shown that excessive public intervention in many of these processes adds unnecessary costs and delays to the release of new varieties and production of high-quality seed, reducing their affordability and availability for farmers. In Ethiopia, for example, the public seed enterprise’s production monopoly has resulted in persistent shortages of initial seed classes, putting improved varieties beyond the reach of smallholders and even some larger agribusinesses (figure 5.1).

Both a primary input for agriculture and a living organism, seed requires up-to-date policies and regulations with a strong scientific foundation. There is a general consensus that the development of a vibrant seed industry requires a seed regulatory framework that encourages and supports the growth of a private seed sector. The public sector may still play a role in the strengthening of seed systems in areas where private enterprises are less active—supporting plant breeding and the development of orphan crops and new open-pollinated varieties of staple food crops. As regulators, governments can play a positive role, eliminating market failures and setting the norms that can facilitate the introduction of new varieties. For example, Peru saw its seed sector grow from 3 private seed companies and 2 parastatals to more than 35 private enterprises in 4 years, thanks to critical regulatory reform that allowed third-party certification. A public-private partnership also established 8 regional seed centers.

The implementation of smart regulation can encourage the development of private seed enterprises and create a thriving seed sector with numerous seed enterprises of all sizes. A

**FIGURE 5.1: In Ethiopia, demand for basic seed for the multiplication of hybrid maize regularly exceeds supply**

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity supplied</th>
<th>Quantity demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>52</td>
<td>118</td>
</tr>
<tr>
<td>2007</td>
<td>102</td>
<td>243</td>
</tr>
<tr>
<td>2008</td>
<td>115</td>
<td>222</td>
</tr>
<tr>
<td>2009</td>
<td>249</td>
<td>313</td>
</tr>
<tr>
<td>2010</td>
<td>730</td>
<td>782</td>
</tr>
</tbody>
</table>


Note: Basic or foundation seed is seed produced under the maintainer’s responsibility, according to the generally accepted practices for the maintenance of the variety. It is intended for the production of certified seed.
good regulatory structure for seed can spur innovation and maximize access to productive genetic resources, allowing farmers to access an increased number of new varieties, and address the needs of farmers in remote ecological areas that may not benefit from the widely available commercial varieties.12

**What strengthening seed systems data focuses on**

Strengthening seed systems data are a response to the need to increase improved seed use. Combining measures of policies, laws and regulations, the data seek to identify the obstacles affecting the timely introduction and production of high-quality seed from formal sources.13 Data include the following:

1. **The regulatory framework for seed.** These data examine policies, laws and regulations governing the seed sector, such as the seed law and intellectual property rights, including recent regulatory reforms.

2. **Requirements for the evaluation and registration of new varieties.** These data cover the legally mandated processes for introducing a variety into the domestic market. The data examine whether a national variety catalogue exists, measure the steps and cost to evaluate and register a variety, and identify whether the private sector is included in the variety release committee.

3. **Availability of initial seed classes.** These data look at whether private enterprises are eligible to produce breeder or pre-basic seed and foundation or basic seed for the domestic market.14

4. **Seed quality control requirements.** These data look at which seed quality control mechanisms are legally required for seed to be sold. Where certification is mandatory, the data measure the procedures and cost to certify locally produced seed.

5. **International and regional seed trade.** These data examine aspects of moving seed across national borders, including whether a country is party to a regional scheme for harmonization of seed regulations and whether it adheres to international certification standards for seed import and export.

**What the initial pilot results show**

The development of a seed system, similar to the agricultural sector itself, passes through distinct stages.15 Each stage is characterized by a specific development phase of the regulatory framework, the private sector, and the uptake of improved varieties by farmers. When developed, the strengthening seed systems indicators will identify policy and regulatory barriers affecting the efficient and timely release of new varieties and highlight obstacles affecting the availability of high-quality seed for farmers so as to provide a baseline for discussion with policy makers.

**Most countries have seed laws but many still lack seed intellectual property rights**

Research in countries that have a robust seed sector with a high turnover of new varieties suggests that one key to this is a legal and regulatory framework that focuses on providing adequate certainty about seed regulation while also creating the necessary conditions for the development of private seed enterprises. The broad consensus is that these objectives can be achieved through a rules-based, structured policy framework with implemented regulations that are clear and enforceable.16
Seed policies guide the sector’s development. A national seed policy document—outlining the government’s plan for the development of the country’s seed sector—becomes particularly important when the seed system is developing and becoming more diverse.\textsuperscript{17} Such a policy provides guidelines on the seed sector operation and details the roles and responsibilities of the government, private seed enterprises, seed research institutions, farmers and others. The policy also needs to include a plan for promoting the use of high-quality seed by farmers and clearly define the government’s position on the marketing of seed by addressing such issues as pricing, subsidies, a dealer network and credit (box 5.1).\textsuperscript{18} Among the 10 pilot countries, Ethiopia, Morocco, Nepal and Rwanda have a seed policy document, while Guatemala and Uganda have a policy in development.

Beyond establishing a seed policy, regulatory reforms update a seed system. A country’s seed regulation identifies the competent authorities, sets out prohibitions and obligations, stipulates registration and seed production systems, and defines other quality requirements.\textsuperscript{19} It generates an enabling environment for the development of seed enterprises of any scale and ensures the timely introduction of new varieties and high-quality seed. However, seed laws need to be updated to reflect policy priorities and the needs of farmers, the seed industry and other stakeholders—and to provide the necessary safeguards to ensure high-quality seed standards.

Among the pilot countries studied, both Ethiopia and Mozambique reformed their seed regulations in 2013. Ethiopia replaced its 13-year-old Seed Proclamation with a new one\textsuperscript{19} that aims at opening the seed sector. Objectives include simplifying variety release by allowing certain varieties to be registered with limited requirements and streamlining seed certification

\textbf{BOX 5.1: Strategies to increase the production of certified seed in Morocco and Guatemala}

To increase available certified seed, some governments and organizations have been investing in expanding the number of seed multipliers. For example, as part of its national plan to boost agricultural production by 2020—known as Plan Maroc Vert (Green Morocco Plan)—the Moroccan government is offering subsidies to private investors to create seed aggregation projects to bring seed producers together.\textsuperscript{a} The seed producers are either given the inputs (seed and fertilizer) by the aggregator or given help in obtaining a loan to purchase the inputs. Producers that join the aggregation project also benefit from subsidies on the purchase of machinery. In Guatemala, the Food and Agriculture Organization (FAO) of the United Nations started an initiative—Seed for Development—in 2008, funded by the Spanish government. The project taught 10 small-farmer organizations how to produce certified maize and kidney bean seed. An alliance was formed with the Institute of Agricultural Science and Technology (the national research institute that produces breeder seed) and the Ministry of Agriculture to guarantee the certification process. The initiative produced over 620,000 kilograms of certified maize seed during its implementation from 2011 to 2013, supplying approximately 80,000 small farmers.\textsuperscript{b} And the activities created an estimated 35,000 jobs for day laborers.\textsuperscript{c}

\begin{itemize}
\item[a]{For details on Plan Maroc Vert, see “Filière Semencière,” Moroccan Ministry of Agriculture and Maritime Fishing, http://www.agriculture.gov.ma/pages/acces-filieres/filiere-semenciere.}
\item[b]{FAO 2013b.}
\item[c]{Interview with FAO Guatemala, November 2013.}
\end{itemize}
procedures. Mozambique also replaced its 2001 seed decree with a new one\(^{21}\) that revises requirements for seed production, trade, and quality control to comply with the Southern African Development Community (SADC) seed protocol requirements. The decree also aims to ease the public sector burden during the seed certification process by introducing the possibility of private sector accreditation for inspections. Implementation is underway in both countries.

The protection of intellectual property rights, which is still lacking in some countries, is also crucial to encourage innovation and the development of new seed varieties. Without the provision of exclusive rights, breeders are less likely to develop new and improved varieties.\(^{22}\) Five of the 10 pilot countries have plant variety protection laws, while Guatemala, Mozambique, Nepal, Rwanda and Uganda do not have laws. In Uganda, the 2013 Plant Variety Protection Act is awaiting the president’s signature, while in Mozambique, the Council of Ministers approved the new Regulation for the Protection of Plant Varieties in March 2014. Utility patents are currently used to protect breeder’s rights in Guatemala.

**Costs and testing requirements across countries for the evaluation and registration of new varieties reduce outcomes**

The timely release of new seed varieties into the market helps ensure that farmers have access to the latest seed technology and that there is adequate renewal of varieties. Most governments establish control systems for evaluating new varieties to ensure that those made available to farmers perform well. But in many countries these controls can be so costly and time-consuming that firms limit the number of varieties they submit for registration.\(^{23}\) And the red tape can prevent the varieties that are released from reaching the market in time for the new crop season.

**Enabling the Business of Agriculture** found a range of requirements for the registration, evaluation and testing of seed varieties. Eight of the 10 pilot countries require registration of all food crops in the national variety catalogue; the exceptions are Guatemala and the Philippines. All 8 countries have regulations requiring testing for distinctness, uniformity and stability (DUS) and value for cultivation or use (VCU) before a variety can be registered. In Rwanda, however, the system has not yet been successfully implemented, and varieties are released into the market directly by the Rwanda Agricultural Research Institute without subjecting them to any testing other than its own. In Ethiopia and Mozambique, DUS testing has been required since 2013, but is not yet fully implemented. The number of crop seasons required for VCU tests varies across countries, even for the same crop (table 5.1). In Ethiopia, for example, wheat testing takes 3 seasons, while it takes 2 seasons in Spain and Morocco. The number of locations where testing must be done also fluctuates greatly. An excessive amount of locations may limit the varieties that a seed enterprise introduces as the variety may only be suited for a smaller number of agro-ecological regions. VCU testing must be done in 4 locations in Uganda, for example, and up to 30 in Ukraine.

To speed up evaluation procedures and reduce the time required for releasing a variety, regulations may allow the public authority to accept test data from the breeder as official test results. Among the pilot countries, only in Guatemala does the law allow this practice. Uganda is following a similar practice for DUS testing because of a lack of capacity at the public authority, the National Seed Certification Services (NSCS). While the NSCS is supposed to conduct performance trials, in practice the
### Table 5.1: Crop seasons required for evaluation and registration of cereal variety

<table>
<thead>
<tr>
<th>Topic</th>
<th>Ethiopia (wheat)</th>
<th>Guatemala (maize)</th>
<th>Morocco (wheat)</th>
<th>Mozambique (maize)</th>
<th>Nepal (maize)</th>
<th>Spain (wheat)</th>
<th>Uganda (maize)</th>
<th>Ukraine (maize)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of crop seasons for DUS testing</strong></td>
<td>n.a.</td>
<td>n.a.</td>
<td>2</td>
<td>n.a.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Number of crop seasons for VCU testing</strong></td>
<td>3</td>
<td>n.a.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Are applicant data accepted as official data?</strong></td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.

Note: The table excludes the Philippines because registration is not mandatory in that country. It excludes Rwanda because the processes prescribed by the 2010 ministerial orders for variety evaluation and release were not operational at the time of data collection. n.a. = not applicable; DUS = distinctiveness, uniformity and stability; VCU = value for cultivation or use.

a. Data is current as of March 31, 2014, pending the implementation of Ethiopia’s 2013 Seed Proclamation which aims to reduce the number of crop seasons for VCU testing to 2 and introduce a requirement for DUS testing.

b. In Mozambique, DUS testing is required only for permanent registration of a variety under the 2012 Decree for the Temporary Registration of Varieties, in force until the end of 2014. This testing is not being carried out because of lack of capacity, but the 2013 Seed Decree aims to reinstate it for 2 crop seasons.

c. There are no DUS or VCU testing requirements in Guatemala. The only required tests are performed by the applicant who, in the case of a Guatemalan national, must submit a report on the test results for 1 crop season in 3 locations of the country. The variety is then evaluated for registration on the basis of this report. Foreigners must submit test results for 2 crop seasons.

National Agricultural Research Organization breeders are running the trials and NSCs accepts their test results for the evaluation. Mozambique is following a similar practice for VCU testing, allowing the seed enterprise to conduct the testing and then sharing the results as official data.

High costs for evaluation and variety release can discourage private enterprises from trying to introduce new varieties. Studies have shown that breeders limit the varieties submitted for official release to those likely to perform well in all test locations. This practice contributes to a shift in breeding priorities, favoring widely adapted varieties over those suited to the diverse characteristics of most small-scale farmers’ conditions. Moreover, long costly processes for evaluation and variety release have the greatest impact on small and medium-size enterprises, which continually need new varieties to compete in the market and stay in business. Research suggests that one way to increase the flow of new seed varieties to farmers in developing countries is to keep registration procedures simple and fees at a minimum—so as to encourage small and medium-size companies to enter the seed sector.

Among the pilot countries that require evaluation and registration fees, Ukraine has the highest cost for evaluation and variety release of its most produced cereal—the cost is 60% of income per capita—followed by Uganda, where it is 28% of income per capita. The cost is 15.8% of income per capita in Morocco and 9.9% of income per capita in Spain. Guatemala has the lowest cost, at 2% of income per capita (figure 5.2).

The variety release committee is the final quality assurance mechanism that reviews a new variety for inclusion in the national catalogue and release into the market. This committee’s diverse representation from both the public and private sector helps ensure that key seed sector actors participate in the decision making. Nine of the pilot countries have an official variety release...
committee with a structure established in the seed regulations or the national seed policy. Guatemala has no regulation addressing this issue and no official variety release committee.

Current regulations on the variety release committee’s composition differ within the pilot countries. Ethiopia or Guatemala do not formulate requirements for private sector representation, while in Morocco, Mozambique, Nepal, the Philippines, Rwanda and Uganda, the committee is mandated to include private sector representatives, but they are outnumbered by those from the public sector. Spain is the only pilot country with an equal number of private and public sector representatives (figure 5.3).

**Seed certification is common and mostly done by public authorities**

Seed quality controls are crucial because they vouch for the seed quality to be distributed in the market. Such controls need to be sufficient to ensure high-quality seed—but also proportionate, to avoid adding extra costs to seed or creating delays in delivering seed to farmers. Excessive controls may also place a financial burden on public authorities that have limited resources.

There is no “one size fits all” method to control seed quality. What is appropriate for a country may depend on how developed its seed sector is and whether farmers have effective recourse against low-quality seed. Seed quality control systems vary among the pilot countries. In Morocco, Mozambique, Rwanda, Uganda and Ukraine, for example, certification is mandatory for all locally produced seed to be sold on the domestic market. In cases like these, allowing companies to become accredited to conduct their own inspections or permitting third parties to do so can ease the public sector’s financial burden and help address capacity issues. Seed regulations in Guatemala, Morocco, Mozambique, Nepal, the Philippines, Spain and Uganda allow this option to varying degrees, as follows:

![Figure 5.2: Cost for evaluation and variety release is highest in Ukraine and Uganda in percentage of income per capita](image-url)

**Source:** Enabling the Business of Agriculture database.

*Note:* The figure excludes the Philippines because registration is not mandatory in that country; Rwanda is excluded because its evaluation and registration process is not fully implemented, and Mozambique is omitted because no data could be obtained. n.a. = not applicable.

a. While the registration of a new variety is currently free in Ethiopia, the 2013 Seed Proclamation will set a cost.
In Morocco, private inspectors are allowed to perform the field inspection during the certification process.

In Nepal, private inspectors are increasingly doing the required field inspections when certification is chosen.

Mozambique’s 2013 Seed Decree introduced the possibility of accreditation for seed companies; at the time of data collection, the government had started inspections of private companies to assess which might be eligible to become accredited in the future.

In Andalucía, Spain—the region that produces the most certified seed—most seed companies are already accredited. Accredited seed enterprises need to complete only 2 interactions with the public authority during the season, as follows: the first to make a request for certification at the start of the season, and then to register the results of tests conducted in accordance with International Seed Testing Association (ISTA) rules. Both procedures can be done online.

Guatemala, Nepal and the Philippines employ voluntary certification; seed enterprises may simply opt to comply with truth-in-labeling requirements. In Spain, vegetables never need to be certified. In Ethiopia, the 2013 Seed Proclamation introduced a new seed category with the Quality Declared Seed option; this system will allow registered seed producers to produce and market seed in accordance with quality standards previously agreed to...
by the government, with limited inspection requirements. Though Ethiopia’s system is not yet in use, FAO guidelines suggest that it should provide seed enterprises with more autonomy and reduce the public sector burden because only 10% of seed produced and offered for sale must be inspected.26

Certification process delays—during seed sampling and in issuing the test results—can deter smaller farmers and smaller enterprises from becoming seed producers. A producer may have seed ready to be marketed but cannot do so due to final official approval delays. For example, seed enterprises in Ukraine usually receive the test results back from the laboratory 10 days after the sample is collected; in Rwanda and Uganda, the wait is 2 weeks, but test results can take a month in Mozambique.

**Regional and international harmonization offers opportunities for faster and simpler evaluation and registration of new varieties**

By harmonizing seed regulations across countries and implementing international certification schemes, governments can increase the flow of seed across national borders. This process expands the potential market size, creating stronger incentives for both local and international investment.27 And simplifying and harmonizing testing and certification procedures helps to improve farmers’ access to high-quality seed by increasing available choices.28

Regional schemes for harmonizing seed regulations are aimed at standardizing the registration, certification, and trade standards of member countries. These schemes can reduce the time and cost to introduce a new variety that has already gone through the process in other member countries. For example, regional variety release systems allow a variety to be released in all members of a trade bloc once it has been released in a minimum number of them (generally 1 or 2).29

Ethiopia, Guatemala, Mozambique, Rwanda, Spain and Uganda are members of regional certification schemes. In addition, Morocco has had an equivalence arrangement for certification with the European Union since 1991. This scheme establishes that seed exported to the European Union meet the same criteria for seed characteristics, examination, identification, marking, control and packaging as seed harvested and controlled within the European Union. For Spain and all other EU members, seed can be sold without further testing once a variety is registered in any one EU member (after 2 years of tests). As a SADC member, Mozambique has moved to align its legislation with the SADC Technical Agreements on Harmonization of Seed Regulations through its 2013 decree. Once the decree is fully implemented, varieties previously registered in 2 SADC countries can be registered in Mozambique without further testing. Rwanda and Uganda have taken steps to be included in the East African Community’s scheme for harmonizing seed regulations, which is now awaiting endorsement by member countries.

A majority of the pilot countries belong to an international seed certification scheme. Morocco, Spain, Uganda and Ukraine are members of the Organisation for Economic Co-operation and Development (OECD) seed certification scheme. The scheme ensures the varietal identity and purity of seed through requirements and controls throughout the cropping, seed processing, and labeling operations. Membership provides for official recognition of “quality guaranteed” seed, facilitating international trade and helping to remove technical trade barriers.30 Nepal, the Philippines, Spain and Ukraine are accredited lab members of
the ISTA scheme, which aims to “achieve uniform seed quality evaluation worldwide.” This scheme promotes specific standards in global seed quality evaluation, including through internationally agreed seed sampling and testing procedures, accreditation of testing laboratories, promotion of research, provision of international seed analysis certificates and training, and the dissemination of knowledge in seed science and technologies. Uganda is also an ISTA member, following the rules for testing, but it does not have an accredited ISTA laboratory.

Ethiopia, Guatemala, Mozambique and Rwanda are not a member of any international seed certification scheme (table 5.2).

**Next steps**

This chapter presented the initial results for a data set that measures policy and regulatory constraints affecting the strength of seed systems. After analyzing the data collection results from more than 170 data points, the team identified 20 data points that are measurable and collectable across countries and narrowed the focus to 5 relevant subtopics, as stated above. After further consultation during the upcoming year, this data set will be further refined and used as a starting point for formulating indicators; a revised questionnaire will be developed for the next round of data collection.

In the coming year, the following areas of content will be refined or developed—although the list may be expanded—for inclusion:

- The usefulness of the current selection of time and motion data—measuring the time, cost and procedures required for the evaluation and registration of new varieties and seed certification processes—must be considered and weighed against the possibility of introducing new time and motion indicators. Initial data collection findings indicate that there are further elements that could be

<table>
<thead>
<tr>
<th>TABLE 5.2: Country membership in regional and international seed certification schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Ethiopia</td>
</tr>
<tr>
<td>Morocco</td>
</tr>
<tr>
<td>Mozambique</td>
</tr>
<tr>
<td>Nepal</td>
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<tr>
<td>Philippines</td>
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<td>Rwanda</td>
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<tr>
<td>Spain</td>
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<tr>
<td>Uganda</td>
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<tr>
<td>Ukraine</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.

Note: COMESA = Common Market for Eastern and Southern Africa; EU = European Union; ISTA = International Seed Testing Association; OECD = Organisation for Economic Co-operation and Development; SADC = Southern African Development Community.
included in the seed time and motion indicators, as follows:

- The legal requirements and cost to obtain a seed producer license are considerations. Initial readings of the regulations demonstrated a number of mandatory requirements that may affect obtaining a license, which is a consistent requirement across countries.

- The time, cost and procedures required to obtain an import license and for seed testing when importing seed are additional considerations. Given that some countries have very limited domestic seed production and the importance of the international seed trade, consideration should be given to include this issue.

- If the current time and motion data are maintained for building an indicator around the evaluation and registration of new varieties and seed certification processes, the team will conduct further research and seek feedback to refine the methodology and case study assumptions to ensure comparability across countries. Following the lessons learned during the pilot phase, additional case study assumptions must be included if a time and motion seed certification indicator is to be established; notably the seed examined must be standardized and the plot size and the number of labels used for packaging must be defined.

- Initial data was gathered on seed policies. Further discussions with experts on the appropriate angle to adopt will be held to further enrich the analysis of these policies.
Notes

The underlying research and design of the strengthening seed systems topic benefited from valuable comments provided by Marcel Bruins, Francois Burgaud, Pietro Chiappini, Joseph Cortes, Will Galvin, David Gisselquist, Lauren Good, Adelaida Harries, Walter le Boef, Lloyd LePage, Carl Pray, and Jitendra P. Srivastava.


2 Enabling the Business of Agriculture defines improved seed as seed that is bred in conventional systems for particularly desired characteristics, such as drought tolerance and disease resistance.

3 Tripp et al. 1998.

4 Dercon, Vargas Hill and Zeitin 2009.


7 USAID EAT Project and Iowa State University Seed Science Center 2011.

8 World Bank 2012b.

9 Enabling the Business of Agriculture defines a seed regulatory framework as the documents, instruments and procedures that regulate the seed sector, such as seed policies, legislation, standards and processes.

10 Minot 2008.

11 Enabling the Business of Agriculture defines private seed enterprises as any person or group of persons willing and able to produce and market high-quality seed under their own responsibility.

12 USAID EAT Project and Iowa State University Seed Science Center 2011.

13 Although seed from informal sources plays an important role in developing a country’s seed system, the sector cannot accurately be measured through the Enabling the Business of Agriculture methodology and is therefore not considered in the strengthening seed systems indicators.

14 Breeder or pre-basic seed is seed directly controlled by the originating or sponsor plant breeding institution, firm or individual. It is the source for the production of seed of certified classes. Basic or foundation seed is seed produced under the responsibility of the maintainer according to the generally accepted practices for the maintenance of the variety, it is intended for the production of certified seed.

15 The literature identifies 4 stages: prevalence of an informal seed sector, initial releases of improved varieties, uptake of improved seed by farmers, and strong commercial seed production and distribution (Maredia and Howard [1998]; Jaffee and Srivastava [1992]; Pray and Ramaswami [1991]).

16 USAID EAT Project and Iowa State University Seed Science Center 2011.


18 FAO 2013d.


20 The reform in Ethiopia was undertaken with assistance from the government of the Netherlands and the Bill & Melinda Gates Foundation.

21 The reform in Mozambique was undertaken in the context of the New Alliance for Food Security and Nutrition. The New Alliance for Food Security and Nutrition, launched in 2012 and building on previous G8 efforts, is a shared commitment by African leaders, private sector partners and donors to achieve sustained and inclusive agricultural growth and raise 50 million people out of poverty over the next 10 years. For more information, see “The New Alliance for Food Security and Nutrition,” Feed the Future, http://feedthefuture.gov/portal/new-alliance-food-security-and-nutrition. For more on the collaboration with the G8, see Feed the Future (2012).

22 UPOV 2005.


24 Louwaars 2005.


26 George and Turner 2006.

27 Minot 2008.

28 Minde and Walthoka 2006.

29 USAID EAT Project and Iowa State University Seed Science Center 2011.


Improving fertilizer supply

A farmer in Mozambique’s Xai-Xai region, Fernanda grows maize, beans and vegetables. She produces enough to sustain her family of 5, but would like to grow surplus production to sell at the local market. Fernanda has heard from other women at her village that if she uses fertilizer she can significantly increase her yield. However, no store in her village sells fertilizer. To find fertilizer, Fernanda would need to travel for more than 6 hours, and she hears that this agricultural input is very expensive. Therefore, Fernanda has decided not to use fertilizer this season.

Fertilizer is among the most important inputs in agriculture. Without it, global yields of food crops would be 40–60% lower. No world region has been able to boost agricultural growth and tackle hunger without increasing the use of fertilizer. Expanding its use is critical not only to meet global food needs but also to maintain soil fertility and ensure that farming is profitable. Farmers using fertilizer are better able to produce surpluses that are essential to move beyond subsistence farming toward commercial agriculture and into the mainstream of a market economy.

Yet most farmers in developing countries have not taken full advantage of the opportunity that fertilizer offers. Fertilizer adoption and use are particularly important where soils are characterized by moderate to very severe fertility constraints, as they are in vast farming regions of Sub-Saharan Africa. Low fertilizer use not only restricts yields today, it also promises declines in the future through the ongoing depletion of soil nutrients.

Fertilizer use in developing countries is constrained by a number of factors, particularly high prices and unavailability that often reflect unsatisfactory procurement practices, inefficient administrative procedures, and inadequate infrastructure. Limited understanding among farmers of how to best use fertilizer, combined with a general lack of agribusiness skills, hampers more widespread fertilizer use and are evidence of ineffective or nonexisting capacity-building programs. It is not surprising then that farmers have little faith in the benefits of using fertilizer, which is also at least partly attributable to poor quality control measures in many countries. Findings from the World Bank’s Agribusiness Indicators reports show a significant number of complaints regarding adulterated and fake fertilizer in almost all African countries studied.

There is also controversy surrounding fertilizer use and its impact on the environment. When improperly used, fertilizer can promote nutrient pollution, generating losses of biological diversity as well as health hazards. Soil analysis and
training can support the application of fertilizer at recommended levels, leading to higher yields while preserving the environment.

**What improving fertilizer supply data focus on**

Improving fertilizer supply data measure regulatory bottlenecks limiting availability. The data also focus on operational and economic constraints, as well as the implementation of legislation affecting the fertilizer industry. Seven subtopics have been developed, as follows:

1. **Domestic production and blending of fertilizer.** Not many countries produce fertilizer and, therefore, many depend on importing it. These questions investigate whether the country produces its own fertilizer and if there are any public or private plants in the country which mix or blend fertilizer.

2. **Regulatory framework for fertilizer.** These data examine policies, laws and regulations governing fertilizer, such as the existence of national and supranational laws and regulations.

3. **Registration of fertilizer.** As many countries require fertilizer to be registered before they can be sold commercially, these data identify the countries that require registration and, in those that do, examine the necessary procedures, including the associated time and cost. The data examine the time length of registration validity and whether there is an official registry open to the public.

4. **Importing of fertilizer.** As fertilizer production is concentrated in only a few countries, requiring most others to rely on imports, these data focus on the private sector’s role in importing fertilizer, as well as the public sector’s procurement role. The data set also measures the procedures, time and cost to import fertilizer.

5. **Subsidies, taxes and tariffs on fertilizer.** These data look at fertilizer subsidy schemes and at import tariffs and taxes levied on fertilizer. Government subsidies can result in economic inefficiencies and large fiscal costs. In economies with market failures, however, subsidy programs might be economically justified as a way to address these failures as well as a lack of incentives for farmers to use fertilizer. Taxes and tariffs can be an important revenue source for governments. In countries with low fertilizer use, however, levies on this input are detrimental to agricultural development.

6. **Quality control of fertilizer.** These data focus on labeling requirements, legislation on the sale of mislabeled and open fertilizer containers, and practices in monitoring fertilizer quality. Adulteration of fertilizer products, including violation of truth-in-labeling requirements on content, quantity and quality, has been shown to be an issue in open markets. The damage caused by adulterated fertilizer—often apparent only months after its application—undermines trust in fertilizer quality and discourages farmers from purchasing this input.

7. **Fertilizer use and soil health.** These data measure fertilizer application rates and look at whether soil testing facilities and extension services are available to farmers. Farmers need to use fertilizer at recommended levels to reach potential
yields but also to avoid the plant toxicity and environmental contamination that fertilizer can cause. Many developing countries lack soil testing capabilities, however, leading to a reliance on blanket recommendations. Training in fertilizer use is needed to ensure adequate soil nutrient levels.

Additional data were collected on fertilizer prices and some analysis is provided below. These data measure end-user fertilizer prices, which vary dramatically across countries. Relatively high prices often reflect high transport and handling costs. High prices might also be generated by the procurement process when a lack of competition and transparency crowd out the private sector. Comparable data on prices, however, were not available for all pilot countries.

**What the initial pilot results show**

Initial data results show common patterns across countries. For example, most of the 10 pilot countries require fertilizer to be registered, require fertilizer packages to be labeled, and prohibit the sale of fertilizer that is mislabeled. Results for other data points, however, reveal large differences from country to country, most notably in end-user prices, in subsidies and tariffs, and in registration and import procedures.

Three pilot countries—Ethiopia, Mozambique and Nepal—have a fertilizer policy directive, and all 10 have laws specific to fertilizer. Besides national laws, only Guatemala and Spain also have supranational agreements on fertilizer with other countries (figure 6.1).

**Four of the 10 pilot countries produce fertilizer:** Morocco, the Philippines, Spain and Ukraine. These 4 countries, along with Ethiopia, Guatemala and Mozambique, also have blending facilities. Ethiopia recently inaugurated its first blending facility, and other sites in the country are set to start operating throughout 2014 (figure 6.2). Only Nepal, Rwanda and Uganda have neither production nor blending facilities. All 10 countries import fertilizer.

**Regional harmonization leads to easier registration of fertilizer**

Registration of fertilizer is important. The registration process endorses the entry of new
and innovative products into the market while ensuring human, animal and environmental safety. The introduction of new products is more efficient when fertilizer registration is supported by agile procedures at a reasonable cost.

All pilot countries except Morocco require that fertilizer must be registered to be legally sold. The process varies across countries. In Spain, registering a fertilizer takes only a single procedure and 60 days, on average. In Ukraine, it requires 6 procedures, and in Uganda 7—and in both countries the process takes more than 500 days. Nepal has the longest process, requiring 1,125 days on average—more than 3 years. Spain is the only pilot country where registering a fertilizer has no cost. Among the other countries the cost ranges from $15.40 in Rwanda to $14,752.50 in Ukraine.

In all pilot countries that require registration, except Ethiopia, the registration is valid for a specified period. In Guatemala, Spain and Ukraine, the registration is valid for 10 years, while in Mozambique, the validity lasts 5 years, and in the Philippines, Rwanda and Uganda, 3 years (figure 6.3.).

Six of the pilot countries—Ethiopia, Guatemala, the Philippines, Spain, Uganda and Ukraine—have publicly accessible fertilizer registries. The registries offer information on who owns the

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**FIGURE 6.2: Fertilizer production and blending by country**

<table>
<thead>
<tr>
<th>Fertilizer producing countries</th>
<th>Morocco</th>
<th>Philippines</th>
<th>Spain</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries that mix/blend fertilizer domestically</td>
<td>Guatemala</td>
<td>Morocco</td>
<td>Mozambique</td>
<td>Philippines</td>
</tr>
<tr>
<td></td>
<td>Spain</td>
<td>Ukraine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.

**FIGURE 6.3: Fertilizer registration requirements by country**

<table>
<thead>
<tr>
<th>Registration required to legally commercialize fertilizer</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Mozambique</th>
<th>Nepal</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td>No registration required</td>
<td>Morocco</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration is subject to a specific time period</td>
<td>Rwanda</td>
<td>Nepal</td>
<td>Philippines</td>
<td>Uganda</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 years</td>
<td>3 years</td>
<td>10 years</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.
fertilizer registration, what the product composition is and when the registration expires. Spain has 2 registries, one for products whose registration is valid across the European Union (EU) and one for those whose registration is valid only in the Spanish market.

Regional harmonization of procedures for registering fertilizer can simplify the process (box 6.1). Two pilot countries are part of regional schemes for harmonizing registration procedures: Spain, within the EU framework, and Guatemala, within that of the Central American Customs Union plus Panama. The EU has harmonized registration procedures for chemical fertilizer but not for other fertilizer products such as organomineral fertilizer. In the Central American Customs Union, the supranational agreement is pending ratification by five member countries. Talks on creating common registration schemes are ongoing in the East African Community and the Southern African Development Community (SADC).

**Public sector is often involved in the procurement of fertilizer**

Fertilizer production is capital intensive, and the industry benefits from economies of scale as well as low costs of raw materials. So it is no surprise that the world’s production capacity is concentrated in a few countries. Just 5 nations produce half or more of the global supply of the most widely used types of fertilizer: urea (60%); nitrogen, phosphorus, and potassium (NPK) (50%); diammonium phosphate (DAP)/ monoammonium phosphate (MAP) (66%); potash (77%); and ammonia (51%). As a result, most countries import fertilizer.

The private sector is allowed to import fertilizer in all the pilot countries. In Ethiopia, Guatemala, Morocco, Nepal and Rwanda, the public sector procures fertilizer products specified for certain food crops. In Rwanda, fertilizer for food crops are imported and distributed through government-subsidized schemes; 3 private firms are involved in the distribution. Only in Mozambique, the Philippines, Spain, Uganda and Ukraine is the fertilizer sector run entirely by private firms.

Fertilizer import procedures vary across countries, as do the associated time and costs. In Uganda, customs clearance for fertilizer imports takes 2 days, while it takes 60 days in the Philippines. In Spain, only 4 documents are required to complete the entire import process, while more than 10 documents are needed in Nepal.

Several pilot countries have imposed specific regulations for the transport, storage and handling of ammonium nitrate, a substance widely used in fertilizer that can be used in explosive compounds. Spain requires a detonability test at a border inspection post; this test costs up to €4,500 for the importer each time. In Guatemala, the Ministry of Interior must inspect the cargo, and a military escort must accompany it from the border post to the approved destination.

**Fertilizer prices are the highest in African pilot countries**

Price determines whether farmers adopt and use fertilizer. Sub-Saharan Africa has the highest fertilizer prices, often putting its use beyond the reach of many farmers. The region accounts for less than 1% of the global fertilizer market (but 10% of the world’s population) and imports relatively small quantities, resulting in higher prices for both the product and its shipment. African importers pay fertilizer producers the same prices as Asian importers, but the costs of onward handling and distribution—including
BOX 6.1: Harmonizing fertilizer registration and trade for lower cost and greater choice

Regional harmonization of fertilizer registration and trade policies creates efficiencies and economies of scale. This process benefits farmers by reducing fertilizer prices and increasing the range of available fertilizer products.

In small markets, companies sometimes prefer not to register fertilizer with limited market shares because the profit will be too slight to compensate for burdensome procedures. Having countries with a common registration regime simplifies the procedures companies need to go through to sell their fertilizer products in multiple markets. This commonality not only reduces costs for the companies but also encourages them to register more products. For example, the European Union (EU) allows a single fertilizer product registration for all EU countries, unifying in one process what was previously done separately in 28 different countries.

Integrated trade regimes lower transport and transactions costs through tariff unification, free trade among members and the acceptance of approvals and inspections done by participating countries. Most of the 10 pilot countries belong to a regional organization with a trade agreement (map B6.1.1), as follows: the Association of Southeast Asian Nations (ASEAN); the Central American Customs Union plus Panama (CACU+P); the Commonwealth of Independent States (CIS), the East African Community (EAC), the EU; or the Southern African Development Community (SADC). In all these groups, fertilizer are “zero rated” among member states so that no tariffs can be levied on them. However, only the EU and CACU+P have free movement of goods and accept approvals and inspections done by all member states.

MAP B6.1.1: Regional organizations with pilot countries as members

Source: IBRD 41264 October 2014.

Note: ASEAN = Association of Southeast Asian Nations; CACU+P = Central American Customs Union plus Panama; CIS = Commonwealth of Independent States; EAC = East African Community; EU = European Union; SADC = Southern African Development Community.
transport costs, tariffs and taxes—can account for up to 50% of the price that African farmers pay, compared with only 20% for Asian farmers.

The high cost of fertilizer discourages its adoption, and the resulting low rate of utilization and consequent low level of imports contribute to higher costs. In Uganda, for example, where comparatively small batches of 1,000 metric tons are imported, fertilizer prices are relatively high. In this landlocked country, the cost of transporting the product from the nearest port in Mombasa, Kenya, to its own border adds to the price that farmers pay. In 2013, the price per ton of NPK 17:17:17 was US$1,013 in Uganda, compared with US$545 per ton of NPK 14:14:14 in the Philippines.

**Programs to promote fertilizer use are becoming increasingly targeted**

Where the price of fertilizer is high and farmers lack knowledge about its use or fail to perceive its benefits, countries may respond by turning to input subsidies. By lowering the price of fertilizer through such measures, governments aim to raise its use to an optimal level at which the additional crop production value exceeds the subsidy cost. The use of input subsidies marks a recent fertilizer policy shift. Until 2005, the focus was on removing subsidies and liberalizing the market. However, concerns about population growth, high food prices and low soil fertility have renewed interest in fertilizer promotion programs delivered as “market smart” subsidies.12

A study to analyze the effects of fertilizer subsidies was conducted by a coalition of institutions comprising the New Partnership for Africa’s Development, the International Fertilizer Development Center, the Food and Agriculture Organization (FAO), and the Alliance for a Green Revolution in Africa.13 The study reveals that in all 8 African countries covered, the subsidy programs have improved smallholder access to fertilizer and increased yields and production. However, it also shows that most programs were poorly targeted to needy households and that there were delays in fertilizer delivery that led to late and, therefore, ineffective applications. In addition, some countries lacked an exit strategy from their subsidy program and, in these cases, the program ultimately crowded out the private sector.

Among the 10 pilot countries, half have implemented fertilizer subsidy schemes: Guatemala, Morocco, Nepal, the Philippines and Rwanda. In Rwanda, selected farmers benefit from the government-procured fertilizer through vouchers allowing them a 50% discount on 50-kilogram bags of urea fertilizer and 100-kilogram bags of DAP fertilizer. Vouchers can be used for maize and wheat production and, since 2012, also for rice and Irish potatoes. Rwanda explicitly involves the private sector by transferring the responsibility for fertilizer distribution to private companies. Nepal is piloting a similar voucher program for smallholders in 6 districts. The vouchers allow the farmers to purchase 50-kilogram bags of NPK, DAP and urea fertilizer at a discount.

To promote profitable fertilizer use by smallholders, some countries reduce marketing costs by removing taxes and tariffs on fertilizer and fertilizer raw materials. Many have lifted levies on fertilizer, including Ethiopia, Rwanda and Uganda. Fertilizer are “zero rated” in the East African Community Customs Management Act, meaning that no duty, value added tax or withholding tax should be levied on fertilizer shipments.14

Seven of the pilot countries charge duties on fertilizer imports. Guatemala levies an import duty of 5% for NPK fertilizer but none for urea fertilizer. Morocco and Mozambique levy import
duties of 2.5% for both NPK and urea fertilizer, while the Philippines levies duties of 3% for NPK fertilizer and 1% for urea fertilizer. Spain taxes fertilizer shipments from outside the EU at 6.5%, while Nepal requires payment of a 20% duty to import NPK and urea fertilizer. Ukraine taxes fertilizer imports from outside the free trade area of the Commonwealth of Independent States at 6.5%.

**Quality controls are common, but not always effective**

Countries use both labeling and inspections to control fertilizer quality. All 10 pilot countries require fertilizer products to be labeled with such information as the company name and the product composition. Ethiopia, the Philippines, Rwanda and Spain require that the label also include the results that can be expected when the fertilizer is used as directed as stated on the label. Guatemala and Ethiopia have specific labeling requirements for products that their governments consider to be of lower quality. Guatemala requires fertilizer with a low concentration of nutrients to have a diagonal red banner, at least 30% of the package width, with the words “Warning: high content of filling materials.” According to Guatemalan law, these are fertilizer with an NPK content of less than 30% or with a content of 39% or more of materials other than fertilizer. Ethiopia requires fertilizer classified as substandard according to national quality requirements to be in a package with a superscribed red “X.”

Some contributors to *Enabling the Business of Agriculture* believe that these visual labeling specifications, by overcoming any issues of dialect or literacy, help ensure that many farmers can identify what the contributors consider to be low-quality products. Other contributors suggest that such policies favor the products of some companies over others. They argue that this is a competition issue and that the adequacy of composition should be determined on the basis of soil analysis and crop.

All the pilot countries prohibit the sale of mislabeled fertilizer that is sold with false or misleading information about its content or quantity. In addition, Morocco, the Philippines, Uganda and Ukraine forbid the sale of open fertilizer containers. In the countries where open containers can be sold, legislation differs on the specifics. In Ethiopia, for example, fertilizer retailers can sell open containers at any time, while manufacturers and importers can sell them only to blenders and large-scale farms. In Guatemala, fertilizer can be sold in bulk if accompanied by a technical data sheet.

Adulterated and counterfeit fertilizer is a major problem in many countries, affecting output in ways that lead to food insecurity and reduce farmers’ profits. Adulteration and dilution of fertilizer happens mostly at the retail level. Governments in all 10 pilot countries have the authority to inspect fertilizer quality at the retail level, but in most of these countries, both private sector representatives and government officials have expressed concern about weak quality controls resulting from constraints on available resources, including a scarcity of inspectors. Moreover, they describe fertilizer sampling as focused mainly on macronutrients while disregarding secondary nutrients.

**Extension services to support efficient fertilizer use are still insufficient**

Adequate fertilizer application, in terms of both doses and timing, is needed to maximize the benefits and minimize environmental contamination. In Sub-Saharan Africa, where soil nutrient deficiencies are high, fertilizer use is trending upward in most countries. However, rates still remain well below the target of 50 kilograms per
hectare set in 2006 in the African Union’s Abuja Declaration on Fertilizer for an African Green Revolution. In Mozambique, for example, fertilizer use rates are as low as 8 kilograms per hectare, and in Uganda, they are as low as 2 kilograms per hectare. By comparison, use rates are 150 kilograms per hectare in Guatemala and the Philippines (Figure 6.4).

Effective fertilizer use requires soil analyses to help in matching products to soil types, but many countries lack the means to enable farmers to test their soil. While all 10 pilot countries have soil testing labs, the number of functional labs varies, as do the time and cost for a soil analysis. In the Philippines, for instance, with 12 official laboratories and many private ones, results can be expected after 10 working days. In Uganda, with 3 functional laboratories and a population about one-third the size of the Philippines, results are available after 5 working days (Box 6.2).

Building farmer capacity in fertilizer management, through training and technical advice, is also crucial for effective use of this input. Agricultural extension services related to fertilizer use are being provided in all 10 pilot countries. The public sector is the main driver in financing and providing these services in nearly all the countries. Spain and Ukraine are the exceptions, where training is provided entirely by private input suppliers. Other sources of agricultural extension services for smallholders range from community-based projects and those funded by nongovernmental organizations (NGOs) to private companies. Data on the number of farmers reached by public extension agents proved to be limited in most of the countries.

Next steps

This chapter presented the initial pilot results for a data set focusing on policy and regulatory aspects related to fertilizer registration, import and sale; fertilizer prices, subsidies, taxes and tariffs; quality control; and fertilizer use and soil health. The results presented were selected based on their relevance, collectability and degree of comparability across countries. The focus areas will be narrowed down during the upcoming year to capture the most critical

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**Figure 6.4: Average fertilizer use rates by country**

![Graph showing average fertilizer use rates by country](image-url)

Source: Enabling the Business of Agriculture database.

Note: Rwanda is excluded because no information could be obtained.
A project in northern Uganda is piloting a mobile training and soil testing laboratory to serve smallholders. The aim is to increase soil fertility and productivity by providing site-specific recommendations for fertilization based on soil tests.

The project is a public-private initiative involving German potassium mining company K+S KALI GmbH; the Sasakawa Africa Association, an international agricultural development NGO; Uganda’s National Agricultural Research Organization; and the University of Göttingen in Germany, which is supporting the project with expertise in soil analysis.

The soil laboratory is capable of measuring the most important nutrients in the soil quickly and accurately. When air-dried samples are submitted, it takes only about an hour to obtain results. The lab is equipped with a water purifier for the lab water and a spectrophotometer for measuring soil nutrients.


2. Determining access to organic fertilizer due to cost implications and the health and environmental benefits of its use.

3. Expanding coverage of soil testing, given its importance, through questions on the availability and updating of soil maps.
Notes

The underlying research and design of the improving fertilizer supply topic benefited from valuable comments provided by Maria Antip, Diego Arias, Joshua Ariga, Todd Benson, Imad Bouziane, Carlos Capparelli, Morgane Danielou, Peter Heffeman, Catherine King, Ignacio Montagud, Mohinder Mudahar, Amit Roy, Jason Scarpone, David Spielman and Malcolm Sumner.

1 Hoyum 2012.
3 World Bank 2013b.
4 Donavan 2004.
5 World Bank 2012c.
6 The countries covered by the World Bank’s Agribusiness Indicators project are Burkina Faso, Ethiopia, Ghana, Kenya, Mozambique, Nigeria, Rwanda, Tanzania and Zambia.
8 Drulhe and Barreiro-Hurté 2012.
9 Gregory and Bumb 2006.
10 IFDC 2009.
11 Minde and Ndlovu (2007) describe “smart” subsidies as those involving specific targeting to farmers who would not otherwise use purchased inputs (or to the areas where added fertilizer can contribute the most to improving yield); measurable impacts; achievable goals; a results orientation; and timely duration of implementation (that is, being time bound or designed with a feasible exit strategy).
13 Wanzala et al. 2013.
14 The East African Community member countries are Burundi, Kenya, Rwanda, Tanzania and Uganda.
15 Acuerdo Gubernativo, 342-2010, article 2 and annex 1.
16 Proclamation 137/1988, articles 2 and 17.
17 Ganesh-Kumar and Pullabhotla 2012.
18 The declaration is a result of the Africa Fertilizer Summit held in Abuja, Nigeria, in 2006.
Simalgarhi Samuha, a farmers’ group based in the village of Chainpur, in Nepal’s Chitwan district, has 22 members who grow beans, eggplant and cauliflower. The farmers sell their produce in the wholesale markets of Bharatpur, Pokhara and Kathmandu, but getting their produce to these markets is not easy. Although an all-weather road connects the village to the markets, the road can deteriorate quickly, especially in the rainy season. And because licensed commercial vehicles are in short supply in the village, the daily rental costs are high, eating into their profits. Instead the farmers often rely on informal public transport such as unregistered minibuses. This solution is far from ideal as the vehicles neither comply with safety rules nor keep the produce fresh until it reaches the market.

Access to essential transport infrastructure and services is crucial for agricultural development all over the world as it strengthens market competitiveness and fosters efficient and inclusive agricultural value chains at local and global levels.

Transport infrastructure matters for all actors along the value chain. But for small-scale producers, who tend to be geographically dispersed, the lack of good quality infrastructure and efficient transport can be a particularly large obstacle, making it difficult for them to obtain essential inputs and get their crops to markets. When small-scale producers do have access to transport services, the cost is often very high, limiting their competitiveness and ability to participate in agricultural value chains.

Competition among transport operators plays a critical part in determining transport prices. Low levels of competition tend to increase transport prices, which are among the largest transactions costs in agriculture. A recent study suggests that imperfect competition accounts for 35% of national transport costs in Central America. Small producers in rural areas tend to be more vulnerable to uncompetitive market structures. According to the World Bank’s World Development Report 2008: Agriculture for Development, inadequate transport infrastructure and services in rural areas push up marketing costs, undermining both local markets and exports.

Development policies have focused mainly on investments to improve transport infrastructure. But the reduced costs of using improved infrastructure will only be enjoyed by consumers and producers if transport services are competitive. Government intervention to increase competition can be an effective way of reducing trade costs. For example, Mexico opened its trucking industry to competition in the late 1980s, and saw road transport prices drop by 23% in real terms within 5 years. In Eastern Europe, the elimination
of rate and route controls led to the entry of new trucking operators that offered competitive prices and innovative logistics services. In the Lao People’s Democratic Republic, the elimination of the trucking cartel and the restrictions on foreign truckers’ transporting goods back out of the country led to a reduction of 30% in logistics costs.

Transport regulation is justified to tackle market failures such as congestion, pollution and safety issues, which can lead to unfair competition. Because roads are generally a public good, users do not perceive the cost of the addition of another vehicle, and this can lead to road (freight) transport fleets exceeding optimal levels. Some governments do not sufficiently address these market failures, while others often go beyond what is necessary and proportionate in doing so. Quantitative restrictions, such as caps on the number of trucking firms, can unduly restrict competition by impeding the entry and development of new firms. Price controls may increase business risks for trucking companies. And excessive licensing requirements and costs discriminate against new entrants, small and medium-size firms and foreign trucking companies.

Smart regulation—regulation that strikes the right balance in ensuring proper enforcement of essential safety and quality control rules while avoiding excessive regulatory burdens in the trucking sector—can lead to both better transport services and lower costs. Appropriate weight (axle-load) regulations help prevent road deterioration, enhance safety, reduce road maintenance costs and create a level playing field among providers of transport services. Appropriate professional standards and certification support an effective logistics sector. And removing unnecessary quantitative limits or excessive licensing requirements in the trucking sector can facilitate trade.

**What transporting agricultural goods data measure**

Transporting agricultural goods data measure policy and regulatory constraints in trucking services and road infrastructure limitations that can potentially affect the development of commercial agriculture. The data focus on road transport because this is the mode used for most agricultural and food products in developed and developing countries alike: in the United States, 70% of agricultural freight is transported by road, and in Africa, 70–90% is. Even cargo conveyed by air, sea or rail travels part of the way by road.

Five subtopics have been designated, as follows:

1. **Licensing requirements to operate a trucking company.** These data measure the requirements and procedures to start and operate a domestic trucking company (see Data notes for case study details), including the time and cost involved. The data focus on the major regulatory requirements for obtaining and renewing necessary licenses or permits to transport agricultural goods.

2. **Pricing and freight allocation.** These data measure regulatory or other interventions by the government or transport associations in determining how prices are set and how freight is allocated.

3. **Axle-load regulation.** These data focus on national axle-load and vehicle total mass limits as well as their enforcement through weighing stations and associated fines.

4. **Mutual recognition of standards and foreign trucking competition.** These data
focus on bilateral or regional agreements between countries and their most important neighboring agricultural trading partners. The data measure whether there is mutual recognition of relevant standards for trucking companies, as well as restrictions on cross-border trucking services, including import, transit, cabotage, backhauling and triangular rights.10

5. Monitoring of road access, density and quality. These data record the existence of government indicators on road access (such as the share of the population living within a certain distance of a road), road network density, and road quality.

What the initial pilot results show

Preliminary findings in the 10 pilot countries show varying levels of regulatory intervention in the trucking sector around the world. Licensing requirements in the trucking sector are intended to ensure that safety and quality standards are met but should not unduly restrict small and foreign companies to enter and operate in the market. The process for obtaining a license or permit should be clear, transparent and efficient. Bilateral and regional transport agreements can be effective instruments to allow reciprocal competition and to harmonize axle-load limits and other relevant standards. Lastly, government indicators on road access, density, and quality are instruments that can help inform policies on transport and infrastructure.

License or permit is required to transport agricultural goods in most pilot countries

Making it easier to obtain licenses for transport equipment and operations is considered to be among the most important ways to improve trade and transport.11 License requirements, caps on the number of trucking firms and discrimination on the grounds of nationality or company size all limit competition among transport providers.

In 7 out of the 10 pilot countries—Ethiopia, Guatemala, Mozambique, Nepal, Rwanda, Spain and Uganda—companies must obtain a trucking license or permit to legally transport agricultural products. In the Philippines, companies must secure a franchise. In Morocco, trucking companies need to be registered with the special register for commercial road haulage (registre spécial de transporteur de marchandises pour compte d’autrui). Ukraine is the only pilot country where no specific license is required for operating a trucking company in the domestic market (figure 7.1).

The process of obtaining a license or other authorization is less burdensome in some countries than in others, ranging from just 1 procedure taking 2 days in Rwanda and Spain, to 8 procedures taking 270 days in the Philippines, where the process includes a hearing that requires legal assistance and must be preceded by notice published in a publicly circulated newspaper. The average cost for obtaining the license or permit in the 10 pilot countries is 17.1% of income per capita ($120), ranging from no cost in Morocco and 0.2% of income per capita in Spain ($68), to 48.8% of income per capita in Nepal ($356). In Nepal, trucking licenses must be renewed annually and, in Spain, every 2 years. In Morocco, the registry entry is valid as long as the company continues to meet the requirements.

Ethiopia, Morocco, Mozambique, Nepal, the Philippines and Spain have nontechnical requirements that can restrict entry into the trucking sector. The most common requirements relate to owners’ nationality and company
size. In Morocco, for example, only national citizens or companies can operate a trucking company. In Spain, trucking companies must have a minimum of 3 trucks that are less than 5 months old. In Guatemala, Mozambique, Nepal and Uganda, a license is required at the truck level; in the rest of the pilot countries, one license is required per company, though additional payments might be required for registering the trucks with the authorities. In most of the countries, trucks need certificates showing that they meet certain technical requirements, such as refrigeration for transporting perishable agricultural goods.

Transparency is essential when granting licenses. Clear explanation of the requirements and the steps in the process promotes accountability and provides businesses with the information they need in a cost-efficient way. All pilot countries that require trucking companies to obtain a license, permit or franchise publish or otherwise make available the requirements a company must fulfill to obtain or renew them. Ethiopia, Guatemala, Mozambique, Nepal, the Philippines, Rwanda and Spain also set a legal time frame for issuing decisions on license applications.

**Little intervention in pricing and freight allocation**

Price controls—in form of mandatory minimum prices imposed on transport services—can be an instrument to limit dumping, but can also lead to uncompetitive high prices. By contrast, a market structure that allows trucking companies to negotiate prices and conditions directly with customers can support greater competition. How freight is allocated also matters. Evidence shows that the use of queuing systems can introduce market distortions and encourage the existence of cartels, leading to higher transport prices.12

Ethiopia, Morocco and Nepal have nonbinding government reference prices for trucking services. In Nepal, this price regulation applies to trucks weighing more than 10 metric tons and covers 47 different routes; prices depend on distance and the type of terrain (mountains, hills, plains). In Ethiopia, the Transport Authority occasionally sets transport prices for strategic commodities such as fertilizer, wheat (food grain) and coffee.13 In other countries, such as Spain, the Ministry of Public Works and Transport publishes past prices (based on
Transporting agricultural goods (insurance underwriting and \textit{a contrario} surveys) for statistical purposes, but the industry does not use them as reference prices.

In Guatemala and the Philippines, trucking associations publish reference prices on their websites or in national newspapers. In neither country are these prices binding (that is, there are no legal sanctions for not following them). But an important question remains for businesses and farmers: How much can independent trucking companies deviate from these “recommended” prices? The answer depends on a number of factors, among the most important being the role of trucking associations (box 7.1).

In none of the pilot countries is it compulsory to belong to a trucking association to operate legally. But the services provided by associations and the possibility of retaliation for failing to belong may push companies to register. Similarly, no pilot country has an institutionalized queuing or intermediary system in place for allocating freight. In Nepal, however, a queuing system was operating openly until February 2011, when it was abolished by a Supreme Court order.

\textbf{Axle-load regulations are widespread}

Well-designed axle-load regulations can have a big impact on transport sector efficiency. As noted, they can help increase road safety.

\textbf{Box 7.1: What is the role of trucking associations?}

Trucking and transport associations exist as member-based organizations in all pilot countries. Most are regional in scope, joining with others to form a nationwide federation. They provide services to members that include public advocacy, simplification of administrative procedures, and technical guidelines and training.

Even if not mandatory, practices in some countries may leave trucking companies with little choice but to register with trucking associations. In the Philippines, shipping companies will offer a contract to transport goods from the port only to members of the federation. In Nepal, where there is inadequate insurance coverage for accidents, trucking companies have to rely on the 2 main federations (Federation of Truck Transport Associations of Nepal and Federation of Nepalese National Transport Entrepreneurs), which have created a fund from membership fees to cover accident-related medical costs. In Ethiopia, the association assists individual truck owners to find clients. In Guatemala and Ukraine, trucking associations are issuing and guaranteeing customs transit documents (allowing the international transit of goods without a stop at intermediate borders). And associations may exert their power by withholding services from a trucking company to punish it for deviating from their guidelines (such as those on pricing).

In some countries, trucking associations perform functions that fall under the government mandate. In Nepal, the 2 main federations have been entrusted by authorities with the management of weighing stations. In other countries, associations negotiate quotas with the license-granting authorities to restrict entry in the sector.

Trucking associations have less power in some countries, however. In Uganda, where the transport market is dominated by Kenyan trucks, national trucking associations are too weak to effectively represent the domestic trucking sector interests.

Source: Enabling the Business of Agriculture database.
avoid deterioration of road quality, reduce maintenance costs for the road network and promote fair competition. Setting appropriate axle-load limits is the first step toward achieving these objectives. The limits then need to be adequately enforced through weighing stations, with sanctions imposed for any violations. Streamlining controls is also important. In the East African Community, cutting the average time required for a truck to cross a truck scale by 1 hour could potentially reduce transport costs by $6.2 million a year.\textsuperscript{14}

All 10 pilot countries have axle-load regulations in place. Axle-load limits range from 6.5 to 13.5 metric tons per axle; the average is 10.3 metric tons. All countries except for Morocco and Nepal also have gross vehicle mass limits, ranging from 40 to 56 metric tons (figure 7.2). Most further specify axle-load and gross vehicle mass limits for specific types of vehicles (as defined by length or wheels per axle) or specific types of roads. Axle-load regulations are enforced through fixed and mobile weighing stations, located mainly at border crossings, on trunk roads, or at main access points to ports and cities. All pilot countries sanction freight carriers for exceeding the weight limits. The most common sanction used in all 10 countries is the imposition of a fine. These fines, generally set as an amount per ton of excess weight, vary greatly in size among the countries. Most of the countries also take other measures, such as temporarily withdrawing plates or licenses (as in Guatemala) or immediately removing the excess weight. In Ukraine, however, excess weight must be unloaded only if it surpasses the maximum allowed by 7%.

\textbf{International transport agreements are in place, but limited foreign trucking competition remains}

When neighboring countries apply different road transport standards, this may require costly

\textbf{FIGURE 7.2: Gross vehicle mass and axle-load limits by country}

Source: Enabling the Business of Agriculture database.
Note: Ethiopia has only gross vehicle mass limits and no axle load limits. Morocco and Nepal have only weight limits per axle but no gross vehicle mass limit.
adjustments for trucking companies, impeding cross-border trade. International, regional and bilateral agreements that harmonize or provide for mutual recognition of transport standards can be an efficient tool for facilitating trade. And **transport rights allowing foreign participation** in trucking and logistics services can improve the competitiveness and quality of services available to the agricultural sector.\(^\text{15}\)

All countries except Mozambique, Nepal and the Philippines are part of a multilateral treaty regulating transport. Morocco, Spain and Ukraine are parties to the Customs Convention on the International Transport of Goods under Cover of TIR Carnets (TIR Convention). Signed in 1975 and ratified by 68 countries worldwide, the TIR Convention is aimed at simplifying and harmonizing the administrative formalities of international road transport. The convention established a customs transit system, allowing goods under a TIR guarantee to move in sealed load compartments and containers with no requirement for customs checks at intermediate borders.

Some pilot countries are part of regional economic communities with a regional transport agreement in place, including Guatemala and Spain. Rwanda and Uganda are part of the East African Community, where a bill on harmonization of axle-load regulations (the Vehicle Load Control Bill) was passed in 2013. The bill, which set the gross vehicle mass limit at 56 metric tons, has not yet been fully implemented by member states, however. Uganda has reflected the new limit in its national laws, but Rwanda will need to adapt from its current 53 metric tons. Once fully implemented, the new limit is expected to save more than $1 billion a year in transport costs in the East African Community.\(^\text{16}\)

**Transport rights that allow trucks to pick up a backhaul from a third country** can encourage the transport of goods from ports to inland **landlocked countries**.\(^\text{17}\) In Zambia, which permits foreign competition in trucking, there are some 1,300–1,500 large trucks registered that operate nationally and regionally. Despite Zambia’s distance from major ports, such as Durban, in South Africa, transport prices in this landlocked country are low because of domestic trucking companies’ exposure to wider regional competition.\(^\text{18}\)

Free competition in transport services, though broadly agreed on in principle, is far from being fully implemented in practice. Among the 10 pilot countries, all except the Philippines (the only island country in the group) allow foreign companies to transport goods into the country, but only Spain and Ukraine allow internal cabotage. These 2 countries also grant foreign companies all other transport rights measured by the transporting agricultural goods data (import, transit, backhauling and triangular rights) (table 7.1).

Reciprocity is not respected in all cases; while Indian trucks can operate in Nepal for 72 hours without a special license, Nepalese trucks need a special permit from the Indian Embassy just to cross the border. As expected, countries with nationality restrictions in licensing also limit foreign trucking competition.

**Broad use of standard government indicators on road quality, but limited reliable data on road access and density**

Good quality roads providing access to markets are fundamental to effective transport in agriculture. Evidence shows that farmers tend to receive better prices when they have access to roads. In Papua New Guinea, prices received by farmers for their crops decrease by 7% for each additional mile away from the nearest transport facility.\(^\text{20}\) Just as important as access to roads is their quality. In East Africa, improving
TABLE 7.1: Transporting goods from the country’s largest neighboring agricultural trading partner

<table>
<thead>
<tr>
<th>Country</th>
<th>Types of transport rights granted to foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import</td>
</tr>
<tr>
<td>Ethiopia</td>
<td></td>
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<tr>
<td>Guatemala</td>
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<td>Morocco</td>
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<td>Mozambique</td>
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<td>Nepal</td>
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<td>Philippines</td>
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<td>Rwanda</td>
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<td>Spain</td>
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<tr>
<td>Uganda</td>
<td></td>
</tr>
<tr>
<td>Ukraine</td>
<td></td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.
Note: Blanks = no such transport rights are granted.

the quality of transport corridors from fair to good (as measured by the International Roughness Index\(^\text{21}\)) reduced transport costs by 15\%\(^\text{22}\).

Roads are primarily a public good, and governments play a critical role in making the investments needed to build and maintain them. Government indicators on road access, density and quality are essential to inform decisions about those investments and assign adequate resources (box 7.2).

BOX 7.2: Morocco’s national programs for improving rural roads

More than 60\% of Morocco’s poor population lives in isolated rural areas, cut off from economic opportunities and key social services by lack of access to all-weather roads. But Morocco has been working steadily to improve rural road quality and access through a series of national programs.

The first National Program for Rural Roads (NPRR-1), in place from 1995 to 2005, built 11,200 kilometers of rural roads. The second program, NPRR-2, from 2005 to 2012, had much more specific objectives, namely to improve access to roads for 3 million people; to raise the National Rural Road Accessibility Index from 54\% in 2005 to 80\% in 2012; and to reduce the huge disparities among provinces. The index was defined as the share of the rural population living within 1 kilometer of an all-weather road and covers only people living in\(d\)\(\text{ouars}\), small villages of more than 50 households. By December 2012, NPRR-2 had built 9,358 kilometers of rural roads and another 3,742 kilometers were under construction. 2.5 million people had gained access to roads, and the National Rural Road Accessibility Index had been raised to 74\%. In 2012, the government launched NPRR-3.
Besides the programs’ direct effects on road density, quality and access, the government also monitors their socioeconomic impact. According to its statistics, the cost for freight transport and public transportation has been reduced by more than 42%, the school attendance rate increased from 67% to 78%, women’s visits to medical centers increased by 80%, monthly household income rose by 39%, and the price for staple foods fell by 14.3%.

Data on rural population and travel time to the nearest city

Research indicates that agricultural production is highly correlated with proximity to urban markets, as measured by travel time. In Africa, maximum productivity was found to be reached between three to four hours of travel time to an urban market, while in Peru, a study found that farm labor productivity and rural income increased when journey times to the nearest city dropped to just under four hours.

Enabling the Business of Agriculture is exploring the use of geographic information systems (GIS) to provide measures of the percentage of the rural population within a specific travel time to major cities (that is, cities of over 100,000 and 250,000 inhabitants). Two examples can be found below, with a map of Morocco illustrating the travel time to cities of more than 250,000 inhabitants and a graph of travel times for the rural population in Morocco to reach larger cities of 100,000 or 250,000 inhabitants (map B7.2.1, figure B7.2.1). The information collected indicates that 20% of the rural population lives beyond a 4-hour travel time from a city of over 100,000 inhabitants, while 30% live beyond 4 hours from a city of over 250,000 inhabitants. This data could form a valuable tool to inform government programs on their rural roads investment.

MAP B7.2.1: Rural population and travel time to the nearest city over 250,000 inhabitants in Morocco

In all countries except the Philippines, Rwanda and Ukraine, the government has established road access indicators, measuring the share of the population living within 1–4 kilometers of an all-weather road. In Ethiopia, Morocco and Uganda, the indicator focuses on rural areas, measuring the share of the rural population within 2 kilometers of an all-weather road. This share ranges from as low as 27% in Ethiopia to 77% in Morocco, though the methodology used and the time series differ considerably among the 3 countries. In Nepal, 2 different indicators are used to reflect the geographic reality of the country, namely the percentage of people living within 4 hours’ walk of an all-weather road in the hill region, and the percentage living within 2 hours’ walk in the terai (plain) region.

Reliable and up-to-date road density data are lacking in most countries. Instead, the total length of the road network in specific regions is used as a proxy. However, all pilot countries have indicators measuring the quality of roads. Except for Morocco, Mozambique and Ukraine, all countries use the International Roughness Index, which tracks the percentage of trunk roads in poor, fair or good quality. In Guatemala and Uganda, the percentage of the national/trunk roads in poor condition is as high as 33 percent and 23 percent, respectively, while in Spain, it is about 5 percent.
Next steps

This chapter presents the initial results for a data set measuring policy and regulatory constraints in trucking that can affect the agricultural sector. After analyzing the data collection results, the focus was narrowed to 30 data points by identifying those that are relevant, measurable and collectable. These data points will be used as a basis for a revised questionnaire for the next round of data collection (see Data notes).

The content in 5 areas will be further developed in the next cycle, as follows:

1. The measurement of the existence of government indicators on road quality, density and access will be refined. In the next phase, additional research will be conducted with questions on data based on the International Roughness Index, as the internationally accepted standard for measuring road quality. For road density, the focus will be on collecting government data on the total length of the network by type of road in the country or in a specific region. As noted, Enabling the Business of Agriculture is exploring the use of geographic information systems (GIS) to provide measures of the percentage of the rural population within a specific travel time to major cities.

2. The existence of bilateral, regional and international transport agreements, including the harmonization and mutual recognition of transport regulations, standards and procedures between neighboring countries, will be researched and analyzed more systematically.

3. The measurement of regulation enforcement will be improved. Currently, research is capturing the legal time frame to grant a transport license, which can be compared with the actual time to obtain it as measured by the licensing data. Another group of indicators would further explore the enforcement of axle-load limits through weighing stations (the number of weighing stations, their location, their operating hours, their enforcement of penalties).

4. An attempt will be made to clearly differentiate all permits, licenses and authorizations needed to operate in the trucking business. While the focus is primarily on the type of license required at the company level, equally important is measuring licenses and other technical specifications at the truck level. The questionnaire will be refined to capture specific requirements for transporting perishable goods as well as the distinction between domestic and regional or international transport.

5. An important effort will be made to measure actual transport prices on key routes in a comparable manner. Despite attempts to capture these data during the pilot phase (including through a standardized case study), there were obstacles relating to comparability and representativeness of the sample. The project is trying to secure a parallel grant to conduct research on transport prices in specific countries, including through additional surveys and a larger sample of trucking companies. Additional information on delays and costs associated with security checkpoints or roadblocks could be added to the analysis.
Notes

The underlying research and design of the transporting agricultural goods topic benefited from valuable comments provided by Charles Kunaka, Theresa Osborne and Virginia Tanase.

1 Osborne, Pachon and Araya 2014.
3 Kunaka et al. 2013.
4 Teravaninthorn and Raballand 2009.
5 Arnold 2005.
6 Teravaninthorn and Raballand 2009.
7 World Bank 2012d.
8 World Bank 2010.
9 Casavant et al. 2010.
10 These rights refer to foreign trucking companies’ ability to transport goods into a country (import), through the country (transit), between 2 points within the country (cabotage), back from the country (backhauling) and from the country into a third country (triangular rights).
12 Teravaninthorn and Raballand 2009.
13 World Bank 2012b.
14 East African Trade and Transport Facilitation Project (EATTFP) and Japan International Cooperation Agency (JICA) 2011.
15 World Bank 2010.
17 Nathan Associates 2012.
18 Raballand, Kunaka and Giersing 2008.
19 Kunaka et al. 2013. See also the World Trade Organization’s General Agreement on Trade in Services.
20 Gibson and Rozelle 2002.
21 The International Roughness Index is a standard scale that quantifies the roughness of roads and measures their quality as poor, fair or good. It is based on the simulated response of a generic motor vehicle to the roughness in a single wheel path of the road surface. Measurement of the index was first experimented with and recommended by the World Bank in 1982.
22 Teravaninthorn and Raballand 2009.
Selling agricultural goods

A farmer from Iganga, Uganda, Seruwo produces and sells maize. When harvest comes, thanks to the farmer organization he belongs to, his maize is pooled with that of his neighbors and sold at the local market. He knows he could get more for his maize across the border in Kenya, but there are several constraints to getting his maize to the neighboring market. Besides lack of proper storage to protect his grain from rain and pests, transportation is expensive, and there are burdensome requirements across the border; many times he does not even have the time or means to find out which documents and certificates are needed. Diwata, a female coconut trader in the Philippines, faces similar problems; in addition, she also has to register as an exporter with 2 different government agencies, which can be costly and take more than 3 weeks.

Market opportunities are the key driver of farm incomes and productivity growth. Market demand for agricultural products in national and global markets is expanding—due to population growth, income gains and increased urbanization—generating new opportunities and challenges. Responding to these growing market opportunities is of critical importance, especially to smallholder farmers that are often constrained by low population densities, remote locations and high transport costs. Improving farmers’ participation in commercial supply chains, where productivity is increased, transaction costs are minimized and necessary quality and health standards enforced, plays a key part in responding to these opportunities and efficiently linking producers and consumers.

Inefficient agro-input supply and distribution systems, lack of financial services and inadequate infrastructure (including quality roads and storage facilities), represent important issues that affect market access. However, inefficient and nontransparent, soft infrastructure emerges as a major obstacle. It is estimated that 75% of the delays in African markets are due to problems with soft infrastructure—particularly legal and regulatory barriers—and poor trade facilitation. These barriers typically have a disproportionately high negative impact on smaller producers and businesses, who do not enjoy economies of scale and have to invest more time and money in understanding and complying with regulations and procedures.

Tackling those obstacles requires certain institutional arrangements, as well as support from the public and private sectors. From the farm gate, one way is through well-governed producer groups, cooperatives, and farmer organizations that can help increase the bargaining power of smaller producers by lowering
costs and guaranteeing a buyer for their agricultural products. These organizations can also play an important role in enabling farmers to comply with quality standards. Either public or private, mandatory or voluntary, standards facilitate the coordination of agriculture value chains and transmit credible information on the nature of the products and the conditions under which they are produced, processed, and transported.4

Government intervention in facilitating access to markets has a crucial regulatory dimension. Sanitary and phytosanitary (SPS) measures, for example, are important to protect human, animal and plant health. However, sometimes governments go beyond justified requirements or apply them in a discriminatory or protectionist manner.5 A challenging but necessary task involves striking the right balance between appropriate SPS measures and the need to facilitate integration of producers, especially smaller scale ones, into regional and national value chains by streamlining processes. An additional challenge lies in the implementation of regulatory measures. Poor implementation of SPS measures can contribute to increases in the price of food staples, increasing costs between 12% and 25%.6 Time-consuming and costly customs systems and procedures may add up to burdensome licensing and registration requirements that impede the trade of agricultural products. Consequently, efficient, transparent and accessible regulations and services are needed to better integrate smallholder farmers into modern value chains.

A second dimension of government intervention is the promotion of agricultural services by facilitating the access of farmers and agribusinesses to market opportunities. This access can be channeled through extension services, provided largely to producer and farmer organizations, including marketing extension, the provision of public market information, and institutional arrangements (box 8.1). Examples of such initiatives might include the development of a marketing department in the relevant ministry or the establishment of investment promotion programs in the agricultural sector.

Improving participation in agricultural markets requires an integrated approach, enabling farmers and other actors to participate in local, domestic, regional and international markets alike. Producers of agricultural goods can often profit from more distant markets, where there is more demand and consumers are willing to pay more for additional quality and variety of produce.7 But foreign trade does not necessarily involve access to remote markets where additional quality or cost efficiencies exceed tariffs and transportation costs. In developing countries (mainly in Africa), borders are often arbitrary and the nearest large market could lie right across the border.8 In fact, improving linkages to regional markets in particular is becoming more important, especially in regions with many small and land-locked countries, such as Sub-Saharan Africa and Central Asia, where economies of scale are necessary to improve market access, develop local supply chains, and link producers and markets.9

Infrastructure, policies and regulations governing trade procedures gain special importance in improving participation in agricultural markets, as they must be designed to address several key obstacles that currently constrain agricultural value chains10 development in local, regional, and global markets. Constraints include: weak and inconsistently applied SPS measures, uneven application of laws and regulations at the local and regional levels, burdensome licensing and registration requirements, and time-consuming customs systems and procedures.11 The World Bank and World
BOX 8.1: A tiered approach to extension services in Rwanda

An awareness of markets and an understanding of how to interact with them play an essential role in assisting smallholder farmers to increase and sell their marketable surpluses. In countries where there is a public extension service, farmers are provided mainly with knowledge on inputs and good agricultural practices. Among the 10 pilot countries, all except Spain have public extension services, although the strength and impact of these services vary. Guatemala has restarted its extension service in recent years after a hiatus of around two decades. Extension agents have been hired and are being trained. The extension agents will primarily provide services on the input side of agriculture, namely seed and fertilizer, and agricultural practices.

The case of Rwanda

The Rwanda Agriculture Board’s government extension services program is different from typical extension service programs in that a tiered approach is used. Each of the 14,837 villages has a farmer promoter to help build farmers’ capacities. Moving on from the village level, there is an integrated development officer in the 2,000 to 2,100 “cells” to provide technical support to the farmer promoters. Beyond the cell level, there are 416 sectors in which there is an agronomist undertaking day-to-day coordination of extension services, such as having the list of cell farmers requesting inputs and the quantity requested. Going one level further, there is also an agronomist coordinating activities in each of the 30 districts. The Rwanda Agriculture Board itself provides demonstration plots, community mobilization, and training. While this service is geared toward providing ample support to farmers, it necessarily requires a significant allotment of government resources.

Source: Enabling the Business of Agriculture database.

Economic Forum estimate that reducing supply chain barriers to trade—many of which can be traced to laws and regulations—could increase world GDP 6 times more than the removal of all tariffs. These barriers often have a bigger impact on smaller producers, who have to invest more time and money in understanding complex regulation and complying with paperwork.12

Given the nature of current value chains, stand-alone regulatory and promotional national policies do not suffice to achieve efficient access to agricultural markets; bilateral and regional collaboration is needed. The lack of harmonization, mutual recognition or equivalence, particularly in SPS measures, can result in duplicative testing and increased production and transaction costs, especially for developing country suppliers.13 It can also impede an efficient integration of inspection and customs authorities. Despite international agreements and regional integration processes, protection and implementation measures still differ considerably across countries, affecting the capacity of farmers to access global markets.

What selling agricultural goods data measure

Selling agricultural goods data examine policies and regulations that can facilitate (or hinder) efficient links between producers and consumers. This requires certain institutional arrangements and support from the public and private sector, such as well-governed producer groups, balanced SPS measures, adequate implementation of regulatory procedures and the provision of agricultural services that promote market linkages.
Five subtopics have been designed. Some are more relevant to the regional trade of agricultural products while others have a greater bearing on domestic agricultural markets. A standardized case study has been considered (see Data notes).

1. **Cross-border agricultural exports.** These data measure the regulatory procedures required per shipment to export agricultural products to a main neighboring market. The data also measure whether hiring a customs broker (customs clearing agent) is required when trading agricultural products and whether exporter accreditation is mandatory.

2. **SPS regulation of agricultural trade.** These data measure the time and official costs of phytosanitary procedures overseen by each national plant protection organization when trading agricultural products with the main neighboring trading partner, which include phytosanitary certification for export, and phytosanitary clearance and inspection for import. The availability of internationally accredited laboratory facilities is also captured.

3. **Information availability and marketing requirements.** These data focus on whether and how the fee schedules of the above-mentioned phytosanitary procedures are publicly available. In addition, they examine the existence of labeling and packaging requirements for processed food.

4. **Government promotion of agricultural marketing.** This data set attempts to measure whether the government has a plan to support farmers who aim to sell their goods at local and regional markets, through an established agriculture marketing development entity in the country or through the development of a government strategy paper for marketing of agriculture commodities.

5. **Collective action to supply markets.** This data examines the legal framework for producer groups, cooperatives or farmer organizations, including the existence of laws and regulations.

Additional key aspects of agricultural market access are measured in other chapters of this report. Within the transport of agricultural goods, for instance, the project looks at better enabling producers to access markets, especially more distant markets. The discussion of contract farming encompasses the anticipated increase in the need for raw materials by agroprocessors to match the growth in demand for processed food products. Information and communication technologies represent a vitaly important conduit for market information, market intelligence, and logistics coordination, and are a class of service that has a key role in leveling the information imbalance, which has especially disadvantaged smaller scale producers.

**What the initial pilot results show**

The pilot results show that the procedural requirements of cross-border agricultural export and SPS regulations vary across countries, and the regulatory processes have been facilitated by regional integration mechanisms and increasing availability of services and information. In addition, governments are putting more efforts in shaping the legal framework and strategies to promote agricultural marketing and farmers' collective action.
Additional procedures and documentation required for exporting agricultural products

Time delays have a significant effect on international trade. A cross-country study found that each additional day that a product is delayed prior to being shipped reduces trade by at least 1 percent and is equivalent to a country distancing itself from its trading partners by about 70 km, on average; the impact could be larger on exports of time-sensitive goods, such as perishable agricultural products. Enhancing the predictability of regulatory requirements of cross-border agricultural exports would help boost trade volumes, increase incomes and contribute to regional food security in Sub-Saharan Africa.

Except for trading between Spain and France, both EU member states, where there is free movement of agricultural products with no restrictions (box 8.2), traders from the other 9 pilot countries have to go through an average 3.3 regulatory procedures when exporting staple cereals to its main neighboring trading partner.

**BOX 8.2: Regional integration facilitates cross-border agricultural trade**

A growing body of research suggests that regional integration is a mechanism to increase local supply capacity and improve access to markets. Several pilot countries are part of different regional integration regimes: Spain is a member state of the European Union (EU), Guatemala belongs to the Central America Integration System (SICA), and Rwanda and Uganda are both members of the East African Community (EAC). Efforts have been made in the different systems to streamline regional trade procedures.

- **In the EU**, no specific government documents are required when member states trade with each other. Agricultural products can move freely across borders within the EU internal market. Over time, the free movement of agricultural products has had a major impact in the volume of trade; from 1995 to 2007, EU imports of agricultural products increased by 55% and exports by 68%. Intra-EU trade in agriculture (as a share of total EU agricultural trade) expanded from 65% to 75% between 1981 and 2005.

- **In SICA**, there is a common regional trade document (known as its acronym, FAUCA) that serves as certificate of origin, commercial invoice, and customs declaration. Joint border management is being implemented between Guatemala and El Salvador, with only one border inspection taking place in the importing country; this process can contribute to efficiency improvement at the border post.

- **The EAC** recently started promoting coordinated border management through the establishment and support of Joint Border Committees at 16 border posts in the region, although this development is still in its early stages. Processes of standard harmonization and mutual recognition are also underway. For example, when importing agricultural products from Kenya, the phytosanitary inspectors of Uganda would recognize the testing results provided by Kenya Plant Health Inspectorate Services, helping to reduce the processing time of the import clearance.

Source: Enabling the Business of Agriculture database.

b. European Commission trade datasets.
c. Korinek and Melatos 2009.
d. USAID 2013.
**TABLE 8.1:** General trade requirements with the largest neighboring agricultural trading partner

<table>
<thead>
<tr>
<th>Country</th>
<th>Use of customs broker</th>
<th>Periodic exporter accreditation</th>
<th>Periodic agricultural exporter accreditation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Export</td>
<td>Import</td>
<td></td>
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<tr>
<td>Ethiopia</td>
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<td>Guatemala</td>
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<td>Rwanda</td>
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<td>Ukraine</td>
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</tbody>
</table>

Source: Enabling the Business of Agriculture database.
Note: Blanks = not required.

An export declaration is required in every pilot country except for Spain, and it applies to all types of exported goods. In the case of Guatemala, traders exporting to other countries within the Central America region can obtain the unique customs form "FAUCA" via the online one-stop shop managed by the Guatemalan Exporters Association (AGEXPORT). On the other hand, in all of the pilot countries in Sub-Saharan Africa, exporters need to hire or have an in-house customs clearing agent to complete required transactions, including access to customs systems and the declaration of both exported and imported cargo.

Moreover, documents that apply specifically to agricultural products may exist. In Ukraine, for instance, a non-GMO certificate issued by the Ukrainian state standard organization is required for all exported agricultural products. Although not mandatory by law, it is common practice for traders to obtain a certificate of inspection in Nepal and a certificate of analysis in Rwanda to prove the quality of the staple cereals when exporting.

Apart from the procedures per shipment when exporting agricultural products, in Ethiopia, Morocco, Mozambique, the Philippines and Uganda, there are also regimes of periodic exporter licensing or accreditation (table 8.1). In the Philippines, for example, agricultural exporters have to get 2 annual accreditations, one from the Bureau of Customs and another from the Bureau of Plant Industry. For horticultural product exports such as pineapple, asparagus, and banana, growers and packing houses as well as exporters must be licensed by the Bureau of Plant Industry. These requirements can be costly and burdensome for small- and medium-sized farms and agricultural small- and medium-sized enterprises (SMEs), potentially limiting their efforts to secure more profitable export markets.

**Compulsory, but not burdensome, SPS processes**

Simplified and efficient implementation of SPS standards is crucial for curtailing the increase of food staples’ prices and can help facilitate
agricultural trade. However, a certain set of rules are also necessary to ensure food safety and agricultural health.

For the regional export of staple cereals or horticultural products, a phytosanitary certificate—a document issued to facilitate the exported consignments to meet phytosanitary requirements of the importing countries—is mandated in all the pilot countries except Spain (within the EU market). In the other 9 countries, this procedure has an average processing time of 2 days from submitting the supporting materials, acquiring inspection if needed, to obtaining the certification.

Similarly, when importing agricultural products from the main neighboring trading partner, the phytosanitary clearance (including relevant sampling, testing, and issuance of the import permit) is required in 9 of the pilot countries, taking on average 2.6 days to complete. Besides the clearance process, upon arrival of the shipment, most government authorities also inspect the imported products. In Ethiopia, there is a risk-based system where agricultural import consignments are not inspected physically; only the documentation gets checked. In Mozambique, the Ministry of Agriculture randomly inspects the imported products at the consignee’s warehouse. In Rwanda, inspection takes place at the border by a joint team composed of officials from the Rwanda Revenue Authority, the Ministry of Agriculture and Animal Resources, and the Rwanda Bureau of Standards.

Official fees for phytosanitary procedures average less than 1% of income per capita ($7.90) for phytosanitary certification when exporting staple cereals and 1.0% of income per capita ($11.30) for phytosanitary import clearance in the pilot countries (figure 8.1). The fees may vary by product, as is the case in Morocco and the Philippines. In Ethiopia, Morocco, Mozambique, the Philippines, and Ukraine, fees are dependent on the volume of products. In Mozambique, fees—based on different ranges according to volume—are particularly high for our standardized case study.

A lack of internationally accredited laboratories and the limited number of trained specialists can make restrictions imposed for health and safety reasons even more constraining. Well-functioning accredited laboratory services are important for sales of agricultural products, both for domestic consumption and foreign trade. These services can help ensure and prove that the technical requirements are met, thereby contributing to food safety and agricultural health. Internationally accredited laboratories are available in all countries except for Rwanda; in Guatemala, Morocco, Nepal, the Philippines, Uganda and Ukraine, accreditation has been extended to both public and private sector laboratories.

**Phytosanitary fee schedules are publicly available in most pilot countries**

Easier access to regulatory requirements, such as fee schedules, is associated with greater regulatory efficiency, lower compliance costs and better regulatory quality for businesses. Especially in the context of agriculture, producers and their marketing organizations are often dispersed in remote areas, do not have access to information and may be subject to opportunistic intermediaries. In this context, transparent rules and availability of information on the necessary requirements become essential.

Official fee schedules for phytosanitary procedures are available in the relevant plant protection legislation or regulation in most of the pilot countries. Meanwhile, governments have been increasingly using channels other
than legal texts to disseminate this information. In Nepal, traders can easily find procedures using the Nepal Business License e-Portal. In Rwanda, application requirements and fees for the phytosanitary certificate are published on the Rwanda Agriculture and Livestock Inspection and Certification Services website. Morocco and Guatemala include information on fees in the service charters of the responsible agencies.

Another factor that can bring farmers closer to markets is the proximity of the responsible agencies. Traders from Morocco, Mozambique, the Philippines and Ukraine can visit regional offices instead of the headquarters of their respective national plant protection organizations to obtain required certificates and permits. Guatemala went a step further by making this process available online. In Uganda, however, traders need to contact the inspectors based in Entebbe to examine the exported products to get the phytosanitary certificate, while the rest of the required trade documents are issued in Kampala.

In 9 pilot countries—all except Guatemala—there are laws or regulations in place that mandate the labeling and packaging of food products. The EU has fully harmonized rules on food labeling, packaging and advertisement. Meanwhile in Ethiopia, the only related requirement is that the label must be written either in Amharic or English. In Mozambique, there are 12 items that are mandatory for inclusion on food product labels.

**Increasing government efforts to promote agricultural marketing**

Ministries of agriculture around the world, particularly in developing countries, are increasingly looking at the marketing of agriculture commodities, in addition to their traditional focus on agriculture productivity. Strategies created
by relevant ministries establish objectives and channels for reaching an intended state of agriculture commercialization.

Nine of the 10 pilot countries—all but Guatemala—have an agriculture development strategy paper that has a component specifically focused on increasing and strengthening agriculture commodity marketing. The focus and methods adopted vary considerably. In Ethiopia, the Agriculture Growth and Transformation Plan 2010-15 has a strong government-driven component on the intensification of agriculture transformation. In Morocco, the aggregation-based model incentivizes the organization of farmers around private actors or professional organizations, while the government provides training subsidies and preferential access to finance. Finally, in Nepal, there is a national plan to promote the market orientation and global competitiveness of agri-businesses by tackling trans-boundary diseases and barriers to trade.

The existence of a marketing department within or attached to the ministry of agriculture or other relevant ministry is an indication of a government’s commitment to supporting a more market-oriented agriculture sector. Most countries have a department or unit within the ministry of agriculture or attached to the ministry that focuses on the marketing of agricultural commodities. In Rwanda, for example, the government has created the Post-Harvest Task Force, mandated with assisting smallholder farmers to maximize net profits and to reduce food insecurity by reducing postharvest losses and strengthening staple crop value chains.

**Legislation on farmers’ groups or organizations is available in most pilot countries**

Globally, there are over 2.5 billion people involved in smallholder agriculture either on a full- or part-time basis. They produce 80% of the food consumed in large parts of the developing world, particularly in Southern Asia and Sub-Saharan Africa. Producer groups, cooperatives and farmer organizations provide a mechanism within a country to aggregate smallholder farmers and serve as a preferred linkage point between producers and agribusiness. These groups can function as an entry point to provide services for boosting productivity, improving the quality of goods supplied, increasing bargaining power in the market, and lowering transaction costs.

Smallholder farmers face several challenges to fully participate in agricultural markets, such as low yields, low quality production, poor market linkages, and limited access to finance. Smallholder farmers are defined in all 10 countries as having less than 10 hectares of land, ranging from just half a hectare in Morocco to 10 hectares in Ethiopia. The difference in farm size among these countries is influenced by many factors, such as the size of the country as a whole and the land system. Some governments have given special focus to small farmers. For instance, the second pillar of Morocco’s agriculture development plan, Green Morocco 2008, focuses on providing support to smallholder farmers to increase farm income in difficult areas. In Rwanda, the government provides input subsidies and training to farmers within cooperatives to increase their marketable surplus and effectively connect them to the market.

One of the most efficient ways to assist smallholder farmers in accessing markets is through the development and support of producer groups, cooperatives and farmer organizations. Given the voluntary nature of these groups, one of the main supporting roles the government can play is to establish “smart” regulatory frameworks through the development of laws
and guidelines. All 10 pilot countries have a law addressing producer groups and/or farmer organizations. These laws and regulations establish the steps to be followed for formal registration and, in most cases, establish which institution regulates and registers these groups.

**Next steps**

This chapter presented the initial results of a data set measuring policy and regulatory constraints related to access to agricultural markets. Having analyzed results from this initial pilot data collection, the data focus has been narrowed down to 5 areas: government promotion of agricultural marketing; the legal framework for producer groups; cooperatives or farmer organizations; cross-border agricultural exports; SPS regulation of agricultural trade; and information availability and marketing requirements. The data set will be further refined and narrowed down after further consultation in 2014/15, with an emphasis on a few key points, as follows:

1. **Further research will be conducted** around regulations on quality standards, with a focus on major agricultural products for both international and domestic markets. Measures of internationally accepted and science-based health objectives supporting SPS requirements will be explored to balance out the objective of streamlining procedures and fostering trade facilitation. Also, more effort will be placed on investigating the mutual recognition of phytosanitary certificates and laboratory tests between countries.

2. **The regulatory framework of cooperatives and farmer organizations will be further developed.** Recognition of international cooperative principles, requirements towards governance and the status of farmer organizations or groups will be investigated.

3. **An attempt will be made to measure government extension services.** Farmers can benefit from public extension services provided that they are efficiently run and accessible. In the 10 pilot countries visited, the team tried to collect information on the existence of extension services, on the number of farmers reached and the average number of times a farmer or farming area was visited in a year. Although most countries had extension services, the ways in which they were structured differed to such an extent that it was difficult to draw meaningful comparisons or conclusions from the responses received. More effort will be spent next year to develop case studies of successful models of extension services from which other countries can draw important lessons.
Notes

The underlying research and design of the selling agricultural goods topic benefited from valuable comments provided by Alina Antoci, Paul Brenton, Michael Cooke, Steve Crossley, Carlos da Silva, Spencer Henson, Ankur Huria, John C. Keyser, John D. Nash, Mikiko Imai-OLLison, Loraine Ronchi, Kees van der Meer, and Steve Wiggins.

1 Harmon, Simataa and van der Merwe 2009.
3 FAO 2012b; World Bank 2007.
5 Jaffee and Henson 2004.
6 Moïse et al. 2013.
7 Wiggins and Keats 2013.
8 World Bank 2012a.
9 Hagglblade 2013.
10 Agricultural value chain refers to the whole range of goods and services necessary for an agricultural product to move from the farm to the final consumer.
11 Global Harvest Initiative 2013.
13 Jaffee and Henson 2004.
15 Djankov, Freund and Pham 2010.
16 World Bank 2012a.
17 In Ukraine, a certificate of grain quality from the State Agriculture Inspectorate was mandatory up to April 9, 2014, when it was abolished by the Law of Ukraine #1193-18 “On Amendments to Several Legislation Acts of Ukraine Regarding Reduction of the Number of Permission Documents.”
18 Moïse et al. 2013.
19 World Bank 2012e.
22 IFAD 2014.
Contracting agricultural production

The town of Melka Awash is located in Ethiopia’s Oromia region, on the banks of the Awash River about 50 km south of Addis Ababa. Since 2005, the Melka Awash farmers have been organized in a cooperative union that now has more than 30,000 members who produce wheat, malt barley, teff and chickpea on individual plots averaging 2 to 3 hectares. In 2012, British beer producer Diageo plc acquired Ethiopia-based Meta Abo Breweries and decided to source its raw materials locally. Diageo-Meta signed production contracts with members of the Melka Awash Cooperative Union to procure 1,000 metric tons of malt barley. Using the seeds and fertilizers provided by Diageo-Meta, the farmers of Melka Awash now have a secure output for their malt barley production, and the brewer can count on a reliable supply of raw materials.

The Food and Agriculture Organization (FAO) of the United Nations, in its Guiding Principles for Responsible Contract Farming Operations, defines contract farming as “agricultural production carried out according to a (formal) contract between a purchaser and a farmer which establishes conditions for the production and marketing of a farm product or products.” Contract farming has been used increasingly in both developed and developing countries as globalization, population growth and the development of rural infrastructure have opened new market opportunities for high-value crops, certified crops and livestock production. In Brazil, for example, 75% of poultry production is under contract. In Vietnam, 90% of cotton and fresh milk, 50% of tea and 40% of rice are purchased through contracts. Governments are also promoting contract farming in China, India, Latin America and several African countries.

A key feature of contract farming is that it establishes backward linkages, which can involve credit for farming inputs, extension or other services to producers. It also facilitates forward market linkages where producers have a guaranteed buyer for their goods and buyers secure consistent supplies at a reasonable price and desired quality. Such arrangements offer mutual gains to the contracting parties and are a cornerstone of market-led, commercial agriculture.

Contract farming can be a particularly effective approach to increase the participation of the farm sector in the market. Farmers often have limited capacity to produce high-quality products at competitive costs and often lack access to information, skills, technologies and other infrastructure needed to reach urban markets. Well-managed contract farming can help farmers solve many of these bottlenecks, while increasing their profitability.
However, implementing and managing sustainable contract farming arrangements present myriad challenges. Among these is the economic power disparity between contracting parties. The contractor, typically a large processing or marketing company, may be in a position to impose contract terms that favor his or her interests. Meanwhile, the producer, generally a small to medium-scale farmer, may not be in a position to fully understand, negotiate or assess the extent and implications of the contractual obligations.\(^6\)

Another challenge is the possibility of voluntary breaches of contract—opportunistic attempts by either party to obtain benefits or escape liabilities that result in either failing to meet their contractual obligations. The contractor may provide the farming inputs with a delay or in an insufficient quantity, with negative consequences on yields. Disputes can also arise over the grading of products, which can adversely impact the sales price. For their part, producers can divert the contractor’s inputs to other uses or sell the production to other buyers in violation of the contract (also known as “side-selling”).\(^7\)

Contract farming arrangements are also subject to compliance with domestic labor laws and standards governing the use of fertilizers and pesticides. The balance, or lack thereof, of bargaining power between large buyers and small producers is also central to the contract farming analysis.\(^8\)

Governments have an important part to play in addressing some of these challenges. Among other supportive interventions, they can put in place policies that aim at attracting private sector investors, coordinate ventures with local producers, and promote cooperation between farmers and the farmer organizations that link them to agribusinesses. In addition, governments need to shape a clear legal framework that will promote predictability and reduce uncertainties in the event of nonperformance of the contract terms, which is crucial to sustain business relationships. Furthermore, strengthening dispute resolution mechanisms that are quick, accessible and efficient can also encourage broader uptake of contract farming.\(^9\)

**What the contracting agricultural production data focus on**

The contracting agricultural production data cover laws and regulations that apply to contract farming agreements, whether production contracts or marketing contracts. Four data sets have been developed, as follows:

1. **Regulatory framework for contract farming.** These data identify the laws regulating contract farming agreements. In particular, the data focus on whether or not there is ad hoc legislation with the specific purpose of regulating contract farming agreements and what other laws or set of laws apply to such agreements.

2. **Contract specifications.** These data identify which of a set of contract specifications are regulated by the laws that govern contract farming agreements. The data focus on specifications that are crucial for these agreements: the quality and quantity of the contracted production, the methods for determining prices and making payments, and the delivery of products. The data differentiate between mandatory rules (rules that the parties cannot waive or alter by agreement) and default rules (rules that apply only if the parties decide not to alter them).

3. **Procedural requirements for contract farming.** These data show whether the
laws and regulations establish registration requirements either for the contracting parties or for the contract itself.

4. Dispute resolution mechanisms. These data establish whether there is a specialized dispute resolution mechanism for disputes arising from contract farming agreements and whether mediation is required before any arbitral or judicial proceedings.

What the initial pilot results show

The analysis of how contract farming is regulated reveals noticeable variations across the 10 pilot countries. These variations are reflected in diverse rules and requirements regarding contract specifications. Some countries establish specific institutional mechanisms to oversee and monitor the practice of contract farming and address disputes arising from contract breach.

Ad hoc contract farming laws are found in only 2 countries—Morocco and Spain

Countries tend to take 2 different approaches to regulating contract farming, reflecting domestic legal traditions and the period in which the legislation was drafted. Ad hoc laws suggest a view that contract farming agreements have particularities requiring a specific set of regulatory provisions. By contrast, reliance on the existing legal framework of contracts and obligations signals a perception that broader norms are sufficient to regulate contract farming agreements.

Two countries—Morocco and Spain—have ad hoc legislation on contract farming (figure 9.1). There are, however, noticeable differences between the regulatory environments established in these countries. Morocco has a new law on farming aggregation with detailed provisions covering issues from formulating to implementing a contract. The Law of 2012 is a pillar of the Plan Maroc Vert (Green Morocco Plan). It aims at promoting agricultural projects that group, for a definite time period, several aggregated parties and one aggregator for the production, the conditioning, the processing or the commercialization of agricultural products. In addition, such agricultural projects must seek at least one of the following objectives: technical training of producers and pooling of the means of production or inputs; facilitated access to financing and/or insurance; or facilitated access to domestic and export markets, either for direct consumption or transformation. On the other hand, Spain introduced a law on standard contracts in 2000 and a law on measures to improve the functioning of the food supply chain in

**FIGURE 9.1:** Specific laws on contract farming exist in only 2 countries

<table>
<thead>
<tr>
<th>Countries with a law on contract farming</th>
<th>Morocco</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries without a law on contract farming</td>
<td>Ethiopia</td>
<td>Guatemala</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.
These laws, together with the Spanish Civil Code, govern different aspects of agricultural production contracts. The Law of 2000 focuses on standard contracts that are approved by the government and are applicable for marketing and production contracts in a designated sector. The Law of 2013 complements it by regulating all marketing and production contracts, including standard contracts.

Among the remaining 8 countries, only Nepal has demonstrated an intention to put in place specific legislation to facilitate agricultural production under contracts. The Nepalese Ministry of Agriculture and Cooperatives recently prepared a draft law on contract farming that, if passed by parliament, could potentially provide a clearer legal framework for producers, farmer organizations and agribusinesses engaging in contractual relationships. In 4 countries—Ethiopia, Guatemala, Mozambique and the Philippines—agricultural production contracts are governed solely by the civil code. In Uganda, the Sale of Goods Act of 1932 and the Contracts Act of 2010 are the principal laws on contract farming, while in Nepal and Rwanda, it is a combination of the Civil Code and the Contract Act.

In addition, some countries have established product-specific legislation that sets conditions and requirements that have an impact on production and marketing contracts for the targeted commodity. In Uganda, for example, product-specific acts organize the production and commercialization of cotton, dairy, coffee and tobacco, setting requirements for producer, trader and processor registration, input distribution, or product grading. In other countries, agricultural development programs can regulate contract farming for a targeted population of producers. For example, under the Philippines’ 2006 Rules and Regulations Governing Agribusiness Venture Arrangement in Agrarian Reform Areas of 2006, entrepreneurs can contract with the beneficiaries of the Comprehensive Agrarian Reform Program for the production of crops.

Different regulatory solutions exist for specifying product quality, price determination, payment and delivery in contracts. Contracts are, by definition, incomplete simply because they cannot consider all contingencies. Default rules established by law are a way to fill in the gaps of an incomplete contract. Mandatory rules, by contrast, limit the parties’ freedom of contract with the aim of protecting either the parties or third parties outside the contract.

In Mozambique and Uganda, the law establishes neither default rules nor mandatory rules on whether the contract should specify the quality of the product (Table 9.1). Four other countries—Ethiopia, Guatemala, Nepal and Rwanda—have default rules. In Nepal, for example, the Contract Act states that if the contract does not mention the quality of goods, their quality should be of the “current standard.” In Rwanda, the 1888 decree on contracts and conventional obligations requires that the seller guarantee that the quality of the goods conforms to their intended use.

In 4 countries—Morocco, the Philippines, Spain and Ukraine—the law makes it mandatory to specify the quality requirements of the goods. In Ukraine, the Economic Code states that a business agreement should specify the quality requirements for the contracted product. In Morocco, under the Law of 2012 on agricultural aggregation, a contract is valid only if it includes the quality requirements set by the buyer. In Spain, Law 2/2000 stipulates that standard contracts are homologated only if they clearly define the quality of the contracted goods.
**TABLE 9.1: Default and mandatory rules for contract specifications**

<table>
<thead>
<tr>
<th>Country</th>
<th>Default or mandatory rule exists for</th>
<th>Country</th>
<th>Default or mandatory rule exists for</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Definition of the product’s quality</td>
<td></td>
<td>Price determination</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>(mandatory)</td>
<td>Guatemala</td>
<td>(mandatory)</td>
</tr>
<tr>
<td>Morocco</td>
<td>(mandatory)</td>
<td>Morocco</td>
<td>(mandatory)</td>
</tr>
<tr>
<td>Mozambique</td>
<td>(mandatory)</td>
<td>Nepal</td>
<td>(mandatory)</td>
</tr>
<tr>
<td>Philippines</td>
<td>(mandatory)</td>
<td>Philippines</td>
<td>(mandatory)</td>
</tr>
<tr>
<td>Rwanda</td>
<td>(mandatory)</td>
<td>Spain</td>
<td>(mandatory)</td>
</tr>
<tr>
<td>Spain</td>
<td>(mandatory)</td>
<td>Ukraine</td>
<td>(mandatory)</td>
</tr>
<tr>
<td>Uganda</td>
<td>(mandatory)</td>
<td>Ukraine</td>
<td>(mandatory)</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.

Note: Blanks = no mandatory or default rules.

In all 10 countries, laws applicable to contract farming agreements address price determination. Ethiopia’s Civil Code provides for default rules when the price of the goods is determined by their weight, their current price or the price usually paid by the seller. Guatemala’s Civil Code requires the parties to a sales contract to agree on a price or on a way to determine it. Determination of the price or the pricing method is also mandatory in Morocco, the Philippines, Spain and Ukraine. In contrast, Uganda’s Sale of Goods Act provides that if the price is not determined by the parties, the buyer must pay a “reasonable price.” Nepal’s Contract Act also refers to payment of a “reasonable price,” if the parties fail to specify a price or a pricing method.

All countries but Uganda have either a default rule or a mandatory rule on the time of payment, and in 7 of them, the law also includes provisions on where the payment should take place. Under Morocco’s Law 04-12 and Spain’s Law 2/2000, a contract is valid only if it clearly stipulates the payment details. In Ethiopia, the Civil Code states that if no place is fixed in the contract, payment shall be made at the address of the seller. In Guatemala and the Philippines, under their civil codes, the payment is to be made at the place of delivery unless the parties agree otherwise; the same requirement applies in Rwanda, under its 1888 decree.

Mozambique, Nepal and Rwanda have neither default nor mandatory rules on the determination of the delivery date. In Ethiopia, the Civil Code establishes that when no delivery date can be inferred from the will of the parties, the seller should deliver the goods as soon as
required by the buyer. In the Philippines, the Civil Code requires the delivery to take place within a “reasonable time,” if no date is specified by the parties. A similar default provision applies in Uganda, under its Contracts Act and Sale of Goods Act.

In Morocco and Spain, in contrast, the contract must specify a delivery date to be valid. The contract must also specify the delivery location. There is no such requirement in the other 8 countries, though default rules apply. For example, Rwanda’s 1888 decree states that, unless otherwise agreed, delivery should take place where the goods were located when the contract was made. Guatemala has a similar default rule under its Civil Code, while Uganda’s Sale of Goods Act establishes the seller’s place of business or residence as the default delivery location.

**Few countries require contract registration**

On one hand, requirements to register a contract or the parties to a contract create additional procedures along with associated costs and delays. On the other hand, these requirements may be motivated by an intent to oversee the contract farming practice; they can provide a way to monitor the performance records of buyers and producers with past contract farming arrangements. They can also help in gathering statistics on contract farming to improve policies and regulations. Finally, contract registration procedures can include a contract review by a competent authority to ensure that its terms comply with relevant regulations.

Both Morocco and Spain have regulations concerning contract farming. Morocco’s 2012 law on contract farming requires producers and contract farmers to register with the Regional Directorate of Agriculture and receive accreditation from the Agricultural Development Agency before entering into agricultural production contracts. Spain has registration requirements for standard contracts. Once a standard contract is agreed upon for a specific sector, it must be registered with the Ministry of Agriculture, Food and Environment (box 9.1).

In Uganda there is no obligation to register contracts with any statutory body. However, contracts can be registered with the registrar of documents, mainly for potential use in litigation.

**Spain and Morocco have specific contract farming dispute mechanisms**

Institutions specifically designed to resolve disputes arising from contract farming agreements can help ensure that the necessary competence and technical expertise are applied. They can also guarantee balanced representation of the parties’ interests by including representatives of professional or trade associations or farmer organizations. These institutions may also encourage or require mediation before any adjudicating procedure takes place. Mediation offers a quicker, less costly and less formal option for resolving disputes. As an amicable method of dispute resolution, it can also help preserve or restore the business relationship.

Morocco and Spain both provide dispute resolution mechanisms specifically for contract farming, under their respective ad hoc legislation. In addition, the Moroccan law requires that the parties seek mediation before any arbitration or court proceedings can take place. If the parties fail to designate a mediator, the law sets default rules for the appointment of a representative mediation panel (box 9.2). In Spain, the law also details the organization and functioning of a representative monitoring committee in charge of resolving disputes arising from standard contract implementation.
**BOX 9.1: Approval of a standard contract in Spain**

Under Spain’s Law 2/2000, the Ministry of Agriculture, Food and Environment reviews and approves standard contracts before their implementation. Application for standard contract approval can be submitted by registered inter-professional organizations, representative organizations of producers, representative organizations of processors or traders, or individual companies engaged in processing or trading if representative organizations do not exist. The application must be addressed to the Ministry of Agriculture, Food and Environment, and it can be deposited at any public administration office, at the level of the central government, the autonomous community or the local government. Applicants must provide the full text of the proposed standard contract, a supporting memo that indicates the contract’s geographical scope and estimates of the volume of the contracted production and the total value of the commercial transaction. All the documents are necessary to establish the agreement of the applicants to form a monitoring committee. According to Law 2/2000, an application must be submitted at least a month before the beginning of the agricultural cycle. The Ministry analyzes the standard contract’s viability, its importance and its impact on the sector. The Ministry also ensures that an agreement exists between at least one representative of the buyer and one representative of the seller. Once approved, the standard contract is valid for the specified product and for one year, and the procedure to extend its validity is detailed in the law.

In addition to its dispute resolution role, each monitoring committee fulfills a data collection role. Within a month after the agricultural cycle ends, the monitoring committee must provide the General Directorate of Nutrition with the number of contracts signed under the standard contract; the quantity of goods produced and the corresponding value; an assessment of the overall performance against the stated objectives; the incidence of conflict in contract execution; and the importance of the standard contract for the larger sector.

Because such services are lacking in remote rural areas and because producers cannot easily afford their costs. Individuals and companies tend to use other methods to ensure compliance. In Rwanda, for example, coffee production contracts are sometimes signed in the presence of the local mayor, who will help resolve disputes or noncompliance if and when they arise.

**Next steps**

This chapter presented the initial results of a pilot data set analyzing the laws and regulations that govern contract farming. The information collected across the 10 countries was reviewed and 30 data points were identified to serve as a basis for a revised questionnaire. After further
consultation with contract farming experts and practitioners, indicators will be designed to better capture key issues.

Two dimensions will be prioritized, as follows:

1. To achieve greater comparability between legal indicators, a more refined definition of contract farming will be used in the next cycle. In the pilot phase, a general definition of contract farming covered a range of contractual and organizational arrangements; in the next phase, an indicator will capture important distinctions regarding the parties’ obligations under an agricultural marketing contract and an agricultural production contract.

2. To complement the alternative dispute resolution (ADR) data, the team will construct a set of time and motion indicators to capture the procedure, time and costs of using available ADR methods. While 2 case scenarios were tested during the pilot phase—side-selling and a grading dispute—more detailed and additional case scenarios will help analyze disputes arising from delayed delivery of inputs, delivery of defective inputs, and delayed payment.
Notes

The underlying research and design of the contracting agricultural production topic benefited from valuable comments provided by Steven D’Alessandro, Dieter Fischer, Damien Shiels and Justin Yap.

1 FAO 2012a.
2 Setboonsarng 2008.
3 Da Silva 2005.
5 Da Silva 2005; Jabbar et al. 2007.
6 UNIDROIT Secretariat 2013.
7 Ibid.
8 Ibid.
9 Pultrone 2012; UNIDROIT Secretariat 2013.
10 Dahir No. 1-12-15 of 27 Sha’ban 1433 (17 July 2012) promulgating Law No. 04-12 on agricultural aggregation.
11 Idem, art. 2.
12 Idem, art. 3.
14 Law 12/2013 of 2 August 2013, measures to improve the functioning of the food supply chain.
15 Chap. 30, Cotton Development Act; chap. 85, Dairy Industry Act; chap. 34, Tobacco (Control and Marketing) Act; chap. 325, Uganda Coffee Development Authority Act.
16 Department of Agrarian Reform Administrative Order No. 09-06, Revised Rule and Regulations Governing Agribusiness Venture Arrangements (AVAs) in Agrarian Reform Areas.
17 Royal Decree 686/2000, art. 19.
Electrifying rural areas

Tesfaye, a maize producer living in a small village near the southern Ethiopian town of Finchawa, still remembers the days before his farmhouse was connected to the national electricity grid. Every year during harvest time, the maize had to be handled very quickly, requiring cleaning, drying, shelling and grinding by hand, using traditional techniques. The price for maize was extremely low during that time due to farmers’ cash needs and risks associated with pest infestation and other storage losses. The new electricity connection allows Tesfaye to process the maize quickly after drying, thanks to a new electric-motor-driven maize milling machine that he and the other farmers of their organization recently purchased. The milling machine is an easy way to preserve the maize and transform the perishable commodity into a product that can be transported long distances, stored and sold later at the market.

More than 1.2 billion people—or 17% of the world’s population—have no access to electricity. About 80% of those without access to modern energy live in rural areas.

Access to reliable electricity is a critical aspect of agricultural production and processing, and it directly contributes to the promotion of a more commercialized agricultural sector in the developing world. Yet, particularly in rural Sub-Saharan Africa, electrification rates are stubbornly low, with only about 18% of the rural population having access to electricity. Such low electrification constrains both agricultural production and postharvest processing, and hence the consumption of processed foods, because many agricultural raw materials need to be processed within a few hours of harvesting to ensure food conservation and marketability.

Farmers rely on electricity for a number of processes, such as grinding, milling, drying, packaging, mechanization (threshing, milking), irrigation, lighting (extended hours for small businesses), and storage (refrigeration, ice making). Such operations offer smallholder farmers opportunities to run their activities more productively and move beyond subsistence farming toward food security and subsequent expansion into new agricultural markets.

A recent comparison of agricultural processing industries in Sub-Saharan Africa to those in high-income countries reveals the opportunities that can be derived from cheap and reliable electricity access for farmers. According to the study, less than 30% of agricultural produce is processed in Africa, compared with 98% in high-income countries. African countries generate only US$40 for processing of 1 ton of
agricultural produce, that is 4.5 times less than high-income countries.\(^1\)

Although rural electrification has received much attention as a development priority in most countries, extremely low electrification rates continue to be the norm in rural areas. To improve electricity delivery to the world’s poor, adequate regulation is essential—to support competition and fair pricing and encourage investment, including the setup of off-grid stand-alone systems.

**What electrifying rural areas data focus on**

The electrifying rural areas topic area measures the share of population that has access to electricity, for the country as a whole and for the rural sector specifically.

During the project pilot year, attempts were also made to develop data sets that addressed electricity affordability, electricity reliability and off-grid electricity systems.

**What the initial pilot results show**

The choice of data published in this report is constrained by the type of data related to rural electricity that is currently available and that was collectible during the fieldwork. The team had envisaged publishing data on electricity affordability and reliability as well as off-grid power, but due to a lack of reliable data, we can only give a glimpse of the findings in these areas.

Electricity reliability was chosen as a data point because outages grossly affect the competitiveness of a commercial farm. Blackouts not only increase operating costs, they also cause additional expenses, such as investments in backup generators, repairs to damaged machinery, and costly disruptions to production, all contributing to reduced profitability for agribusinesses. The fieldwork experience has shown, however, the difficulty in obtaining data on electricity outages—particularly in rural areas—through the relevant authorities. The pertinent electricity transmission companies that monitor power outages were unable to share this type of information. As a result, the reliability subtopic area was excluded from this chapter.

**Access to electricity**

Cognizant of the benefits electricity services offer in tackling the development challenges facing the poor across the globe, governments have set electricity access as a priority in their development agenda, particularly in developing countries. As a consequence, many rural electrification programs and national electrification agencies have been created in these countries with the mandate to monitor more accurately the needs and the level of rural development and electrification.\(^2\)

In the pilot countries, with the exception of Morocco, Spain and Ukraine, there is a significant portion of the rural population that does not have access to electricity, with rates varying drastically across the seven countries. Mozambique, Uganda and Ethiopia have, by far, the lowest rural electrification rates. In the Philippines, about half the rural population, and in Guatemala and Nepal, about two-thirds have access to electricity. The team was unable to obtain data for Rwanda from the relevant authority. However, secondary sources suggest that Rwanda’s rural electrification rate currently stands at about 2% (figure 10.1).

**Electricity affordability**

Reliable electricity access is an essential enabler in the agribusiness value chain. Therefore, it is important to not only assess the extent to which
FIGURE 10.1: Rural electrification rates by country, 2013

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent of rural electrification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mozambique</td>
<td>5</td>
</tr>
<tr>
<td>Uganda</td>
<td>7</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>11</td>
</tr>
<tr>
<td>Philippines</td>
<td>52</td>
</tr>
<tr>
<td>Guatemala</td>
<td>69</td>
</tr>
<tr>
<td>Nepal</td>
<td>72</td>
</tr>
<tr>
<td>Morocco</td>
<td>97</td>
</tr>
<tr>
<td>Ukraine</td>
<td>99.8</td>
</tr>
<tr>
<td>Spain</td>
<td>99.9</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.
Note: Rwanda is excluded as no data could be obtained.

Farmers have the opportunity to make use of electricity, but also to determine to what degree it is provided at a reasonable price.

According to a 2012 World Bank study, power tariffs in most parts of the developing world are in the range of US$0.04 to US$0.08 per kilowatt hour (kWh). However, average tariffs in Sub-Saharan Africa are much higher, at US$0.13 per kWh.³

During the initial data collection on electricity affordability in the 10 pilot countries, reliable and comparable information on electricity pricing appeared to be out of reach, given that there are remarkable differences between the tariffs that are charged to different consumers in each country. Most countries have electricity prices dissected by consumption levels and differentiate between social tariffs, household tariffs, farming tariffs, and general tariffs, as well as the type of consumer (residential and commercial) and quality of voltage, single phase, and three-phase connections. Furthermore, some countries apply a government subsidy to their electricity prices that further distorts comparability. Prices also differ based on the electricity source, with electricity from renewable sources being typically more costly than from conventional power plants based on fossil fuel.

While the team was able to obtain pricing data in a number of pilot countries, there is a need to determine a methodology for collecting electricity prices that are robust and comparable across countries. A possible data point that would be easily comparable across countries is the cost to obtain a rural electricity connection, similar to the Doing Business getting electricity indicator that measures the procedures, time, and cost for an urban small- to medium-size business to get a new electricity connection.⁴ It is important to note, however, that connection fees could depend on the required distance for the grid extension, which impacts the electricity utility’s fee charged to its customers.

Off-grid electricity systems

Until recently, many government agencies in the developing world viewed improving electricity...
access in rural areas as being synonymous with extending the national grid into all corners of the country. The experience has shown, however, that small decentralized electricity grids or autonomous generation (for example, micro hydropower plants, and solar or wind systems) are an important means of supplying rural, remote or isolated areas that can alleviate the government’s investment burden in electricity generation and distribution systems. To reach the universal electricity access target by 2030, set by the Sustainable Energy For All initiative, off-grid systems will have to contribute a substantial proportion of the new connections.

Some pilot countries have introduced special programs aimed at electrifying rural communities through community mini-grids and stand-alone household systems. Nepal, for example, has set up a specialized agency that coordinates and oversees the majority of off-grid electrification in the country. The agency completed a successful pilot project to synchronize approximately 10 micro hydropower plants connecting into a rural mini-grid. Further, the Nepalese Electricity Act of 1992 enables independent power producers to generate and sell power to the Nepal Electricity Authority, increasing the country’s generation capacity. However, the connection of hydropower plants to the national grid is still being examined. Other pilot countries are undertaking similar efforts.

**Next steps**

This chapter presented initial pilot results on the electricity access data collected in the 10 pilot countries. Existing data collected by the World Bank and the World Energy Outlook was consulted to cross-check the findings.

For the next data collection round, further research will be undertaken to focus the scope of the data and to build indicators on electrifying rural areas. The team will attempt to assess the regulatory and policy environment to promote the provision of rural power services, such as by measuring the procedures to register as a small power producer and the associated time and costs.
Notes

The underlying research and design of the electrifying rural areas topic benefited from valuable comments provided by Tomoyuki Yamashita.

1 Korwama 2011.
4 World Bank 2013a.
5 Sustainable Energy for All initiative.
6 Banerjee 2014.
7 World Bank 2014b.
Imagine farmers around the world being able to use their mobile phones to acquire real-time market information and get access to various agricultural extension services.

### Questions and Responses

#### Question from a cassava farmer in Ethiopia

**Question:** I will be planting cassava. Is there a recommended amount of fertilizer for both dry and wet seasons regardless if I conducted soil analysis?

**Response:** We recommend NPK (12:24:12) application at the rate of 336 kg/ha 6 weeks after planting, followed by 16:8:24 16 weeks after planting.

#### Question by a rice farmer in the Philippines

**Question:** Please send me information about rice seed variety NSIC RC 222. Thanks

**Response:** NSIC Rc222 (also known as Tubigan 18) has an average yield of 6.1 t/ha and the maximum yield is 10 t/ha., 114 days maturity. Height is 101 cm. Intermediate to blast, bacterial leaf blight and tungro. Moderately resistant to brown plant hopper and green leafhoppers.

#### Question by a tomato producer in Uganda

**Question:** I have 50 kilograms of tomatoes that I would like to sell at the market in Jinja. My farm is near Bukoyo. Can somebody pick up my produce? What is the current market price of tomatoes?

**Response:** We have a truck with capacity for your produce passing by your village this Friday. We will connect you with the trucker to arrange for a meeting point. The kilo price for tomatoes in Kampala is 2,836 Ugandan Shillings this week.
Information and communication have always played a crucial role in agriculture. Ever since people have grown crops, raised livestock, and caught fish, they have sought information from one another. Information and communication technologies (ICTs) can offer smallholder farmers a wealth of opportunities to acquire accurate and timely information on material supply and prices, as well as knowledge about existing technologies, best practices, and innovation. With this information, farmers can make better-informed production and marketing decisions, and participate more actively in value chains. As such, ICTs provide an essential tool for farmers to overcome the commercialization barrier by improving the local infrastructure, strengthening business services and increasing farmers’ skills and knowledge.

Today, mobile communication has become the most prevalent form of communication in almost every country in the world. The number of mobile cellular users increases steadily, and the mobile communication subsector continues to be the fastest growing industry around the globe. In 2012, three-quarters of the world’s inhabitants had access to a mobile phone.

Ensuring universal service and access to ICT is a top national objective in many countries. However, a review of the relevant statistics reveals a strong rural-urban divide in ICT service access. Reaching out to farmers in remote rural areas is a major challenge. In many countries, governments struggle to formulate and implement appropriate policies to create an enabling environment for farmers to use ICT as a means to commercialize their businesses. Rural areas lag behind in terms of access, affordability, and quality of ICTs. The lack of electricity in rural areas is arguably the biggest barrier to increasing access to ICTs. Electricity shortages force many mobile operators to use expensive diesel generators, which drive up costs, making service less affordable for generally lower-income rural dwellers. At the same time, a lack of electricity makes it difficult to recharge phones.

What the ICT data focus on

ICT is defined as any device, tool, or application that permits data exchange or collection through interaction or transmission. ICT is an umbrella term that includes devices and services ranging from radio to satellite imagery to mobile phones and electronic money transfers. Given the popularity of mobile phones around the world, ICT data focus on mobile networks, as well as farmers’ opportunities to access information through the use of mobile phones. Mobile cellular phones support voice communications as well as text messaging and Internet access, at increasingly higher speeds, including broadband. At the same time, mobile phones open channels for market information and extension services, which are crucial to enable farmers and traders to make informed decisions about what to grow, when to harvest, or which markets produce should be sent to and at what price.

Five data sets were developed with the objective of measuring access to ICT services in the 10 pilot countries, as follows:

1. **Number of mobile cellular subscriptions per 100 inhabitants.** These data measure the number of subscriptions to a public mobile telephone service using cellular technology.

2. **Number of active mobile broadband subscriptions per 100 inhabitants.** These data measure the number of mobile broadband subscriptions and dedicated mobile broadband subscriptions to the public Internet.
3. Market structure of the telecommunications subsector in the 10 pilot countries. The rapid spread of mobile cellular networks worldwide would most likely not have been possible without competition. Therefore, these data measure the market structure of the telecommunications subsector in the 10 pilot countries.

4. Public sector role to support the development of ICT infrastructure. These data measure government strategies and mechanisms in place, such as subsidies and incentives, that support ICT infrastructure development.

5. Existing ICT-enabled market information and e-extension services. These data measure the existence of market information and e-extension services that make use of ICTs and are available to farmers in the country.

What the initial pilot results show

Access to targeted ICTs can help farmers to grow their businesses and increase their revenues. However, many countries still struggle to establish and implement appropriate policies to create an enabling environment for these services to be developed and improved. Collecting and analyzing data on access and usage of mobile phone and broadband Internet, business needs and the major constraints of farmers are crucial to formulate effective policies. Preliminary findings in the pilot countries show that mobile cellular usage rates and mobile broadband usage rates vary substantially across countries, impacting the potential role of ICTs. In addition, many countries lack strategies to support the development of targeted ICT-enabled services, for example, in their poverty reduction strategies.

One of the main challenges encountered during the pilot was that insufficient data exists to provide a comprehensive picture on ICT pricing in all pilot countries. Most countries now have at least partly privatized the telecommunication sector and, as a consequence, there is not a standard tariff; there are many different offers available in all countries, ranging from prepaid to post-paid offers, billed on a per-minute, per-30-second or per-second basis.

Another lesson learned is that penetration rate data provide a better picture of the use of mobile devices than data coverage, as mobile cellular coverage only measures the theoretical ability of the population to subscribe to a network, irrespective of whether or not they actually do. Furthermore, some data points that the team was intending to collect were unavailable, for example, data on mobile cellular and broadband subscriptions dissected by urban and rural locality, and dissected by gender.

Mobile cellular subscriptions versus country population

An International Telecommunications Union (ITU) report recommended that “complete mobile coverage of all rural areas worldwide by 2015, or even earlier, should become a clear policy target and would appear achievable with the right policy emphasis.” However, high mobile signal coverage does not equate with usage. While it is estimated that more than half of rural areas in Africa are covered by a mobile signal, existing ITU data suggest that few rural households in the region have a mobile subscription. Where there is a large gap between population coverage and penetration, it suggests that bottlenecks in access are more due to affordability than to infrastructure shortcomings. Governments must strive to ensure that solutions are found to make mobile services affordable for people living in rural areas.
Figures on national mobile cellular subscriptions are available for all 10 pilot countries, either through the regulators, the operators, or both. These figures could be disaggregated into urban and rural usage, though data are not typically compiled in this manner. In fact, in none of the pilot countries were available data dissected by the rural and the urban space. The World Bank and the ITU collect and publish data on mobile cellular penetration figures on a national basis. These figures were consulted to cross-check the findings from the fieldwork in the pilot countries.

According to these findings, Ethiopia has the lowest mobile cellular usage rate—only 22 out of 100 Ethiopians subscribe to a mobile cellular network. These figures are in high contrast to Guatemala, Morocco, the Philippines, Spain, and Ukraine, where the number of mobile cellular subscriptions exceeds each country’s population. In Nepal, Rwanda and Uganda, there are about as many subscriptions to a mobile cellular network as half these countries’ populations (figure 11.1).

**Highly variable mobile broadband subscriptions**

Evidence indicates that Internet access using mobile phones is a growing worldwide trend. Mobile broadband access can be an attractive solution in rural areas since it requires less investment than installing fixed broadband connections. Mobile broadband use rates, or the percentage of the population within reach of a 3G mobile cellular signal, therefore, will be an important metric to monitor.12

None of the pilot countries collect data on broadband Internet use rates by rural and urban locality. Existing data suggest, however, that broadband access in rural households remains very limited in many developing countries or
is not available at all. In many industrialized countries, on the other hand, rural connectivity is on par with urban connectivity.

For the pilot countries, Ethiopia comes in last in terms of mobile broadband usage rates, followed by Mozambique and Rwanda. By the year 2012, mobile broadband subscription rates did not exceed 10% in any of the developing pilot countries for which data is available. At the same time, there are remarkable differences between the industrialized countries, with penetration levels ranging from a relatively low 5.5% in Ukraine, to more than 50% in Spain (figure 11.2).

**Telecommunications sector liberalization**

The ongoing spread of mobile cellular networks, including into rural areas, has been driven by the telecommunications sector liberalization worldwide, with particular emphasis on developing competition in the mobile cellular market. The national governments in the 10 pilot countries have evidently provided an environment that enables private sector participation in the telecommunications sector, although Ethiopia is an exception as it is the only country with a government monopoly in the sector. The exclusive control over the market has, by implication, notably hindered the growth of ICTs in Ethiopia. As outlined in the previous sections, Ethiopia lags behind in terms of mobile cellular use as well as mobile broadband usage rates.

**Public sector’s role**

A number of governments in the 10 pilot countries have recognized ICTs as a vital part of agricultural development and have put special emphasis on increasing ICT access rates in rural areas.

The governments of Nepal and Uganda, in particular, have designed rural telecommunication development funds to be financed

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**FIGURE 11.2: Mobile broadband usage rates across pilot countries**

<table>
<thead>
<tr>
<th>Country</th>
<th>Mobile cellular subscriptions per 100 inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>53.4</td>
</tr>
<tr>
<td>Morocco</td>
<td>10.1</td>
</tr>
<tr>
<td>Uganda</td>
<td>7.6</td>
</tr>
<tr>
<td>Ukraine</td>
<td>5.5</td>
</tr>
<tr>
<td>Guatemala</td>
<td>4.5</td>
</tr>
<tr>
<td>Philippines</td>
<td>3.8</td>
</tr>
<tr>
<td>Rwanda</td>
<td>3.3</td>
</tr>
<tr>
<td>Mozambique</td>
<td>1.8</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Source: Enabling the Business of Agriculture database.

Note: International Telecommunications Union (ITU) data were consulted to cross-check findings from the fieldwork in the pilot countries. For Nepal, data for mobile broadband usage rates are not available.
from a charge of 2% and 1%, respectively, on operators’ gross annual revenues. The authority invests the deposited amount in the development, extension and operation of telecommunications infrastructure in those areas where service provision would otherwise not be feasible or unlikely to be provided by operators in the following years without a subsidy.

**ICT-enabled market information and e-extension services**

Agricultural mobile applications (“apps”) and other programs are widely available in many developing countries and are offered by private as well as public sector providers. These services focus on improving agriculture supply chain integration and have a wide range of functions, such as providing market information, increasing access to extension services and facilitating market links.

Market information systems aim to reduce information asymmetries in the agricultural value chain and empower farmers with up-to-date market information. In addition, they can provide direct links to markets (by bypassing intermediaries) and increase farmers’ incomes through their informed ability to negotiate trades, and thus develop commercialized farming activity. Market information systems gather and distribute commodity prices to farmers and traders, making use of various media channels, with mobile phones and the Internet being increasingly popular.

The role of ICT-enabled market information services and agricultural extension services is constantly evolving over time. The focus is moving from pure commodity price information to a variety of services such as marketing and business needs and skills, and good practices for all parts of the value chain. Many new tools such as apps with video diagnostic or geographic information systems (GIS) are used to support farmers. A major challenge for governments is how to link different types of farmers with their different needs, market aspirations, and sets of skills to different types of markets. Moreover, how can the cooperation among different public and private sector actors on ICT services be strengthened? The different services available in the 10 pilot countries—focusing mainly on providing market information on prices and best practices—show the huge variety of such services, as table 11.1 illustrates.

**Next steps**

The objective of the pilot data collection was to identify relevant, measurable, and collectible data sets on ICT infrastructure and services. After analyzing the data collection results, the team narrowed the focus to 5 data points. This chapter presented the initial methodology and the findings for the core data points. Based on the lessons learned from the data collection and the feedback received, the topic and the questionnaire will be further refined for the next cycle and additional measurements may be considered.

With regards to developing ICT indicators, the team is analyzing the following options:

- **The topic could continue to be an individual indicator and be extended to additional legal and regulatory aspects.** For example, a focus could be on the affordability of agricultural ICT services. Another very important aspect is to analyze the variety of services offered, determining the kind of services and providers for each target group, as well as how the government supports the development of new tools. The team will continue to expand cooperation and exchange with international organizations.
## TABLE 11.1: ICT-enabled market information and e-extension services in the 10 pilot countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Name of Service/Product</th>
<th>Description/Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>Ethiopia Commodity Exchange (ECX)</td>
<td>ECX provides a virtual marketplace that is accessible online and by phone and SMS; it improves transparency on supply, demand and prices. ECX receives more than one million requests per month for market information, with 80% coming from rural areas. The producers are able to see the price difference between different grades and commodities, so they can make more informed decisions on what to plant and can see the quality premium and discount associated with postharvest production.</td>
</tr>
<tr>
<td>Guatemala</td>
<td>Distance Diagnostics through Digital Imaging (DDDI)</td>
<td>The DDDI system allows textual information and descriptive images to be submitted directly from extension offices for rapid diagnosis by resource professionals, such as on plant diseases.</td>
</tr>
<tr>
<td>Morocco</td>
<td>ASAAR</td>
<td>The information system, ASAAR, implemented by the Ministry of Agriculture and Maritime Fishing, provides stakeholders with information on prices and markets on its website and via an app.</td>
</tr>
<tr>
<td>Mozambique (and several other African countries)</td>
<td>Esoko</td>
<td>Agro-marketing/trade; The Esoko platform provides automatic and personalized price alerts, buy and sell offers, bulk SMS messaging, stock counts, and SMS polling. Markets, commodities, languages, and currencies are easily configured. Esoko also offers strategy, support and trainings to projects rolling out market information systems.</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Sistema De Informação De Mercados Agrícolas De Moçambique (SIMA)</td>
<td>The Ministry of Agriculture has implemented an Agricultural Market Information System (SIMA). SIMA produces weekly (Quente-Quente) and monthly bulletins (Boletim Mensal). Through the system, farmers have access to domestic prices of 25 agricultural products in 27 producer, wholesale, and retail markets throughout the country, plus regional and international prices of selected commodities and market commentary. The information is disseminated by radio, local district agriculture directorates and by NGOs via email circulation.</td>
</tr>
<tr>
<td>Philippines</td>
<td>b2bpricenow</td>
<td>The b2bpricenow.com is an integrated e-commerce/m-commerce program that has an agriculture e-marketplace that provides up-to-the-minute price updates and other market information, as well as money movements.</td>
</tr>
<tr>
<td>Philippines</td>
<td>International Rice Research Institute (IRRI)</td>
<td>IRRI-developed websites and apps offer services related to rice information, such as specific recommendations on nutrients, pests, weeds, or water management, depending on the specific crop variety, yield from the previous season, and the site-specific field conditions.</td>
</tr>
<tr>
<td>Philippines</td>
<td>Agriculture Training Institute</td>
<td>The Agriculture Training Institute is an agency with a mandate to provide extension and training for farmers and extension staff, such as access to best practices and updated science and technology to improve agricultural methods and increase agricultural productivity. Within the agency is the Farmers’ Contact Center, a call center (voice call, text messages, online forum) that caters to queries from farmers related to agriculture and fisheries technologies, agricultural marketing, pests and diseases. The service is being implemented by the Department of Agriculture through the Agricultural Training Institute, in collaboration with the partner institutions in the Department of Science and Technology, local government units, state colleges and universities, and other stakeholders in agriculture and fisheries extension.</td>
</tr>
</tbody>
</table>

(Continued next page)
<table>
<thead>
<tr>
<th>Country</th>
<th>Name of Service/Product</th>
<th>Description/Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>Application Laboratories, “AppLab”</td>
<td>Applab is an anti-poverty technology program that the Grameen Foundation manages. Applab aims to help smallholder farmers obtain accurate, timely, and actionable agricultural information through a network of community knowledge workers (CKWs) comprising rural community members. The program uses mobile technology to deliver agricultural information both to and from smallholder farmers. Through the network of CKWs throughout Uganda, the Grameen Foundation aims to revolutionize agricultural knowledge sharing and, in turn, improve yields, reduce losses and increase incomes of poor smallholder farmers throughout the country.</td>
</tr>
<tr>
<td>Uganda</td>
<td>Farmer’s Friend</td>
<td>Farmer’s Friend (powered by Google SMS and the Grameen Foundation) offers farmers an affordable and targeted means by which to search for agricultural tips through an SMS-based database. Keywords in the request for assistance are matched against the database, and the farmer receives a reply with a tip related to the relevant query terms.</td>
</tr>
<tr>
<td>Uganda</td>
<td>Foodnet and Farmgain</td>
<td>Data on prices, traded volumes, market flow, growing conditions, and other relevant information are collected from villages and market centers and, together with relevant national and regional information, are disseminated in local languages by local FM radio stations. The project receives and disseminates instant reports through SMS on changing market prices. Both the national and localized market information projects are fully integrated, using a central information processing facility, thereby reducing cost and augmenting local information with national and regional market information of relevance to the local target area.</td>
</tr>
<tr>
<td>Uganda</td>
<td>Google Trader</td>
<td>Agro-marketing/trade tool by Google, Grameen Foundation, and MTN Uganda: Google Trader helps buyers and sellers find each other. Users can broadcast a message by sending an SMS, allowing them, for example, to list the products that they are selling or to find space on a truck to take their goods to market.</td>
</tr>
<tr>
<td>Uganda</td>
<td>Infotrade</td>
<td>Infotrade provides critically analyzed information collected from 20 district markets in Uganda that cover a total of 46 commodities. Data is collected three times a week, verified, and then posted on a website. Information can be accessed by email or directly on a mobile phone.</td>
</tr>
<tr>
<td>Rwanda</td>
<td>Agricultural Information and Communication Centre (CICA)</td>
<td>CICA is an agricultural management information system (website) created by the Rwandan Ministry of Agriculture to collect, share and disseminate agricultural information and knowledge.</td>
</tr>
<tr>
<td>Rwanda, Uganda</td>
<td>East Africa Exchange (EAX)</td>
<td>EAX is a regional commodity exchange that was established to link smallholder farmers to agricultural and financial markets, secure competitive prices for their products, and facilitate access to financing opportunities. EAX is registered throughout East Africa Community partner states.</td>
</tr>
</tbody>
</table>

Sources: Q. Zhenwei et al. 2012; Enabling the Business of Agriculture database.

and institutions, such as the ITU, to further refine the methodology.

• Another option would be to embed ICT as a cross-cutting topic into other program topic areas, similar to what will be done with the gender and environmental sustainability topic areas. Possible areas that are already partly included in the topics are ICT-enabled market information services (access to markets), mobile banking (access to finance), or e-extensions (fertilizer and seed).
Notes

The underlying research and design of the connecting farmers to information topic benefited from valuable comments provided by Sara Boettiger, Aparajita Goyal and Eija Pehu.

1 World Bank 2011b.
2 Shenggen et al. 2013.
4 ICT4Ag 2014.
5 ITU 2010.
6 World Bank 2011b.
7 The term “e-extension” refers to the provision of extension services through the use of modes of information and communication technologies (ICTs), such as a mobile phone that is used as a platform for exchanging information, for example, through short messaging services.
8 ITU 2010.
10 ITU 2010.
11 World Bank 2014b.
12 ITU 2010.
13 Ibid.
14 Kanugu 2010.
15 A geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth’s surface. GIS can show many different kinds of data on one map and enables people to more easily see, analyze, and understand patterns and relationships.
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CGAP (Consultative Group to Assist the Poor) and IFAD (International Fund for Agricultural Development). 2006. “Emerging Lessons in Agricultural Microfinance: Selected Case Studies.” CGAP and IFAD. Washington, DC.


———. 2013b. “Reforzamiento de las políticas de producción de semilla de granos básicas en apoyo a la agricultura campesina para la seguridad alimentaria en países miembros del CAC.” FAO, Guatemala City, Guatemala.


Sustainable Energy for All initiative, http://www.se4all.org/.


USAID (United States Agency for International Development) EAT (Enabling Agricultural Trade) Project and Iowa State University Seed Science Center. 2011. “Building an Enabling Environment for Seed Sector Growth.” Policy Brief 1. USAID, EAT, and Iowa State University, Washington, DC.


Data notes

Enabling the Business of Agriculture aims to identify and monitor policies and regulations that impact the functioning of markets within the sector, allowing policy makers to compare their country’s agribusiness climate with that of others. In the pilot year, the team collected data in 10 countries on 6 topics: registering agricultural land, accessing financial services, strengthening seed systems, improving fertilizer supply, transporting agricultural goods, and selling agricultural goods. Three other topics were identified for initial testing: contracting agricultural production, electrifying rural areas, and connecting farmers to information. Several others will be tackled in year 2 of the project’s implementation: mechanization, water, livestock, gender, and environmental sustainability.

- **Registering agricultural land** explores the efficiency of first-time registration processes and analyzes the safeguards provided by the registration process and the legal structure of the land registry.

- **Accessing financial services** measures constraints in the regulation of a set of financial services that can foster financial inclusion and the development of agricultural enterprises and households.

- **Strengthening seed systems** seeks to identify the obstacles affecting the timely introduction and production of high-quality seed from formal sources.

- **Improving fertilizer supply** examines regulatory bottlenecks that limit fertilizer availability. This topic also focuses on operational and economic constraints, as well as the implementation of legislation affecting the fertilizer industry.

- **Transporting agricultural goods** identifies policy and regulatory constraints in trucking services and infrastructure limitations that can potentially affect commercial agriculture development.

- **Selling agricultural goods** investigates policies and regulations that can facilitate (or hinder) efficient links between producers and consumers.

- **Contracting agricultural production** investigates laws and regulations that apply to contract farming agreements, whether production contracts or marketing contracts.

- **Electrifying rural areas** measures the share of population that has access to electricity, for the country as a whole and for the rural sector specifically.

- **Connecting farmers to information** focuses on mobile networks, as well as farmers’ opportunities to access information through the use of mobile phones.

The data presented and analyzed in this report primarily represent measurements, variables that are quantitative (numbers) or can be expressed quantitatively (by being scored or assigned a value), and are statistically robust and comparable across countries. The data will be used as the basis for developing aggregate indicators in the future.
Different types of data are included. Some emerge from a reading of the laws and regulations. Others measure market prices, available infrastructure or the implementation of services related to the topic area. Still others reflect the regulatory system efficiency—for example, the number of procedures and the time and cost to complete a process such as certifying seed for sale in the domestic market. Data of this kind, critical to understanding key processes in the agribusiness sector, are built on legal requirements, and cost measures are backed by official fee schedules, when available. Time estimates often involve an element of judgment by respondents who routinely administer the relevant regulations or undertake the relevant transactions. To construct the time estimates for a particular regulatory process, such as completing the requirements to import fertilizer, the process is broken down into clearly defined steps and procedures. The time to complete these steps is verified with expert respondents—through conference calls, written correspondence and visits by the team—until there is convergence on a final answer.

The data are current as of March 31, 2014.

The report team welcomes feedback on the methodology of this pilot data set and looks forward to refining both its coverage and scope in the next year. All the data and sources are publically available at http://eba.worldbank.org.

The following assumptions and definitions were used to make the data comparable across countries.

**Registering agricultural land**

Five data sets were designed to measure the efficiency of first-time registration processes and the safeguards provided by the registration process and the legal structure of the land registry:

1. First-time registrations of private land for individuals.
2. Procedures, time and cost for first-time registrations of private land for individuals.
3. First-time registrations of leases of public land for individuals.
4. First-time registrations of land for communities.
5. Land registry and registered land rights.

The data were gathered through questionnaires that were sent to 2 main types of respondents: lawyers and registrars. To a lesser degree, surveyors, judges and civil society organizations also responded to the questionnaire. There is one questionnaire that is used for all respondent types, and each responds according to their knowledge and experience in the subject matter. Depending on the country context, one type of contributor or another may be more qualified to respond to certain sections of the questionnaire.

Data collection has shown that the question of which respondents can provide the best source of information in an independent and reliable manner depends on the country context. For some questions, registrars are the best source of information (for example, for information on compensation cases in the event of damages due to erroneous information certified by the registry). However, depending on the country context, there are specific parts of the questionnaires that can only be filled by civil society organizations, judges or government officials.

To make the data comparable across countries, several assumptions about the applicant, the property and the procedures are used.

**Assumptions about the first-time registration process**

Understanding the complexity of different ownership structures around the world, 3 different scenarios are explored in which a
farmer or farming community could request the registration of rights to a plot of land for which there has been no prior registration of land rights.

Assumptions about the applicant

The applicant:

Scenario 1:
- Is a domestic farmer.
- Has been in possession of a plot of agricultural land.
- Has used the plot without interruption for the last 30 years.

Scenario 2:
- Is a domestic farmer.
- Seeks to obtain the right to use a plot of agricultural land that belongs to the public sector.

Scenario 3:
- Is a farming community.
- Seeks to register collective rights to a plot of land that has been collectively used by the community according to customary practices.

Assumptions about the property

The property:
- Has a value of 10 times income per capita.
- Is 1 hectare of agricultural land.
- Has never been registered.
- Is located in one of the country’s main agricultural production regions.

Type of registration process

Judicial and administrative registrations are the two processes that allow for first-time registrations of land rights. Judicial registration implies that the land registration process is conducted in a formal and official court, and administrative registration implies that the land registration process is initiated in a governmental office.

Procedures

A procedure is defined as any interaction of the applicant, his/her agents or the property with external parties, including government agencies, inspectors, surveyors, notaries and lawyers. All procedures are included that are legally or in practice required to have the plot registered for the first time at the land registry. Other procedural steps, internal to the court, the administrative office, or between the parties and their counsel may be counted as well.

Time

Time is recorded in calendar days and captures the median duration of each procedure. It is assumed that the applicant does not waste time and commits to completing each remaining procedure without delay. If a procedure can be accelerated for an additional cost, the fastest legal procedure available and used by the majority is chosen. If procedures can be undertaken simultaneously, it is assumed that they are. It is assumed that the parties involved are aware of all requirements and their sequence from the beginning. Time spent on gathering information is not considered. If the time estimates differ among sources, the median reported value is used.

Cost

Only official costs required by law are recorded, including fees, transfer taxes, stamp duties and any other payment to the property registry, notaries, public agencies or lawyers. Other taxes, such as capital gains tax or value added tax, are also included in the cost measure. If the total cost estimates differ among sources, the median reported value is used.
**Specific terms**

**Customary rights** is defined as land tenure norms used by a given community, which are based on their history and customs, that may or may not be recognized by written and official legal instrument.

**Freehold** is defined as ownership of property for life with the right to pass it on through inheritance. This right can be given to an individual or to a community, in which case the freehold right would be of an individual or collective nature, respectively.

**Indefeasibility** is a characteristic that registration systems may have. It provides for a more secure land registry, as the land registry can give conclusive information with respect to registered rights. Specifically, it means that, in the event of conflict, registered rights cannot be defeated by other rights, that is, registered rights prevail over any other rights. Some registration systems allow for some exceptions to this rule, for example, in certain fraud cases; and others provide that registered rights can under no circumstance be defeated. The latter are called absolutely indefeasible.

**Lease** is defined as a contract whereby the owner of a plot of land cedes the right to use the land and benefit of its proceeds to another party in exchange for a payment. The following definitions are used:

- **Short-term lease** is defined as being 1 to 4 years.
- **Medium-term lease** is defined as being 5 to 9 years.
- **Long-term lease** is defined as being over 10 years.

**Sequencing** is a characteristic that registration systems may have. It provides for a more secure land registry, as only transactions which follow suit of transactions and parties that are already registered are allowed in the registry’s books. For example, if a person is trying to sell a plot of land which is registered under someone else’s name, the registry would automatically pick up on this, as the seller is not the registered owner.

**Accessing financial services**

Four data sets were designed to measure regulatory frameworks covering the following:

1. Provision of financial services through branchless banking;
2. Usage of nontraditional collateral, especially the categories that are relevant for agricultural enterprises and smallholders;
3. Warehouse receipt operation and financing; and
4. General prudential regulation and supervision imposed on financial institutions.

The data were gathered through tailored questionnaires to 3 types of respondents: financial sector supervisory authorities, financial lawyers, and legal officers of financial institutions. Data collections include interviews conducted during country visits directly with respondents, followed by rounds of follow-up communication via email and conference calls with respondents as well as with third parties. The data were also verified through analyses of laws and regulations, including a review of public sources of information on banking law, collateral law, warehouse receipt law, financial institutions law, and so on.

In the chapter, the data are classified as: (i) yes; (ii) no; and (iii) n.a. “Yes” refers to existence of certain features in the legislation, “no” means that the legislation lacks certain features or specific provisions, and “n.a.” means not applicable, in most cases due to nonexistence of a legal and regulatory framework in the
area that is measured by the data point. Data on nontraditional collateral are based on “in practice” usage in line with the Doing Business database. Minimum capital requirements for financial institutions are converted into US dollars using the 2013 conversion rate from the World Bank Development Indicators database.

**Specific terms**

**Branchless banking** is the delivery of financial services outside of conventional bank branches. The delivery is made through retail agents or information and communication technology.

**Capital adequacy ratio** is a measure of the amount of a bank’s core capital expressed as a percentage of its risk-weighted asset. Where risk weights are not used, the national regulator’s minimum total capital requirement is used as the ratio denominator.

**Electronic signature** is defined as symbols or other data in digital form attached to an electronically transmitted document as verification of the sender’s intent to sign the document.

**Microfinance institutions (MFIs)** are financial institutions that specialize in the provision of small-volume financial services (for example, credit, deposits, loans) to low-income clients.

**Nontraditional collateral** is a pledge that is not traditionally accepted to secure repayment of a loan. Movable collateral, future assets and leased assets are examples of nontraditional collateral.

**Provisioning rules** determine how much money banks must set aside as an allowance for bad loans in their portfolios. The share of a loan that must be covered by provisioning can either be the full loan amount or the part that is not secured by collateral (unsecured share).

**Prudential regulations** are rules that limit risk-taking activities of deposit-taking financial institutions with the aim of ensuring the safety of depositors’ funds and maintaining the stability of the financial system. Rules on capital adequacy ratio, risk weighting, and provisioning are examples of prudential regulation.

**Security interest** is defined as a property interest created by agreement or by operation of law over assets to secure the performance of an obligation, usually the payment of a debt. It gives the beneficiary of the security interest certain preferential rights in the disposition of secured assets.

**Warehouse receipts** are issued by warehouse operators as evidence that the person or firm they name has deposited commodities of a specified quantity and quality at a particular location. They can be paper-based, electronic or both.

**Strengthening seed systems**

Five data sets were designed, as follows:

1. The regulatory framework for seed.
2. Requirements for the evaluation and registration of new varieties.
3. Availability of initial seed classes.
4. Seed quality control requirements.
5. International and regional seed trade.

Data were collected through interviews conducted during country visits directly with respondents and also by email and teleconference calls from Washington, DC. The strengthening seed systems topic area has 4 main types of respondents: seed producers and companies, seed associations, relevant government authorities (for example, a Ministry of Agriculture seed authority) and academia. In addition, when possible, local and international technical experts from donor-funded seed programs and nongovernmental organizations (NGOs) were also consulted. Questionnaires were tailored to the 3 types of respondents: one questionnaire
for public sector, one for private sector (seed companies, seed associations and NGOs) and one for academia.

Responses from respondents were cross-checked by reading the applicable laws and regulations to the extent that these were obtained. Secondary research was also performed when necessary, such as the verification of information via recently published literature and online searches. In addition to the initial consultations with seed experts, the team received technical contributions on data selection and the interpretation of the regulations from Joe Cortes and Adelaida Harries, specialists within the Global Seed Program, Seed Science Center of Iowa State University.

**Evaluation and registration of new varieties**

To make the data comparable across countries, several assumptions about the registration and certification process are made.

**Assumptions for evaluation and registration of new varieties**

The variety:

- Is the main listed cereal.
- Is being registered for the first time in the country.
- Has not been registered in any other country.

**Seed quality control**

**Assumptions for certification of seed**

The seed:

- Is a multiple of the main listed cereal.
- Is intended for sale on the domestic market.
- Has not been certified in any other country.

- The company already has certified foundation seed.

**Procedures**

Procedures are defined as any interaction of the seed company’s owner, manager, or employees with external parties, including any relevant government agencies, banks, lawyers, auditors, notaries, public and private inspectors and technical experts. All procedures that are legally or in practice required for the seed company to operate within its respective normal business functions are counted.

**Cost**

Only official costs required by law are recorded, including fees and taxes. Professional fees (notaries, lawyers or accountants) are only included if the company is required to use such services.

**Specific terms**

**Basic/foundation seed** has been produced under the responsibility of the maintainer according to the generally accepted practices for the maintenance of the variety and is intended for the production of certified seed. Basic or foundation seed must conform to the appropriate conditions in the regulations, and the fulfillment of these conditions must be confirmed by an official examination.

**Breeder/pre-basic seed** is directly controlled by the originating or sponsor plant breeding institution, firm or individual, and it is the source for the production of seed of the certified classes.

**Distinctness, Uniformity and Stability (DUS) testing** is a test performed to compare candidate varieties for registration with varieties already listed in seed register on these qualities:

- **Distinctness (UPOV):** A variety shall be deemed to be distinct if it is clearly distinguishable in at least one character from any other variety whose existence
is a matter of common knowledge at the time of filing the application for registration.

- **Uniformity (UPOV):** A variety shall be deemed to be uniform if, subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its relevant characteristics.

- **Stability (UPOV):** A variety shall be deemed to be stable if its relevant characteristics remain unchanged after repeated propagation by the method which is normally used for the particular variety.

**Seed certification (OECD)** is the quality assurance process during which seed intended for domestic or international markets is controlled and inspected by official sources to guarantee consistent high quality for consumers. This process is done by the following: i) controlling the seed in previous generations; ii) conducting field inspections during the multiplication process to ensure there is little contamination and that the variety is true to type; iii) growing samples of the known seed in control plots to ensure that the progeny conform to the characteristics of the variety; and, iv) seed quality testing in laboratories.

**UPOV** is the International Union for the Protection of New Varieties of Plants, an intergovernmental organization based in Geneva, Switzerland; its mission is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants for the benefit of society. To be a member, the law of a country must conform to the standards of the 1991 Act of the UPOV Convention. The country can also have observer status after having officially expressed an interest in becoming a member of UPOV and in participating in the sessions of the Council.

To date, 71 countries have achieved member status and 57 observer status.

**Value for Cultivation and Use (UPOV)** is a variety registration requirement to assess whether a variety has characteristics and properties that affect improvement in cultivation or in the utilization of the harvest or its products in comparison to the existing listed varieties.

**Variety (UPOV)** is a plant grouping within a single botanical taxon of the lowest known rank, which, irrespective of whether the conditions for the grant of a breeder’s right are fully met, can be:

- Defined by the expression of the characteristics resulting from a given genotype or combination of genotypes;
- Distinguished from any other plant grouping by the expression of at least one of the said characteristics; and
- Considered as a unit with regard to its suitability for being propagated unchanged.

**Variety catalog** is a list of varieties that have been registered and released by a national authority and can be produced and marketed in a country or region as certified seed.

**Variety release committee** is the committee that decides whether or not a new variety can be registered and should be introduced on the domestic market.

**Improving fertilizer supply**

Seven data sets were developed, as follows:

1. Domestic production and blending of fertilizer.
2. Regulatory framework for fertilizer.
3. Registration of fertilizer.
4. Importing of fertilizer.
5. Subsidies, taxes and tariffs on fertilizer.
6. Quality control of fertilizer.
7. Fertilizer use and soil health.

The fertilizer topic area has 3 main types of respondents: fertilizer companies, relevant government authorities (for example, the ministry of agriculture) and agricultural input dealer associations. Researchers and academia also contribute to the topic area. Questionnaires are tailored to these different types of respondents; there is one questionnaire targeted to private sector respondents, one for the public sector and one for fertilizer associations and researchers.

To make the data comparable across countries, several assumptions about the fertilizer company are used, as detailed below:

**Assumptions about the business**

The business:

- Is a fertilizer importer.
- **Does not operate in an export processing zone or an industrial estate with special import or export privileges.**

The destination port for importation of fertilizers is the most used port in the country. If the country is land-locked, it is assumed that the most used border posts are employed.

**Assumptions about the imported fertilizer**

The fertilizer:

- Is a fertilizer product in solid form.
- Weighs 5,000 metric tons.
- Is transported by ocean transport, then transported inland in 25 metric tons trucks.

**Procedures**

A procedure is defined as any interaction of the company’s owners, managers or employees with external parties, for example, government agencies, lawyers, auditors, notaries, and customs or border authorities. It includes all procedures that are officially required for the business to legally perform its described activities, such as registering and importing fertilizer. Interactions among owners, managers and employees are not counted as procedures.

**Time**

Time is recorded in calendar days and captures the median duration of each procedure. The time span for each procedure starts with the first filing of the application or demand, and ends once the company has received the final document, such as the company registration certificate or tax number (for example, it would include the time to make an appointment with the notary or any waiting time once the documents are filed). It is assumed that the company’s owners, managers or employees have had no prior contact with any of the officials.

**Cost**

Only official costs required by law are recorded, including fees and taxes. If possible, the relevant fee schedule or calculation formula should be indicated (for example, as a percentage of the company’s capital). Professional fees (notaries, lawyers or accountants) are only included if the company is required to use such services.

**Specific terms**

**Blend** is any combination or mixture of fertilizer products.

**Fertilizer form** is the form in which the fertilizer is presented, for example, liquid, granules, powder, spikes, tablets or pellets.
**Fertilizer product** is any product containing nitrogen, phosphorus, potassium, or any recognized plant nutrient element or compound that is used for its plant nutrient content.

**Fertilizer types** are as follows:

- NPK is composed of three main elements: nitrogen (N), phosphorus (P), and potassium (K), each of these being essential in plant nutrition.
- Urea is a form of nitrogen fertilizer with an NPK (nitrogen-phosphorus-potassium) ratio of 46-0-0.
- DAP, diammonium phosphate, is the world’s most widely used phosphorus (P) fertilizer.
- MAP (monoammonium phosphate).
- MOP, muriate of potash, is the most common form of potash.
- Potash or fertilizer potassium (K), sometimes called "potash."
- Ammonium nitrate is a salt of ammonia and nitric acid that is widely used in fertilizers. The substance can be used in explosive compounds, which is why many countries have imposed specific regulations for its transport, storage and handling.

**Transporting agricultural goods**

Five data sets were designed, as follows:

1. Licensing requirements to operate a trucking company.
2. Pricing and freight allocation
3. Axle-load regulation.
5. Monitoring of road access, density and quality.

The transport topic area has 3 main types of respondents: trucking companies, trucking associations and relevant government authorities (for example, ministry of transport, road transport authorities, customs). To a lesser degree, lawyers, freight forwarders and academia also responded to the questionnaire. Questionnaires are tailored to the 3 types of respondents: one questionnaire for public sector, one for trucking associations and one for trucking companies, freight forwarders and lawyers.

**Assumptions about the business**

To make the data comparable across countries, several assumptions about the business and its activities are used, as detailed below:

**The business:**

- Is a limited liability company.
- **Operates in the largest town in the main agricultural production region of the country.**
- Is 100% domestically owned and has 2 owners, neither being a legal entity.
- Has startup capital equivalent to 10 times income per capita.
- Has between 5 and 10 employees 1 month after the commencement of operations.
- Transports agricultural products, including perishable fruits/vegetables and grains, with any required licensing or registration to transport such products.
- Also transports other rural goods, such as construction materials or equipment, during periods of low demand for agricultural transportation services.
- Does not transport fertilizers or pesticides.
• Engages in foreign trade, in terms of transporting domestic agricultural goods across the border into the country’s largest neighboring agricultural trading partner; if the country is an island, it is assumed that the truck is shipped in a ferry to the closest agricultural trading partner.

• Does not qualify for any investment incentives or special tax regime.

• Owns 2 trucks; each truck has 2 axles and 25 metric tons weight capacity.

• Does not own any real estate; leases or rents a commercial office.

• Has a company deed 10 pages long.

Procedures

A procedure is defined as any interaction of the company’s owners, managers or employees with external parties (for example, transport regulators, inspectors, other government agencies, or private service providers, such as lawyers). All procedures that are officially required to legally operate a trucking company are recorded.

Time

Time is recorded in calendar days and captures the median duration of each procedure. The time span for each procedure starts with the first filing of the application or demand, and ends once the company has received the final document, such as the company registration certificate or transport license.

Cost

Only official costs required by law are recorded, including fees and taxes. If possible, the relevant fee schedule or calculation formula should be indicated. Professional fees (charged by lawyers or notaries) are only included if the company is required to use such services.

Specific terms

Transport rights granted to foreign trucking companies

Backhauling rights: A truck registered in Country A is able to transport agricultural goods into Country B for sale, load other goods in Country B and carry them back to Country A.

Cabotage rights: A truck registered in Country A is able to pick up agricultural goods in Country B and deliver them to a different point in Country B.

Transit rights: A truck registered in Country A is able to travel through Country B to deliver agricultural goods into Country C.

Triangular rights: A truck registered in Country A is able to pick up agricultural goods in Country B and transport them to be delivered into Country C.

Transport/import rights: A truck registered in Country A is able to transport agricultural goods produced in its country into Country B for sale.

Freight allocation

Intermediary system ("bourse de fret") allows freight forwarders/logistics providers to offer freight to be transported through trucking companies, which offer vehicle space.

Queuing system ("tour de rôle") is a way of allocating freight to transport companies. It generally requires the operator to be affiliated with a transport association. Each carrier needs to be registered on arrival at the local or regional freight bureaus and then receives a priority order to load freight.

Axle-load regulation

Axle is a central shaft for a rotating wheel or gear on wheeled vehicles. It may be fixed to the wheels, rotating with them, or fixed to its surroundings.
**Axle-load** is the total weight felt by the roadway for all wheels connected to a given axle, that is the fraction of total vehicle weight resting on a given axle.

**Gross vehicle mass** is the maximum total mass allowed for a fully loaded operating motor vehicle. It consists of the tare mass of the vehicle plus the load, but excluding the weight of any trailers.

**Selling agricultural goods**

Five data sets were designed, as follows:

2. SPS regulation of agricultural trade.
3. Information availability and marketing requirements.
5. Collective action to supply markets.

Local freight forwarders, transport logistics companies, customs brokers, and public officials at the customs service and the ministries of agriculture provide information on required procedures and cost as well as the time to complete each procedure. In addition, the team collects information on domestic markets from ministries of agriculture, ministries of trade and commerce, farmer organizations, and agroprocessors, along with wholesalers and retailers of agricultural products.

Several assumptions about the business and the traded goods are applied to make the data comparable across countries.

**Assumptions about the business**

The business:

- Is a limited liability company.
- Performs general agricultural trading activities.
- Has obtained exporter accreditation or license from the relevant government agencies, for example, customs authority, ministry of trade, or ministry of agriculture.
- Does not operate in a special export processing zone.
- Is 100% domestically owned and has 2 owners, neither being a legal entity.
- Has 30-50 employees (including seasonal workers who are temporarily hired), all of them nationals.
- Has at least one employee who is a licensed customs broker.

**Assumptions about the traded goods**

The traded agricultural goods:

- Are the country’s most regionally traded staple cereal/horticultural product.
- Are traded with the largest neighboring agricultural trading partner.
- Are transported by a truck with a carrying capacity of 25 metric tons.
- Are transported as a 20-foot container if there is no land border with the regional trading partner.
- Weigh 25 metric tons.
- Are valued at $10,000.

**Procedures**

A procedure is any interaction of the company’s employees or managers with external parties, including government agencies or inspectors, chamber of commerce or other relevant associations, as well as public or private laboratories. All procedures that are required legally or in practice for exporting/importing agricultural products per shipment are taken into account,
even if they may be avoided in exceptional cases. Any procedure related to obtaining a letter of credit is not recorded.

**Time**

Time is recorded in calendar days. The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost and is available to all trading companies, the fastest legal procedure is chosen. Fast-track procedures applying only to firms located in an export processing zone or only to certain accredited firms under authorized economic operator programs are not taken into account. It is assumed that the exporter/importer wastes no time and that the exporter/importer commits to completing each remaining procedure without delay.

**Cost**

Costs measure all the administrative fees associated with completing the required procedures to export or import agricultural goods, including obtaining a phytosanitary certificate and import clearance. The cost does not include customs tariffs, duties or costs related to transport. Only official costs are recorded.

**Specific terms**

*Phytosanitary certificate* is an official paper document or its official electronic equivalent, issued for exported or re-exported consignments, to provide assurance to an NPPO (National Plant Protection Organization) that the consignments meet the phytosanitary import requirements.

*Phytosanitary import permit* is an official document authorizing the importation of a commodity in accordance with specified phytosanitary import requirements.

*SPS measure* is any measure applied to: (i) protect human or animal life from risks arising from additives, contaminants, toxins or disease-causing organisms in their food; (ii) protect human life from plant or animal-carried diseases; (iii) protect animal or plant life from pests, diseases, or disease-causing organisms; and (iv) prevent or limit other damage to a country from the entry, establishment or spread of pests.¹

**Contracting agricultural production**

Four data sets were designed as follows:

1. Regulatory framework for contract farming.
2. Contract specifications.
3. Procedural requirements for contract farming.
4. Dispute resolution mechanisms.

The data are gathered through tailored questionnaires to 3 types of contributors: contract lawyers, farmers’ organizations, and agroprocessors. Data collection includes interviews conducted during country visits directly with respondents, followed by rounds of follow-up communication via email and conference calls with respondents as well as third parties. The data are also verified through analyses of laws and regulations, including a review of public sources of information on civil codes, contract laws and laws on contract farming.

The data are classified as: (i) yes; (ii) yes(m); (iii) no; and (iv) “n.a.” “Yes” refers to the existence of certain features in the legislation and the existence of default contractual rules established by law; “yes(m)” refers to the existence of mandatory contractual rules established by law; “no” means that the legislation lacks certain features or specific provisions; and, “n.a.” means the nonexistence of a legal and regulatory framework in the area that is measured by the data point.
**Electrifying rural areas**

The electrifying rural areas data measure the share of population that has access to electricity, for the country as a whole and for the rural sector specifically. During the project pilot year, attempts were also made to develop data sets that address electricity affordability, electricity reliability and off-grid electricity systems.

The data was collected during the country visits by means of a questionnaire targeted to the relevant government authorities (ministry of energy and public agencies with a mandate of electrifying rural areas), as well as electricity generation, transmission and distribution companies. Existing data published by the World Bank and the World Energy Outlook were consulted to cross-check the findings from the fieldwork.

**Connecting farmers information**

Two data sets were collected with the objective of measuring access to ICT services in the 10 pilot countries, as follows:

1. Number of mobile cellular subscriptions per 100 inhabitants.

2. Number of active mobile broadband subscriptions per 100 inhabitants.

The team collected some preliminary information on the market structure of the telecommunications subsector, the public sector role to support the development of ICT infrastructure, and existing ICT-enabled market information and e-extension services. The data, however, were not available for all countries and often not comparable.

The data were gathered through a questionnaire tailored to the relevant government authority in the country (for example, the ministry of communications, and/or the specialized agency for information and communications technology). The ministry of agriculture and the relevant agricultural advisory service agencies, as well as seed and fertilizer companies, contributed to the market information and e-extension services data set. Existing data collected by the World Bank and the International Telecommunications Union (ITU) were consulted to cross-check the findings from the fieldwork in the pilot countries.

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**Country characteristics**

**Gross national income per capita**

Enabling the Business of Agriculture 2015 reports 2013 income per capita as published in the World Bank Group’s World Development Indicators 2014. Income is calculated using the Atlas method (current U.S. dollars). For cost data points expressed as percentage of income per capita, 2013 gross national income (GNI) in U.S. dollars is used as the denominator. GNI data were not available from the World Bank for Ethiopia or Spain. In these cases the GDP or GNP per capita data and growth rates from other sources were used, such as the International Monetary Fund’s World Economic Outlook database and the Economist Intelligence Unit.

**Exchange rate**

Most cost data was collected in local currency units (LCU). For better comparison, these costs were converted to U.S. dollars using the exchange rate as published in the World Bank Group’s World Development Indicators 2014. Some topics then used the U.S. dollar amounts to convert to costs in percentage of income per capita.
Note

Pilot data tables
## Registering Agricultural Land

### First-time registrations of private land for individuals

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the law provide for first-time registrations of individual private land?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>If so, are there regulations and institutions in place to process applications for first-time registrations of private land?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is an application for private land registration made public by the relevant authorities?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Is a public hearing held to consult neighbors and other interested parties on the property claim of an applicant for private land registration?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is the decision on a first-time private land registration made public under the name of the applicant and can affected parties appeal the decision?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

### Procedures, time and cost for first-time registrations of private land for individuals

<table>
<thead>
<tr>
<th>What type of process is used to register private land?</th>
<th>Administrative</th>
<th>Judicial</th>
<th>Administrative</th>
<th>Administrative</th>
<th>Administrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many procedures does it take to register private land for the first time?</td>
<td>—</td>
<td>12</td>
<td>10</td>
<td>10</td>
<td>—</td>
</tr>
<tr>
<td>How much time does it take to register private land for the first time (in calendar days)?</td>
<td>90</td>
<td>208</td>
<td>341</td>
<td>676</td>
<td>—</td>
</tr>
<tr>
<td>What is the cost to register private land for the first time (as % of property value)?</td>
<td>6.4</td>
<td>0.2</td>
<td>2.1</td>
<td>36.5</td>
<td>—</td>
</tr>
</tbody>
</table>

### First-time registrations of leases of public land for individuals

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>If so, are there regulations and institutions in place to process applications for leases of state-owned land?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is an application for public land registration made public by the relevant authorities?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is a public hearing held to consult neighbors and other interested parties on an applicant’s property claim for public land registration?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>—</td>
</tr>
<tr>
<td>Is the decision on a first-time public land registration made public under the name of the applicant and can affected parties appeal the decision?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>—</td>
</tr>
</tbody>
</table>

### First-time registrations of land for communities

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the law provide for first-time registrations of customary land that is used for farming?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>If so, are there regulations and institutions in place to process applications for first-time registrations of land for communities?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
</tr>
<tr>
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<th>Spain</th>
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<tbody>
<tr>
<td><strong>First-time registrations of private land for individuals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the law provide for first-time registrations of individual private land?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>If so, are there regulations and institutions in place to process applications for first-time registrations of private land?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
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<td>Yes</td>
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<tr>
<td>Is a public hearing held to consult neighbors and other interested parties on the property claim of an applicant for private land registration?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Is the decision on a first-time private land registration made public under the name of the applicant and can affected parties appeal the decision?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Procedures, time and cost for first-time registrations of private land for individuals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What type of process is used to register private land?</td>
<td>Judicial</td>
<td>Administrative</td>
<td>Judicial</td>
<td>Administrative</td>
<td>Administrative</td>
</tr>
<tr>
<td>How many procedures does it take to register private land for the first time?</td>
<td>6</td>
<td>5</td>
<td>12</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>How much time does it take to register private land for the first time (in calendar days)?</td>
<td>254</td>
<td>48</td>
<td>180</td>
<td>90</td>
<td>159</td>
</tr>
<tr>
<td>What is the cost to register private land for the first time (as % of property value)?</td>
<td>0.7</td>
<td>0.4</td>
<td>0.1</td>
<td>1.7</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>First-time registrations of leases of public land for individuals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the law provide for leasehold applications of state-owned land for agricultural purposes?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>If so, are there regulations and institutions in place to process applications for leases of state-owned land?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is an application for public land registration made public by the relevant authorities?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is a public hearing held to consult neighbors and other interested parties on an applicant’s property claim for public land registration?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is the decision on a first-time public land registration made public under the name of the applicant and can affected parties appeal the decision?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>First-time registrations of land for communities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the law provide for first-time registrations of customary land that is used for farming?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>If so, are there regulations and institutions in place to process applications for first-time registrations of land for communities?</td>
<td>Yes</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
</tr>
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<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Is an application for registration of land for a community made public by the relevant authorities?</td>
<td>Yes</td>
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<td>n.a.</td>
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<td>Yes</td>
<td>n.a.</td>
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<tr>
<td><strong>Land registry and registered land rights</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do rural and urban areas use the same land registry?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Can all citizens register rights to land?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Can registered rights be inherited?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Do registered rights include the subsoil?</td>
<td>Yes, unless there is a mine or water.</td>
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</tr>
<tr>
<td>Sequencing: Do land authorities register only transactions that follow suit to registered ones?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Indefeasibility: Do registered rights prevail over unregistered rights?</td>
<td>Yes</td>
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<td>No</td>
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<tr>
<td>Can landowners lease their land?</td>
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<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Branchless banking</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Can agents be hired by banks, microfinance institutions or both?</td>
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<td>Banks</td>
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<td>None</td>
<td>Banks</td>
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<td>No</td>
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<td>n.a.</td>
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<td>No</td>
</tr>
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<td>Must agents be connected in real-time to banks?</td>
<td>Yes</td>
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<td>n.a.</td>
<td>n.a.</td>
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<tr>
<td>Can agents withdraw cash from customers’ accounts?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>n.a.</td>
<td>Yes</td>
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<td>Can agents transfer money to other customers’ accounts?</td>
<td>Yes</td>
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<td>Can agents offer bill payment services?</td>
<td>Yes</td>
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<td>n.a.</td>
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<td>Can agents open accounts?</td>
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<td>n.a.</td>
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<td>Can agents process loan documents?</td>
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<td>Yes</td>
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<td></td>
<td></td>
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<td>Yes</td>
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<td>Yes</td>
</tr>
</tbody>
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<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can agricultural machinery be used as collateral?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Can crops be used as collateral?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Can movable collateral be described in general terms?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Can leased movable assets be used as collateral?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Can future assets be used as collateral?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the security interest automatically extend to transformations of the original collateral?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Warehouse receipts</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Is there specific legislation regulating the operation of warehouse receipts?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Must warehouse operators obtain a license?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must the warehouse operators insure their warehouse or the stored goods against fire, flood and earthquake?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Are paper-based, electronic or both types of receipts legally valid?</td>
<td>Both</td>
<td>Paper-based</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must receipts contain information on the location of storage?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must receipts contain information on the amounts in storage?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must receipts contain information on the year and harvest of goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must receipts contain information on performance guarantees?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must receipts contain information on security interests over the goods?</td>
<td>Yes</td>
<td>No</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Prudential regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are financial institutions legally required to direct a certain share of their lending to the agricultural sector?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Can microfinance institutions take deposits?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What is the minimum capital to establish a microfinance institutions (as multiple of income per capita)?</td>
<td>21.9</td>
<td>none</td>
<td>none</td>
<td>4.2</td>
<td>162.7</td>
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<tr>
<td>What is the mandatory capital adequacy ratio for microfinance institutions?</td>
<td>12</td>
<td>n.a.</td>
<td>n.a.</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Are provisioning rates for microfinance institutions different from those applied to commercial banks?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>What share of a loan must be covered by provisioning by financial institutions?</td>
<td>Full amount</td>
<td>Unsecured share</td>
<td>Unsecured share</td>
<td>Unsecured share</td>
<td>Full amount</td>
</tr>
<tr>
<td>STRENGTHENING SEED SYSTEMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory framework for seed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the country have a seed policy document?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the country have intellectual property rights for seed?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>What is the country’s current status in the International Union for the Protection of New Varieties of Plants (UPOV)?</td>
<td>None</td>
<td>Observer</td>
<td>Member</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes. (continued on page 142)
<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can agricultural machinery be used as collateral?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Can crops be used as collateral?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Can movable collateral be described in general terms?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Can leased movable assets be used as collateral?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Can future assets be used as collateral?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the security interest automatically extend to transformations of the original collateral?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Warehouse receipts**

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there specific legislation regulating the operation of warehouse receipts?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Must warehouse operators obtain a license?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Must the warehouse operators insure their warehouse or the stored goods against fire, flood and earthquake?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are paper-based, electronic or both types of receipts legally valid?</td>
<td>Both</td>
<td>Paper-based</td>
<td>n.a.</td>
<td>Paper-based</td>
<td>Both</td>
</tr>
<tr>
<td>Must receipts contain information on the location of storage?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Must receipts contain information on the amounts in storage?</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Must receipts contain information on the year and harvest of goods?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Must receipts contain information on performance guarantees?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Must receipts contain information on security interests over the goods?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
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</table>

**Prudential regulation**

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are financial institutions legally required to direct a certain share of their lending to the agricultural sector?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Can microfinance institutions take deposits?</td>
<td>No</td>
<td>Yes</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What is the minimum capital to establish a microfinance institutions (as multiple of income per capita)?</td>
<td>none</td>
<td>3737</td>
<td>n.a.</td>
<td>350.5</td>
<td>30.6</td>
</tr>
<tr>
<td>What is the mandatory capital adequacy ratio for microfinance institutions鲣 (%)</td>
<td>n.a.</td>
<td>15</td>
<td>n.a.</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Are provisioning rates for microfinance institutions different from those applied to commercial banks?</td>
<td>n.a.</td>
<td>Yes</td>
<td>n.a.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>What share of a loan must be covered by provisioning by financial institutions?</td>
<td>Full amount</td>
<td>Unsecured share</td>
<td>Unsecured share</td>
<td>Full amount</td>
<td>Unsecured share</td>
</tr>
</tbody>
</table>

**STRENGTHENING SEED SYSTEMS**

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the country have a seed policy document?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Does the country have intellectual property rights?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes. (continued on page 143)
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the current seed regulation allow inspectors, laboratories or seed enterprises to be accredited as third parties?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Requirements for evaluation and registration of new varieties</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Must all food crop varieties be registered to be legally sold?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>For applications to register a new variety, are field testing data from the breeder accepted as the official data?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is there an officially mandated variety release committee in the country?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>How many public sector representatives sit on the committee?</td>
<td>11&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4&lt;sup&gt;1&lt;/sup&gt;</td>
<td>9</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>How many private sector representatives sit on the committee?</td>
<td>none</td>
<td>none</td>
<td>3</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Does the country have a variety catalogue listing new commercial seed varieties?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Procedures and cost for evaluation and registration of new varieties</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many procedures does it take to evaluate and register a new variety?</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>What is the cost to register a new variety (as % of income per capita)?</td>
<td>no cost&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2.0</td>
<td>15.8</td>
<td>—</td>
<td>no cost</td>
</tr>
<tr>
<td>Availability of initial seed classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are private enterprises eligible to produce breeder/pre-basic seed of local public varieties for use in the domestic market?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are private enterprises eligible to produce foundation/basic seed of local public varieties for use in the domestic market?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Seed quality control requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is seed certification mandatory for all food seed crops to be sold on the domestic market?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>How many procedures does it take to get cereal seed locally certified?</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Are any programs in place to transfer certification activities (such as training, accreditation) to individuals in communities and villages?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>—</td>
<td>Yes</td>
</tr>
<tr>
<td>International and regional seed trade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In what (if any) regional harmonization scheme is the country a member?</td>
<td>COMESA seed harmonization</td>
<td>Central American Technical Regulations</td>
<td>EU certification equivalence</td>
<td>SADC Technical Agreements on Harmonization of Seed</td>
<td>none</td>
</tr>
<tr>
<td>In what (if any) international certification scheme is the country a member?</td>
<td>none</td>
<td>none</td>
<td>OECD</td>
<td>none</td>
<td>ISTA</td>
</tr>
</tbody>
</table>

**IMPROVING FERTILIZER SUPPLY**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the country produce fertilizer?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Are there fertilizer mix/blend plants in the country (public or private)?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Regulatory framework for fertilizer**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the country have a fertilizer strategy or policy directive?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are there national laws regulating fertilizer?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes. (continued on page 144)
<table>
<thead>
<tr>
<th><strong>Does the current seed regulation allow inspectors, laboratories or seed enterprises to be accredited as third parties?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Requirements for evaluation and registration of new varieties**

<table>
<thead>
<tr>
<th><strong>Must all food crop varieties be registered to be legally sold?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>For applications to register a new variety, are field testing data from the breeder accepted as the official data?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Is there an officially mandated variety release committee in the country?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>How many public sector representatives sit on the committee?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>6</td>
<td>10</td>
<td>7</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>How many private sector representatives sit on the committee?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>10</td>
<td>3</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Does the country have a variety catalogue listing new commercial seed varieties?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Procedures and cost for evaluation and registration of new varieties**

<table>
<thead>
<tr>
<th><strong>How many procedures does it take to evaluate and register a new variety?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>n.a.</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>What is the cost to register a new variety (as % of income per capita)?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Ukraine</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.6</td>
<td>n.a.</td>
<td>9.9</td>
<td>28.0</td>
<td>60.0</td>
<td></td>
</tr>
</tbody>
</table>

**Availability of initial seed classes**

<table>
<thead>
<tr>
<th><strong>Are private enterprises eligible to produce breeder/pre-basic seed of local public varieties for use in the domestic market?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Are private enterprises eligible to produce foundation/basic seed of local public varieties for use in the domestic market?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Seed quality control requirements**

<table>
<thead>
<tr>
<th><strong>Is seed certification mandatory for all food seed crops to be sold on the domestic market?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>How many procedures does it take to get cereal seed locally certified?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Are any programs in place to transfer certification activities (such as training, accreditation) to individuals in communities and villages?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**International and regional seed trade**

<table>
<thead>
<tr>
<th><strong>In what (if any) regional harmonization scheme is the country a member?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>COMESA seed harmonization</td>
<td>EU legislation on the marketing of seed and plant propagating material</td>
<td>COMESA seed harmonization</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>In what (if any) international certification scheme is the country a member?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISTA</td>
<td>none</td>
<td>OECD and ISTA</td>
<td>OECD and ISTA</td>
<td>OECD and ISTA</td>
<td></td>
</tr>
</tbody>
</table>

**IMPROVING FERTILIZER SUPPLY**

<table>
<thead>
<tr>
<th><strong>Domestic production and blending of fertilizer</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the country produce fertilizer?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Are there fertilizer mix/blend plants in the country (public or private)?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Regulatory framework for fertilizer**

<table>
<thead>
<tr>
<th><strong>Does the country have a fertilizer strategy or policy directive?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Are there national laws regulating fertilizer?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Registration of fertilizer</td>
<td>Ethiopia</td>
<td>Guatemala</td>
<td>Morocco</td>
<td>Mozambique</td>
<td>Nepal</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>---------</td>
<td>------------</td>
<td>-------</td>
</tr>
<tr>
<td>Must fertilizers be registered to be legally sold in the country?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>How many procedures does it take to register a fertilizer?</td>
<td>2</td>
<td>4</td>
<td>n.a.</td>
<td>n.a.</td>
<td>3</td>
</tr>
<tr>
<td>How much time does it take to register a fertilizer (in calendar days)?</td>
<td>120</td>
<td>154</td>
<td>n.a.</td>
<td>n.a.</td>
<td>1125</td>
</tr>
<tr>
<td>What is the total cost to register a fertilizer (in US$)?</td>
<td></td>
<td>323.3</td>
<td>n.a.</td>
<td>n.a.</td>
<td>4710</td>
</tr>
<tr>
<td>Once a fertilizer is registered, is its registration limited to a specific period?</td>
<td>No</td>
<td>Yes</td>
<td>n.a.</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>If so, how long is that period (in years)?</td>
<td>n.a.</td>
<td>10</td>
<td>n.a.</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Is there an official catalogue listing all registered fertilizers?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is the country party to a supranational agreement on the registration of fertilizer products?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Are new fertilizer products registered in other countries party to the agreement immediately accepted in the country, without further procedures?</td>
<td>n.a.</td>
<td>No</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Importing of fertilizer</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the government procure fertilizer?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Is the private sector allowed to import chemical fertilizer?</td>
<td>Yes*</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>How many procedures does it take to import fertilizer?</td>
<td>N.A*</td>
<td>8</td>
<td>—</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>How much time does it take to import fertilizer (in calendar days)?</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subsidies, taxes and tariffs on fertilizer</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a fertilizer subsidy scheme in place?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Are any tariffs or taxes levied on fertilizer?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality control of fertilizer</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the fertilizer law prohibit the sale of mislabeled fertilizer?</td>
<td>Yes</td>
<td>Yes</td>
<td>—</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the regulatory body have the authority to conduct quality inspections of fertilizer at the point of retail sale?</td>
<td>Yes</td>
<td>Yes</td>
<td>—</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the law require labeling information (for example, brand name, net weight, volume) on fertilizer containers?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the law require the label to include the results or effects that can be expected when fertilizer is used as directed?</td>
<td>Yes</td>
<td>No</td>
<td>—</td>
<td>No</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fertilizer use and soil health</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any soil testing labs in the country?</td>
<td>Yes</td>
<td>Yes</td>
<td>—</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What is the average fertilizer use rate (in kilograms per hectare)?</td>
<td>23</td>
<td>150</td>
<td>40</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Are there any extension activities to train farmers in the use of fertilizer?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes. (continued on page 146)
<table>
<thead>
<tr>
<th><strong>If so, are the provisions contained in a unified law or in multiple laws?</strong></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

| **Registration of fertilizer** |
|---|---|---|---|---|---|
| Must fertilizers be registered to be legally sold in the country? | Yes | Yes | Yes | Yes | Yes |
| How many procedures does it take to register a fertilizer? | 3 | 2 | 1 | 7 | 6 |
| How much time does it take to register a fertilizer (in calendar days)? | 105 | — | 60 | 853 | 595 |
| What is the total cost to register a fertilizer (in US$)? | 202.1 | 15.4 | no cost | 983.1 | 14,752.5 |
| Once a fertilizer is registered, is its registration limited to a specific period? | Yes | Yes | Yes | Yes | Yes |
| If so, how long is that period (in years)? | 3 | 3 | 10 | 3 | 10 |
| Is there an official catalogue listing all registered fertilizers? | Yes | No | Yes | Yes | Yes |
| Is the country party to a supranational agreement on the registration of fertilizer products? | No | No | Yes | No | No |
| Are new fertilizer products registered in other countries party to the agreement immediately accepted in the country, without further procedures? | n.a. | n.a. | Yes | n.a. | n.a. |

| **Importing of fertilizer** |
|---|---|---|---|---|---|
| Does the government procure fertilizer? | No | Yes | No | Yes | No |
| Is the private sector allowed to import chemical fertilizer? | Yes | No | Yes | Yes | Yes |
| How many procedures does it take to import fertilizer? | 4 | 4 | 4 | 7 | — |
| How much time does it take to import fertilizer (in calendar days)? | 43 | 13 | 6 | 37 | — |

| **Subsidies, taxes and tariffs on fertilizer** |
|---|---|---|---|---|---|
| Is there a fertilizer subsidy scheme in place? | Yes | Yes | No | No | No |
| Are any tariffs or taxes levied on fertilizer? | Yes | No | Yes | No | Yes |

| **Quality control of fertilizer** |
|---|---|---|---|---|---|
| Does the fertilizer law prohibit the sale of mislabeled fertilizer? | Yes | Yes | Yes | Yes | Yes |
| Does the regulatory body have the authority to conduct quality inspections of fertilizer at the point of retail sale? | Yes | Yes | Yes | Yes | Yes |
| Does the law require labeling information (for example, brand name, net weight, volume) on fertilizer containers? | Yes | Yes | Yes | Yes | Yes |
| Does the law require the label to include the results or effects that can be expected when fertilizer is used as directed? | Yes | Yes | Yes | No | No |

| **Fertilizer use and soil health** |
|---|---|---|---|---|---|
| Are there any soil testing labs in the country? | Yes | Yes | Yes | Yes | Yes |
| What is the average fertilizer use rate (in kilograms per hectare)? | 150 | — | 131 | 2 | 78 |
| Are there any extension activities to train farmers in the use of fertilizer? | Yes | Yes | Yes | Yes | Yes |

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes. (continued on page 147)
### TRANSPORTING AGRICULTURAL GOODS

#### Licensing requirements to operate a trucking company

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>What type of licensing is required to transport agricultural products in the domestic market?</td>
<td>Specific license or permit</td>
<td>Specific license or permit</td>
<td>Registry or notification</td>
<td>Specific license or permit</td>
<td>Specific license or permit</td>
</tr>
<tr>
<td>How many procedures does it take to obtain the required license / permit / authorization?</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>How much time does it take to obtain the required license / permit / authorization (in calendar days)?</td>
<td>2</td>
<td>30</td>
<td>18</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>What is the cost to obtain the required license / permit / authorization (as % of income per capita)?</td>
<td>11.1</td>
<td>0.7</td>
<td>no cost</td>
<td>44.7</td>
<td>48.8</td>
</tr>
<tr>
<td>Is such a license granted to all companies meeting the technical, safety and financial requirements?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Does a single license allow operation of several trucks?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Are the requirements that a firm must fulfill to obtain or renew a license publicly available?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Must license applicants be informed of decisions within a certain time frame?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is the same license required if a company is transporting its own products?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Are there any requirements specific to the transport of agricultural / perishable goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Must trucks or trucking companies be registered with trucking associations to legally operate?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Pricing and freight allocation

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the government regulate or influence prices of agricultural transport services (for example, through pricing guidelines)?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Do transport associations regulate or influence prices of agricultural transport services (for example, through pricing guidelines)?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is an institutionalized queuing system (tour de rôle) used to allocate agricultural freight?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is an institutionalized intermediary system (bourse de fret) used to allocate agricultural freight?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Axle-load regulation

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an official set of axle-load regulations?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What are the axle-load limits per axle and in total (in metric tons)?</td>
<td>n.a.; 40</td>
<td>8; 41</td>
<td>11.5; n.a.</td>
<td>9; 56</td>
<td>10.2; n.a.</td>
</tr>
<tr>
<td>Is there a fine if failing to comply with axle-load regulations?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are there restrictions to truck circulation (for example, during certain hours or days)?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### Mutual recognition of standards and foreign trucking competition

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an international or bilateral agreement with the largest neighboring agricultural trading partner granting harmonization or mutual recognition of axle-load regulations?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes.
## TRANSPORTING AGRICULTURAL GOODS

<table>
<thead>
<tr>
<th>Licensing requirements to operate a trucking company</th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>What type of licensing is required to transport agricultural products in the domestic market?</td>
<td>State concession or franchise</td>
<td>Specific license or permit</td>
<td>Specific license or permit</td>
<td>Specific license or permit</td>
<td>No license</td>
</tr>
<tr>
<td>How many procedures does it take to obtain the required license / permit / authorization?</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>n.a.</td>
</tr>
<tr>
<td>How much time does it take to obtain the required license / permit / authorization (in calendar days)?</td>
<td>270</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>n.a.</td>
</tr>
<tr>
<td>What is the cost to obtain the required license / permit / authorization (as % of income per capita)?</td>
<td>1.4</td>
<td>24.9</td>
<td>0.2</td>
<td>21.6</td>
<td>n.a.</td>
</tr>
<tr>
<td>Is such a license granted to all companies meeting the technical, safety and financial requirements?</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>n.a.</td>
</tr>
<tr>
<td>Does a single license allow operation of several trucks?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>n.a.</td>
</tr>
<tr>
<td>Are the requirements that a firm must fulfill to obtain or renew a license publicly available?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must license applicants be informed of decisions within a certain time frame?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>n.a.</td>
</tr>
<tr>
<td>Is the same license required if a company is transporting its own products?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>n.a.</td>
</tr>
<tr>
<td>Are there any requirements specific to the transport of agricultural / perishable goods?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>n.a.</td>
</tr>
<tr>
<td>Must trucks or trucking companies be registered with trucking associations to legally operate?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### Pricing and freight allocation

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the government regulate or influence prices of agricultural transport services [for example, through pricing guidelines]?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Do transport associations regulate or influence prices of agricultural transport services [for example, through pricing guidelines]?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is an institutionalized queuing system [tour de rôle] used to allocate agricultural freight?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is an institutionalized intermediary system [bourse de fret] used to allocate agricultural freight?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### Axle-load regulation

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an official set of axle-load regulations?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What are the axle-load limits per axle and in total (in metric tons)?</td>
<td>13.5; 45</td>
<td>10; 53</td>
<td>11.5; 40</td>
<td>10; 56</td>
<td>11; 46</td>
</tr>
<tr>
<td>Is there a fine if failing to comply with axle-load regulations?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are there restrictions to truck circulation (for example, during certain hours or days)?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Mutual recognition of standards and foreign trucking competition

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an international or bilateral agreement with the largest neighboring agricultural trading partner granting harmonization or mutual recognition of axle-load regulations?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes. (continued on page 149)
<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the country party to an international/multilateral transport agreement or convention (for example, International Road Transport)?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Are foreign trucking companies allowed to transport goods into the country?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are foreign trucking companies allowed to transport goods back from the country (backhauling)?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are foreign trucking companies allowed to transport goods from the country into a third country (triangular rights through country)?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Are foreign trucking companies allowed to transit through the country?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Are foreign trucking companies allowed to transport goods between 2 points within the country (cabotage)?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Monitoring of road access, density and quality**

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the government use indicators to monitor access to roads?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the government use indicators to monitor road density?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the government use indicators to monitor quality of roads (for example, international roughness index)?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Selling agricultural goods**

Largest neighboring agricultural trading partner
- Djibouti
- El Salvador
- Spain
- South Africa
- India

**Cross-border agricultural exports**

*(Assumption: The following questions relate to trade with the largest neighboring agricultural trading partner identified above)*

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is an export declaration required for agricultural goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is a certificate of origin required for exporting agricultural goods?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>How many other specific documents must be completed for each shipment of staple cereals?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>How many procedures does it take to export a shipment of staple cereals?</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Is the use of a customs broker mandatory for import and export?</td>
<td>Yes, both</td>
<td>No</td>
<td>Yes, both</td>
<td>Yes, both</td>
<td>No</td>
</tr>
<tr>
<td>Is general exporter accreditation required?</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Is agriculture-specific exporter accreditation required?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**SPS regulation of agricultural trade**

*(Assumption: The following questions relate to trade with the largest neighboring agricultural trading partner identified above)*

<table>
<thead>
<tr>
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<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a phytosanitary certificate required for exporting agricultural goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What is the cost to obtain a phytosanitary certificate for exporting staple cereal (as % of income per capita)?</td>
<td>0.4</td>
<td>0.2</td>
<td>0.6</td>
<td>5.9</td>
<td>0.2</td>
</tr>
<tr>
<td>How much time does it take to obtain a phytosanitary certificate (in calendar days)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Is sanitary and phytosanitary (SPS) import clearance required for agricultural goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What is the cost to obtain SPS import clearance, including inspection (as % of income per capita)?</td>
<td>0.2</td>
<td>0.9</td>
<td>0.5</td>
<td>6.4</td>
<td>0.3</td>
</tr>
</tbody>
</table>

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<td>Yes</td>
<td>Yes</td>
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<td>No</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are foreign trucking companies allowed to transport goods from the country into a third country (triangular rights through country)?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are foreign trucking companies allowed to transit through the country?</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Are foreign trucking companies allowed to transport goods between 2 points within the country (cabotage)?</td>
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<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Monitoring of road access, density and quality**

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<th>Ukraine</th>
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</thead>
<tbody>
<tr>
<td>Does the government use indicators to monitor access to roads?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Does the government use indicators to monitor road density?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the government use indicators to monitor quality of roads (for example, International Roughness Index)?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**SELLING AGRICULTURAL GOODS**

<table>
<thead>
<tr>
<th>Selling agricultural goods</th>
<th>Indonesia</th>
<th>Uganda</th>
<th>France</th>
<th>Kenya</th>
<th>Russian Federation</th>
</tr>
</thead>
</table>

**Cross-border agricultural exports**

(Assumption: The following questions relate to trade with the largest neighboring agricultural trading partner identified above)

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is an export declaration required for agricultural goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is a certificate of origin required for exporting agricultural goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>How many other specific documents must be completed for each shipment of staple cereals?</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>How many procedures does it take to export a shipment of staple cereals?</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Is the use of a customs broker mandatory for import and export?</td>
<td>Yes, import only</td>
<td>Yes, both</td>
<td>n.a.</td>
<td>Yes, both</td>
<td>Yes, both</td>
</tr>
<tr>
<td>Is general exporter accreditation required?</td>
<td>Yes</td>
<td>No</td>
<td>n.a.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Is agriculture-specific exporter accreditation required?</td>
<td>Yes</td>
<td>No</td>
<td>n.a.</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**SPS regulation of agricultural trade**

(Assumption: The following questions relate to trade with the largest neighboring agricultural trading partner identified above)

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is a phytosanitary certificate required for exporting agricultural goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What is the cost to obtain a phytosanitary certificate for exporting staple cereal (as % of income per capita)?</td>
<td>0.1</td>
<td>0.05</td>
<td>n.a.</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>How much time does it take to obtain a phytosanitary certificate (in calendar days)?</td>
<td>3</td>
<td>2</td>
<td>n.a.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Is sanitary and phytosanitary (SPS) import clearance required for agricultural goods?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What is the cost to obtain SPS import clearance, including inspection (as % of income per capita)?</td>
<td>0.2</td>
<td>no cost</td>
<td>n.a.</td>
<td>0.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes.

(continued on page 151)
<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much time does it take to obtain SPS import clearance, including inspection (in calendar days)?</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Are internationally (ISO) accredited laboratories in the country public, private or both?</td>
<td>Private</td>
<td>Both</td>
<td>Both</td>
<td>Private</td>
<td>Both</td>
</tr>
</tbody>
</table>

**Information availability and marketing requirements**

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is information on fees for phytosanitary certificates publicly available?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is information on fees for SPS import clearance publicly available?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are there specific regulations on the labeling or packaging of processed agricultural products?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Government promotion of agricultural marketing**

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a marketing department in the ministry of agriculture or another relevant ministry?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is there a government strategy paper on the marketing of agricultural commodities?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is there a government extension program on the marketing of agricultural commodities?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Collective action to supply markets**

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a law on farmer organizations?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**CONTRACTING AGRICULTURAL PRODUCTION**

**Regulatory framework for contract farming**

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an ad hoc legislation regulating contract farming?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>If there is no contract farming legislation, are there any plans to draft one?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>What other law or set of laws govern contract farming?</td>
<td>Civil Code</td>
<td>Civil Code</td>
<td>Contract Law</td>
<td>Civil Code</td>
<td>Civil Code; Contract Law</td>
</tr>
</tbody>
</table>

**Contract specifications**

<table>
<thead>
<tr>
<th></th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of the product’s quality</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (m)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Criteria and method for quality control</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Date of quality control</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Location of quality control</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Duration of quality control</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Parties to be present during quality control</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Who is responsible for the quality control costs</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Consequences for noncompliance</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Quantity to be produced</td>
<td>No</td>
<td>No</td>
<td>Yes (m)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Explanation of cultivation practices</td>
<td>No</td>
<td>No</td>
<td>Yes (m)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Date of delivery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (m)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Location of delivery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (m)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Method of delivery</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Who is responsible for transport arrangements and related costs</td>
<td>Yes (m)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

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<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much time does it take to obtain SPS import clearance, including inspection [in calendar days]?</td>
<td>4</td>
<td>3</td>
<td>n.a.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Are internationally (ISO) accredited laboratories in the country public, private or both?</td>
<td>Both</td>
<td>None</td>
<td>Private</td>
<td>Both</td>
<td>Both</td>
</tr>
</tbody>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is information on fees for SPS import clearance publicly available?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Are there specific regulations on the labeling or packaging of processed agricultural products?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Government promotion of agricultural marketing

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a marketing department in the ministry of agriculture or another relevant ministry?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is there a government strategy paper on the marketing of agricultural commodities?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Is there a government extension program on the marketing of agricultural commodities?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Collective action to supply markets

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a law on farmer organizations?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### CONTRACTING AGRICULTURAL PRODUCTION

#### Regulatory framework for contract farming

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an ad hoc legislation regulating contract farming?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>If there is no contract farming legislation, are there any plans to draft one?</td>
<td>No</td>
<td>No</td>
<td>n.a.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>What other law or set of laws govern contract farming?</td>
<td>Civil Code</td>
<td>Civil Code; Contract Law</td>
<td>Civil Code</td>
<td>Contracts Act; Sale of Goods Act</td>
<td>Civil Code; Economic Code</td>
</tr>
</tbody>
</table>

#### Contract specifications

<table>
<thead>
<tr>
<th></th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the law establish a mandatory/default rule on the following?</td>
<td>Yes [m]</td>
<td>Yes</td>
<td>Yes [m]</td>
<td>No</td>
<td>Yes [m]</td>
</tr>
<tr>
<td>Definition of the product’s quality</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Criteria and method for quality control</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Date of quality control</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Location of quality control</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Duration of quality control</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Parties to be present during quality control</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Who is responsible for the quality control costs</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Consequences for noncompliance</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Quantity to be produced</td>
<td>No</td>
<td>No</td>
<td>Yes [m]</td>
<td>No</td>
<td>Yes [m]</td>
</tr>
<tr>
<td>Explanation of cultivation practices</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Date of delivery</td>
<td>Yes</td>
<td>No</td>
<td>Yes [m]</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Location of delivery</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes [m]</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Method of delivery</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Who is responsible for transport arrangements and related costs</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

n.a. = not applicable; — = not available; (m) = mandatory. For more details, see the Data notes. (continued on page 153)
<table>
<thead>
<tr>
<th>Procedural requirements for contract farming</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must buyers register with a statutory body to participate in contract farming?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Must producers register with a statutory body to participate in contract farming?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Must the contract be registered with a statutory body?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dispute resolution mechanisms</th>
<th>Ethiopia</th>
<th>Guatemala</th>
<th>Morocco</th>
<th>Mozambique</th>
<th>Nepal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an alternative dispute resolution (ADR) mechanism to address disputes arising from contract farming arrangements?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Is mediation required before arbitral or judicial proceedings?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

| ELECTRIFYING RURAL AREAS | | | | | |
|--------------------------|---|---|---|---|
| Access to electricity | | | | |
| What is the share of population that has access to electricity (as % of total population)? | 23.3 | 81.9 | 98.9 | 20.2 | 76.3 |
| What is the share of population that has access to electricity (as % of rural population)? | 11.0 | 69.0 | 97.0 | 5.0 | 72.0 |

| CONNECTING FARMERS TO INFORMATION | | | | | |
|-----------------------------------|---|---|---|---|
| Access to ICT services | | | | |
| How many mobile cellular subscriptions are there (per 100 inhabitants)? | 22.3 | 137.8 | 119.9 | 36.2 | 59.6 |
| How many active mobile broadband subscriptions are there (per 100 inhabitants)? | 0.4 | 4.5 | 10.1 | 1.8 | — |

Note:
- Information for Ethiopia is based on the 2012 variety catalog pending the full implementation of the 2013 Seed Proclamation.
- In Guatemala the variety release committee is informally organized.
- While the registration of a new variety is currently free in Ethiopia, the 2013 Seed Proclamation will set a fee.
- The registration period is indefinite if the fertilizer is registered in the EU registry.
- Import of fertilizer is allowed for firm consumption only and is not for resale.
- Only one company is allowed to import fertilizer.
- Not applicable because Spain and France belong to the European Union internal market and there is no export/import process as such.
- Fees differ between staple cereal (listed above), fruits (1.1% income per capita) and vegetables (0.9% income per capita).
- Fees differ between staple cereal (listed above), fruits (1.1% income per capita) and vegetables (0.9% income per capita).
- For more details, see the data notes. The exchange rates and income per capita data used in calculations are from the World Bank’s World Development Indicators 2014 (where available).
<table>
<thead>
<tr>
<th>Consequences for untimely or partial delivery</th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

| Price determination                           | Yes[m]     | Yes    | Yes[m] | Yes    | Yes[m] |
| Time of payment                               | Yes        | Yes    | Yes[m] | No     | Yes     |
| Place of payment                              | Yes        | Yes    | Yes[m] | No     | No      |
| Consequences for untimely or partial payment  | Yes        | Yes    | Yes    | Yes    | Yes     |
| Force majeure clause                          | No         | Yes    | No     | No     | Yes     |
| Contract duration                             | No         | No     | Yes[m] | No     | Yes[m] |

**Procedural requirements for contract farming**

| Must buyers register with a statutory body to participate in contract farming? | No | No | No | No | No |
| Must producers register with a statutory body to participate in contract farming? | No | No | No | No | No |
| Must the contract be registered with a statutory body? | No | No | No | No | No |

**Dispute resolution mechanisms**

| Is there an alternative dispute resolution (ADR) mechanism to address disputes arising from contract farming arrangements? | No | No | Yes | No | No |
| Is mediation required before arbitral or judicial proceedings? | No | No | No | No | No |

**ELECTRIFYING RURAL AREAS**

<table>
<thead>
<tr>
<th>Access to electricity</th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the share of population that has access to electricity (as % of total population)?</td>
<td>70.2</td>
<td>—</td>
<td>99.9</td>
<td>14.9</td>
<td>99.9</td>
</tr>
<tr>
<td>What is the share of population that has access to electricity (as % of rural population)?</td>
<td>52.0</td>
<td>—</td>
<td>99.9</td>
<td>7.0</td>
<td>99.8</td>
</tr>
</tbody>
</table>

**CONNECTING FARMERS TO INFORMATION**

<table>
<thead>
<tr>
<th>Access to ICT services</th>
<th>Philippines</th>
<th>Rwanda</th>
<th>Spain</th>
<th>Uganda</th>
<th>Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many mobile cellular subscriptions are there (per 100 inhabitants)?</td>
<td>106.5</td>
<td>49.7</td>
<td>108.4</td>
<td>45.0</td>
<td>130.3</td>
</tr>
<tr>
<td>How many active mobile broadband subscriptions are there (per 100 inhabitants)?</td>
<td>3.8</td>
<td>3.3</td>
<td>53.4</td>
<td>7.6</td>
<td>5.5</td>
</tr>
</tbody>
</table>
Acknowledgments

The Enabling the Business of Agriculture 2015 report would not be possible without the expertise and generous input of a network of more than 800 local partners, including legal experts, business associations, private sector representatives, farmers’ organizations, academics, government officials and other professionals routinely administering or advising on the policy, legal and regulatory requirements in the 10 countries covered during the pilot phase. Please note that the data published in the report and online represent a unified response based on the answers the team received from various contributors and sources, and are not attributed to any particular contributor. Wherever possible, answers were corroborated by official fee schedules, laws, regulations and public notices.

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Damian Milverton, Alison Strong, and Dina Towbin edited the manuscript. The Word Express, Inc. designed the report and the graphs.

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Plaza Forwarding SL
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AgroVestigio
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ASEMTRAEX
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Nicolas Nagoreles
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Oscar Lanzaro Pug
Rocasol
Jose Rivera
TRACASA
Vickoil
Yasa

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Cholóe Uganda
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Otis Gorden Seeds
Nicholas Rodeyns
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Muxaming Group
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Burjula Chemical Industries Ltd
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Svitlana Gusak
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Company MAIS
Roman Ognevyyuk
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