Baseline Study of Contract Farming in Soy, Oil Palm, Beef and Sugar Cane Supply Chains in Brazil, Colombia and Ecuador

REPORT TO

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Executive Summary

In the last three decades, increasing global demand for agricultural commodities has driven an expansion of the modern agribusiness production model into developing countries, presenting significant threats to smallholders who can face either displacement by the advancing agroindustrial frontier and or difficulties in meeting the rigorous requirements of the formalized global market. Contract farming has come to be seen as a promising rural development strategy with the potential to integrate smallholders into modern supply chains and lead to significant improvements in income and quality of life.

Although contract farming presents an important opportunity for smallholder friendly rural development, it remains a controversial arrangement in much of the developing world. Contract farming arrangements have evolved in the context of the verticalization of agroindustry precisely to give these giant companies flexibility in labor costs while also reducing market and production risks by shifting these costs and risks to independent farmers. Critics argue that smallholders are often at a disadvantage when negotiating contracts with large companies and often assume a disproportionate share of risks while receiving a less than proportionate share of income. From a third perspective, contract farming is not necessarily either a driver of sustainable development or underdevelopment; much depends on the degree to which contracts address smallholder needs and this in turn often depends on the existence of local governance conditions that can help to ensure the negotiation and implementation of equitable contracts.

This report provides an overview of contract farming in the production of four major commodities (soy, sugar cane, beef and palm oil) in Brazil, Colombia and Ecuador. The purpose of the report is to identify examples of successful contract farming arrangements, the key ingredients of these arrangements, and present recommendations for future work on contract farming. The report is a desk study and draws on published and unpublished articles, telephone interviews, government reports and census documents. Research involved no fieldwork or face-to-face interviews. The numbers used in this report are for the most part those we found in the documents we consulted and should be considered more or less illustrative of the findings in this report, to de refined or substituted in a subsequent phase of the research.

Overview of Contract Farming

Based on the contract farming literature and the survey of CF arrangements in the three countries, we identify five general types of contract farming arrangements, characterized by the intensity of company investment in farmer production. The type of arrangement employed varies greatly among countries and commodities and in most cases several different CF arrangements can be found for each commodity.

1. **Market Provision:** The company agrees to purchase a given quantity and quality of product from the farmer for a given price and on a given date.
2. **Short-Term Resource Provision:** The company supplies short-term training to the farmer and may advance some inputs.
3. **Long-Term Resource Provision:** The company supplies long-term technical assistance, inputs and/or credit to the farmer.
4. **Management Specification:** The farmer receives technical assistance and inputs, and must follow company production protocols and meet production deadlines.
5. **Land Lease:** The farmer rents land to the company, which produces the crop.

Contract farming in the soybean sector: No information was found on contract farming arrangements in the soybean sector in Colombia and Ecuador. Smallholders in the latter are responsible for 27% of soybean production. In Brazil smallholders (up to 50 ha) accounted for only 10% of soybean production, with the majority of production coming from farms greater than 500 ha. Contract farming arrangements are found in the soy sector, with the first three types of contracts Market Provision (1), Short-Term Resource Provision contracts (2), and Long-Term Resource Provision contracts (3) predominating. Soybeans are responsible for 85% of oil seed production supplying the Brazilian National Biodiesel Program (PNPB). The PNPB includes a Contract Farming component designed to integrate small-scale producers into oil seed supply chains.

Contract farming in the sugar cane sector: All five types of contract farming can be found in sugar cane production in both Brazil and Colombia. In Brazil, smallholders (up to 50 ha) account for only 5.6% of production. Smallholders in newer areas rely on Management Specification (4) or Land Lease Contracts (5) because they prefer

to rent out the land than to farm themselves and earn higher returns than they would from raising beef cattle. In areas with a tradition of sugar cane production, lower company investment contract agreements predominate, such as Short and Long Term Resource Provision Contracts (Júnior 2008). In Colombia, smallholders play a significant role in sugar cane cultivation with smallholders (up to 50 ha) accounting for 49% of all farms, but only 13% of total area. Smallholders are organized into some 100 cooperatives, and are represented by the union Procaña. In Ecuador, smallholders account for only 6% of production, and tend to operate with Market Provision contracts. Contracting sugar cane mills are more likely to use types Resource Provision Contracts with medium- and large-scale farmers because investments to these producers entail less risk.

Contract farming in the beef sector: None of the countries surveyed here have significant traditions of contract farming in the beef sector, although they are prevalent in the dairy sector. Raising cattle for beef and milk is a ubiquitous feature of small scale farming in Brazil, involving 2.14 million small farms, 80% of the total, which account for only 17% of the total herd. While CF arrangements are rare in Brazil and Colombia, a variety of arrangements can be found involving farmers and owners of cattle, although these arrangements rarely involve technical assistance and inputs. The Colombian Federation of Ranchers (Federación Colombiana de Ganaderos, or FEDEGAN), Nestlé and the Colombia government are each implementing programs to increase the productivity and sustainability of beef and dairy production.

Contract farming in the palm oil sector: Across our three countries, this sector employs mainly Market Provision and Short- and Long-Term Resource Provision types of contracts. With the inclusion of palm oil in the PNPB, smallholders now have access to Long-term Resource Provision Contracts with local mills participating in the Program and can qualify for low-interest loans via the Biodiesel Program of PRONAF (Programa Brasileiro de Produção de Biodiesel). The situation is somewhat different in Colombia and Ecuador, where smallholders account for about 15% of the total area in production. In Ecuador, mill over-capacity has created a sellers' market, so farmers prefer to sell to mills without involving CF arrangements. CF arrangements are varied in Colombia, both in terms of type and success. Through Resource Provision contracts, limited technical assistance is available, but productivity is low and many smallholders cite the lack of assistance as reason for not meeting production targets.

Successful Contract Farming

While there are significant differences among Brazil, Colombia and Ecuador in terms of their population, land area and size of their agricultural sectors, smallholders in the three countries face similar barriers to gaining access to or competing in modern markets. Lack of access to credit and technical assistance, land tenure irregularities, deficiencies in basic infrastructure, inaccessible and unresponsive government agencies, and lack of organizational and business capacity all represent significant bottlenecks. As supply chains continue to expand, formalize and place increasingly rigorous social and environmental demands on producers, these bottlenecks may prevent smallholder access to global markets while also squeezing them out of national and even local markets.

Contract farming represents a promising strategy for addressing many barriers to improving smallholder efficiency and market access both directly and indirectly. Contract farming gives agribusiness companies a vested interest in ensuring that their suppliers have the necessary skills, equipment and documentation needed to comply with regulations and standards. Through commercial partnerships with companies smallholders can gain access to key inputs, technical assistance, and finance that governments are not providing as well as access to modern supply chains. Producer organizations can also work together with companies and NGO partners to pressure government agencies to resolve infrastructure and regulatory problems. These groups can also work with government agencies to develop the governance conditions and institutional capacity and arrangements that foster a culture and practice of equitable contracts and between smallholder organizations and agribusiness companies.

Important CF Support programs: Brazil, Colombia and Ecuador

All three countries have one or more programs that support contract farming initiatives. The programs described here combine to varying degrees two overlapping approaches to promoting contract farming initiatives: a supply chain approach in which the focus is on integrating smallholders into specific commodity supply chains, and regional approaches, which consider supply chains within their broader enabling environment.

Brazil: The PNPB is the major government program supporting contract farming as a mechanism for integrating smallholders into the oil seed supply chain for biodiesel production. The contract farming component is based on the Social Fuel Certificate created by the Ministry of Agrarian Development. Financing is provided by a special biodiesel program of the National Program for Family Agriculture (PRONAF). The PNPB involves a number of different oil seeds, including soybeans, sunflower seeds, castor seed, oil palm, peanuts, cotton seed and *Jatropha curcas* (Curcas Nut). Of these, soybeans are the most important, accounting for 80-85% of the oil used for biodiesel production. Oil seed production under the program is organized into "Biodiesel Production Poles". This regional approach is intended to increase the number of small-scale farmers in the PNPB and strengthen rural co-operatives and associations.

Colombia: The main government program in support of contract farming is the Proyecto de Apoyo a Alianzas Productivas (PAAP). The PAAP promotes the establishment of productive partnerships between organized small-scale farmers and private companies, and also involves other relevant stakeholders such as government agencies, NGOs and other members of the supply chain. This is perhaps the most important CF support program in Latin America, and this model has been disseminated to other Latin American countries. In Colombia partnerships involve a large number of agricultural, forest and animal products. By January 2012, 369 partnerships were under implementation, involving 26,003 smallholder families, 50,817 hectares and a total investment of roughly US$ 422 million, of which slightly less than 25% was provided by the government. The program operates in 27 of 31 Departments and in 350 municipalities.

Ecuador: *Plataformas* began in 1998 as part of the Papa Andina Partnership Program (PAPP), an applied research program funded by the International Potato Center and the Swiss Agency for Development and Cooperation. Since then, it has evolved into a process involving multiple stakeholders and has led to various commercial, technological and institutional innovations. The logic of PAPP was based on the idea that incorporating smallholders into market chains involves more than providing technical assistance to increase productivity. The main objective of the *Plataformas* program was to make smallholder potato producers a viable option for high-value buyers by reducing transaction and production costs. The *Plataformas* program has had a significant impact on smallholder production and income and has also led to the creation of a national organization to support joint marketing activities called the Consortium of Small Potato Producers (CONPAPA).

Recommendations

The preliminary conclusion of this initial survey of contract farming in the three countries is that CF arrangements of varying types are widespread throughout the agricultural sectors of each country, but vary in their relative importance across the range of crops and livestock produced. In addition, based on the limited information we were able to find, CF arrangements do seem to have the potential to contribute significantly to improving incomes and quality of life of small-scale farmers and could play a significant role in rural development strategies for smallholders. Based on the preliminary results of this desk study, we make the following recommendations:

1. **Develop a better understanding of the state of small-scale farming and factors contributing to the performance of contract farming:** While CF arrangements are wide-spread, there is also considerable distrust of contract farming in Brazil and many other Latin American countries due to long histories of rural conflict and traditions of debt peonage. These views are often supported by selective use of the mixed results achieved in many CF experiences. There is a critical need for a balanced discussion of the role of contract farming in smallholder rural development, an analysis of factors that influence the performance of CF arrangements for different commodities and more case studies of contract farming arrangements in specific commodities that can assist practitioners in developing equitable contracts between companies and smallholder organizations.

2. **Design and implement programs to support contract farming:** There is a need to develop programs that can foster the development of contract farming in the production of different crops and livestock. The PAAP of Colombia appears to be an especially promising model for the development of equitable CF arrangements involving companies and farmers for a wide range of commodities. Towards this end, more investment is needed in developing the capacity of key government, private sector and smallholder institutions so they can engage in and/or support the development of equitable CF arrangements. Programs should also promote greater communication and exchange of experiences between CF farmers, companies and policy makers.

3. **Align contract farming with low emissions rural development:** Contract farming has the potential to redirect high emissions land use strategies based on shifting cultivation to more intensive and diversified farming strategies. It can provide the necessary technical assistance, inputs and finance to improve the productivity

and sustainability of small scale production while also integrating them into sustainable supply chains. Success in achieving CF potential, however, depends to a large degree on government commitment to creating adequate enabling conditions.

Contract Farming, Deforestation and Low Emissions Rural Development

Oil Palm: In the context of Sharp's objectives of promoting smallholder development while reducing deforestation, oil palm production is probably the most promising alternative for integrating small-scale producers into sustainable supply chains, especially as oil palm production is expanding rapidly in tropical forest regions of all three countries. The crop seems to be appropriate for small-scale production and can be integrated into diversified household economic strategies that avoid over-dependence on oil palm income, provide for subsistence security and enable producers to adjust to price fluctuations. However, the viability of smallholder production depends on the provision of adequate technical assistance and high quality varieties and the negotiation of equitable contracts that adequately protect smallholders from market and production risks.

Smallholder Beef Production: The most strategic sector for addressing the combined objectives of reducing deforestation and promoting smallholder development through contract farming is smallholder beef production. All three countries have significant numbers of smallholders involved in raising cattle for beef and milk. While contract farming is widespread in the dairy industry, it is far less prevalent in raising beef cattle. There is an urgent need to develop programs for promoting contract farming type arrangements in smallholder beef production that address the problems of low productivity and income, and high rates of deforestation and forest degradation that are associated with smallholder livestock production in frontier regions.

Contract farming and Smallholder Colonization: In all three countries there are significant flows of smallholders out of densely populated areas into frontier regions of the Amazon. Contract farming could play a critical role in helping to redirect this process. A frontier development program with a strong CF element could help colonists make the transition from high emissions land use strategies based on shifting cultivation to more intensive farming strategies that involve different combinations of annual and perennial crop production, small and large animal husbandry, silviculture and management of forest resources.

Conclusion

Contract farming is widespread in the countries studied here, with contractual arrangements varying greatly among countries and commodities. While contract farming has the potential to have a net positive role in smallholder development, this will depend on the regional governance conditions, institutional capacity, productive infrastructure and supporting programs and policies that can foster development of successful and equitable contract farming arrangements.

List of Acronyms

ANCUPA	Asociación Nacional de Cultivadores de Palma Africana (National Associate of Africa Palm Cultivators), Ecuador
BASA	Banco da Amazônia (Bank of the Amazon), Brazil
CAR	Cadastro Rural Ambiental (Rural Environmental Registry), Brazil
CF	Contract Farming
CINCAE	Centro de Investigación de la Caña de Azúcar del Ecuador (Sugar Cane Research Centre of Ecuador)
CONPAPA	Consorcio de Productores de Papa (Consortium of Small Potato Producers), Ecuador
FEDEGAN	Federación Colombiana de Ganaderos (Colombian Federation of Ranchers)
FEDEPAL	Fundación de Fomento de Exportaciones de Aceite de Palma (Foundation for the Promotion of Palm Oil Exportations), Ecuador
FEDEPALMA	La Federación Nacional de Cultivadores de Palma de Aceite (The National Federation of Oil Palm Cultivators), Colombia
FINAGRO	Fondo para el Financiamiento del Sector Agropecuario (Fund for the Financing of the Agricultural Sector), Colombia
IFAD	International Fund for Agricultural Development
IBGE	Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics)
MADR	Ministério de Agricultura y Desarrollo Rural (Department of Agriculture and Rural Development), Colombia
MDA	Ministério do Desenvolvimento Agrário (Ministry of Agrarian Development), Brazil
PAAP	Proyecto de Apoyo a Alianzas Productivas (Productive Partnership Support Program), MADR, Colombia
PAPP	Papa Andina Partnership Program, Ecuador
PNPB	Programa Nacional para Produção e Uso do Biodiesel (National Program for the Production and Use of Biodiesel), Brazil
PRONAF	Programa Nacional de Fortalecimento da Agricultura Familiar (National Program for the Strengthening of Family Agriculture), MDA, Brazil
SAGRI	Secretaria de Estado da Agricultura do Pará (Pará State Secretary of Agriculture), Brazil
SEBRAE	Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Brazilian Service of Support for Micro and Small Businesses)

1. Introduction

In recent decades contract farming has come to be seen as a promising rural development strategy with the potential to modernize smallholder production systems, increasing efficiency, product quality and farm income (Barrett et al. 2012). Rather than seeing the global expansion of agribusiness as a threat to smallholders, proponents see contracts between smallholders and agribusiness companies as an opportunity to harness this expansion via a smallholder friendly rural development strategy that could significantly improve the incomes and quality of life of rural smallholders throughout the developing world (ODI 2013, Prowse 2012).

Contract farming (CF) can be a quite controversial subject in much of the developing world, however (Echánove and Steffen 2005, Little and Watts 1994, Cahyadi and Waibel 2011). Critics argue that contract farming is often just another way to exploit smallholders who are inherently at a disadvantage in negotiating contracts with businesses. Power differentials and limited business understanding and skills can hinder smallholder ability to negotiate and execute equitable contracts with agribusiness companies (Gwynne 1999, Murray 1997). From a third perspective, the benefits of contract farming depend on how well contractual arrangements take into account smallholder interests. So, whether or not contract farming can be beneficial to smallholders depends on the content of the agreement and the conditions under which it is implemented (Bogetoft & Olesen 2002, Key and Runsten 1999).

This last approach seeks to identify ingredients of successful CFs and more generally factors that influence CF performance and use this information to design more equitable contract arrangements that enable smallholders to participate effectively in global markets (Bogetoft & Olesen 2002, Barrett et al. 2012). Researchers find that what works often depends on local conditions, including infrastructure and governance, as well as the negotiating capacity of the two sides and their ability to come to agreement on a contract that adequately addresses their needs. What works in one context, may not address producer needs adequately elsewhere. This has led to an interest in identifying examples of successful contract models or systems, the ingredients of successful CFs and their underlying design principles (Eaton and Shepherd 2001, Gradl et al. 2012, Will 2013, Little and Watts 1994, Singh 2005).

The purpose of this report is to present a preliminary overview of contract farming in three countries: Brazil, Colombia and Ecuador. The report seeks to evaluate the importance of contract farming in the modern agricultural sector of each country, identify the main contract farming models used for each commodity, and provide examples of successful CF arrangements and the key ingredients of these models.

2. Project Objectives and Approach

This report is based on a desk study conducted between October and December, 2013, on contract farming arrangements involving four major commodities: palm oil, beef, soybeans and sugar cane. The report draws on published and unpublished articles, reports and other documents, government census data and interviews with representatives of producer organizations, companies and government agencies in the three countries. Research for this report did not involve fieldwork or face-to-face interviews with stakeholders.

This report is a preliminary step in mapping out the state of contract farming in each country with a special emphasis on the role of smallholders in CF arrangements involving the four commodities mentioned earlier. It was rarely possible to adequately assess the quality of the data we found or to resolve inconsistencies between different data sources. A more in-depth study is needed that digs more deeply into the available data and includes a strong field component in order to develop more accurate data sets on CF arrangements involving smallholders and companies so as to confirm (or not) initial impressions based on the information presented here. Further research is also needed to evaluate important CF initiatives, policies and programs in each country.

3. Modern Agroindustrial Revolution

Beginning in developed countries, the agrifood industry has undergone fundamental changes in production, processing and marketing beginning with the modernization of wholesale supply chains followed by that of the retail sector, as exemplified by the rise of modern supermarkets (Reardon et al. 2009). This process has been accompanied by the increasing formalization of wholesale and retail sectors as companies have come into compliance with national fiscal, health and labor legislation. A second process has been the vertical integration of supply chains so that the major phases of the processing and marketing of food products have increasingly been integrated into single companies. However, vertical integration has in general not included crop and livestock

production. These production systems have been integrated into modern supply chains via formal and informal contracts between agrifood companies and farmers (Reardon et al. 2009). In most cases the adoption of CF arrangements has been motivated by a desire to reduce labor costs as well as production and market risks.

In the last three decades the modern agribusiness production model has expanded into developing countries and, more specifically in the context of this report, into tropical forest regions. This expansion has been driven by increasing global demand for agricultural commodities in Europe and rising incomes in the developing world, which is leading to changing diets and increased consumption (Nepstad et al. 2006). Expansion into tropical forest regions has been associated with high rates of deforestation, land conflicts and displacement of rural populations (Pacheco 2012). Concerned with the high rates of deforestation, environmental organizations have pressured major commodity traders and multinationals of the agrifood industry to adopt measures to reduce or eliminate deforestation from their supply chains. This has led to the creation of commodity roundtables for four major commodities (palm oil, sugar, soy and beef) and the development of certification schemes that evaluate compliance with environmental and social regulations, including the elimination of deforestation and slave labor from company supply chains (Nepstad et al. 2006 and 2014).

These trends in the formalization of global and domestic supply chains and the growth of public and private standards for commodity production represent a significant threat to smallholders who, when not displaced by the advancing agroindustrial frontier, face difficulties in meeting the increasingly rigorous requirements of both global and domestic markets. At the same time, formalization of supply chains has the potential to result in important governance innovations, such as rules, safeguards and compliance incentives/price premiums that could ensure more rigorous environmental standards, as well as more equitable contracts for smallholders.

4. Smallholders

Smallholders constitute a large and diverse group of rural producers. In the context of the Amazon basin three main groups can be distinguished: (1) settlers who are commercially-oriented and depend primarily on farming for their subsistence and income, (2) traditional peoples of mixed ethnic origin who are more subsistence-oriented, depending on shifting cultivation and extraction of forest and aquatic products, and (3) Indigenous groups who are also subsistence-oriented but with a somewhat greater dependence on extractive activities. The three groups also have different settlement arrangements, land rights and levels of integration into local, regional and national markets. There is also considerable inter- and intra-regional variation within each country with regard to farming systems and market orientation. Of the three groups, settlers, who also depend largely on shifting cultivation, are responsible for most of the deforestation attributed to small-scale farmers (Nepstad et al. 2009).

TABLE 1 | Smallholder farms and area.

Country	Size Class (Ha)	Farms	Area (Ha)	Ave Ha	% Farms	% Area
Brazil	0-20	3,213,863	18,088,291	6	65%	5%
Colombia	0-2	831,269	1,036,343	1.2	41%	2%
Ecuador	0-2	366,058	251,850	0.7	43%	2%

Source: Soto Baquero et al. 2007.

In the three countries included in this study, smallholders represent a significant proportion of the total number of farms but a far smaller share of total farmland. Following the International Fund for Agricultural Development (IFAD), we define smallholders as farmers with 0-20 ha in Brazil and 0-2 ha in Colombia and Ecuador. Based on this definition, there are 3.2 million smallholders in Brazil, who account for 65% of the total number of properties but only 5% of total farmland. In Colombia 831 thousand smallholders constitute 41% of the total number of properties but only 2% of national farmland. This pattern is repeated in Ecuador where 366 thousand smallholders represent 43% of total properties and 2% of total farmland.

In all three countries smallholders face a similar array of problems. While in countries like Brazil and Ecuador smallholders have been relatively successful in resolving land tenure issues and gaining social benefits and favorable government policies, they have been less successful in developing production systems that are competitive in modern markets. Critical problems include lack of regular access to technical assistance and credit, land tenure irregularities and deficiencies in social services, basic infrastructure and access to markets.

As a result of these bottlenecks, smallholders have been largely left out of the agroindustrial revolution sweeping tropical forest countries. They have considerable difficulty meeting the standards of quality, reliability and

production efficiency that modern domestic and global markets require. Consequently, they are unable to benefit from the technological advances and expanding markets that are driving rural development in major regions of the Tropics. Environmental concerns, especially deforestation, tend to further marginalize smallholders, as most still depend on clearing forest to plant crops and raise livestock. For example, in Mato Grosso, Brazil a farmer faces no less than eight different mandatory and voluntary initiatives (including domestic policies and market-based incentives) related to deforestation, each with its own definition and criteria related to forests within a given landholding. Understanding, much less complying with, numerous initiatives may be difficult for smallholders (Nepstad et al. 2013b).

5. Contract Farming

Eaton & Shepherd (2001) define contract farming "as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices." A distinguishing feature of contract farming involving smallholders is the provision by the company of technical assistance, production inputs, financing and access to markets. The provision of technical and financial assistance by companies is a major reason for interest in contract farming as a mechanism for integrating smallholders into modernizing domestic and global agrifood systems.

In the literature three or four types of contract farming arrangements are identified, which vary in the intensity of company investment in farmer production (Eaton and Shepherd 2001). Here we include a fifth type, Land Lease, due to its importance in the production of some commodities on smallholder lands. The five types of contracts form a continuum of increasing company involvement in production. These are:

1. **Market Provision:** Company agrees to purchase given quantity, quality, price and date from farmer.
2. **Short-Term Resource Provision:** Company supplies technical training to farmer and in some cases, finance.
3. **Long-Term Resource Provision:** Company supplies technical assistance, inputs and/or credit to the farmer.
4. **Management Specification:** Farmer receives technical assistance plus all inputs and must follow company production protocols and meet production deadlines.
5. **Land Lease:** Farmer rents land to company, which produces the crop.

Modern contract farming has evolved to enable companies to secure the quantities and qualities of product they need while avoiding labor costs and the risks associated with crop production and marketing. For smallholders, contract farming can provide access to technical assistance, quality inputs, financing and integration into modern supply chains. CF also entails risks for smallholders due to their more limited ability to negotiate equitable contracts that fairly allocate costs, risks and benefits. In addition, companies can cease local operations and move, leaving farmers without access to markets and in some cases with specialized investments that no longer have an economic function (Little and Watts 1994).

For companies, there are advantages and disadvantages to working with smallholders. Because of their smaller scale of production, working with smallholders requires a larger number of suppliers to meet demand. This can result in higher logistical and transaction costs, especially where the level of smallholder organization is low. Smallholders also require investments in technical assistance, production inputs and logistical support. On the other hand, contracts with smallholders may mean lower output prices and greater control of side selling. Furthermore, in some cases smallholders control land and resources that companies can only access via CF arrangements with resident smallholders (Lima et al. 2006, Pedroso Júnior 2008). Consequently, while company preference for larger scale farmers has been confirmed in the literature, there are numerous situations in which companies prefer to work with smallholders or a mix of large and small scale suppliers (Barrett et al. 2012).

TABLE 2 | Number of Transitional and Consolidated Farms in Three Countries[1].

Farm Class	Brazil	Colombia	Ecuador	Total
Transitional	993,751	95,316	274,064	1,363,131
Consolidated	406,291	57,093	9,780	473,164
Total	**1,400,042**	**152,409**	**283,844**	**1,836,295**

Source: Adapted from Soto Baquero et al. (2007).

1 These numbers should be considered illustrative.

From the perspective of contract farming, several authors have distinguished three main groups of smallholders, which differ in their capacity to access modern markets, due to the level of farm development and market involvement and/or to the quality of regional infrastructure:

Consolidated farmers are either already integrated into the market or have the capacity and regional infrastructure needed for market participation. **Transitional** farmers have sufficient capacity to meet production requirements and live in areas with adequate regional infrastructure that provides basic conditions needed to produce for modern markets. **Subsistence** farmers have critical deficiencies in both production capacity and/or regional infrastructure. Subsistence farmers require major investments in regional infrastructure and in farm development that in most cases exceed the capacity and economic interests of agrifood companies. Transitional and Consolidated farmer groups are the ones that can most benefit from contract farming arrangements (Soto Baquero et al. 2007). These authors estimate that some 1.8 million (42%) of an estimated 4.4 million smallholders in Brazil, Colombia and Ecuador are benefitting or could benefit from integration into modern supply chains via contract farming arrangements (Table 2).

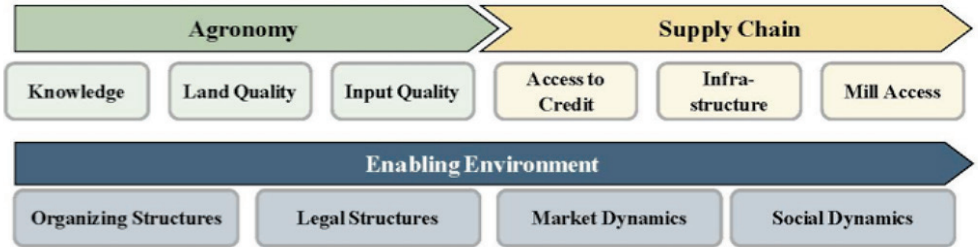

FIGURE 1 | Factors affecting smallholder integration into commodity supply chains.
Source: FSG/World Bank 2010.

Figure 1 shows the three main components of the CF system: Agronomy (production system), Supply Chain and Enabling Environment, as well as the main elements of each. Several authors have noted that what distinguishes Consolidated and Transitional farmers from Subsistence farmers is a combination of both Agronomy and Supply Chain characteristics on the one hand, and the Enabling Environment on the other (e.g. legal framework, market dynamics, and socio-political structures). Figure 1 also nicely illustrates the importance of the enabling environment to the performance of CFs.

6. Countries

The study focuses on three countries of northern South America, Brazil, Colombia and Ecuador, all of which have significant portions of their national territories in the Amazon basin. While they have many similar characteristics, there are also significant differences between them. These differences are evident in the range in size from Brazil with 194 million people and a national territory of 845 million hectares, to Colombia with 46 million people and a total area of 113 million hectares to Ecuador with 14.5 million people and 85 million hectares. Differences in population and land area are also reflected in the relative sizes of their agricultural sectors, which range from Brazil with a GDP of 112.4 billion dollars to Colombia with a GDP of 22.2 billion dollars to Ecuador with a GDP of 8.4 billion. The range in gross income per capita is considerably smaller, varying from $12,000 per capita in Brazil to $10,000 in Ecuador. Finally, the percentage of the population classified as rural ranges from 13% in Brazil to 25% in Colombia and 33% in Ecuador, indicating that the process of urbanization is far more advanced in Brazil than in the other two countries.

All three countries have diverse agricultural sectors, which include a large group of subsistence farmers with little formal market interaction and modern commercial farmers who are fully integrated into the global economy. Total land in production ranges from roughly 5 million farms on 329 million hectares in Brazil to 2 million farms on 51 million hectares in Colombia and 843 thousand farms on 12 million hectares in Ecuador.

TABLE 3 | Total land area and production of four study commodities.

Country	Sugar cane (ha)	Cattle land (ha)	Total head of cattle	Exclusively Dairy	Soy (ha)	African Oil Palm (ha)
Brazil	9,705,388	204,442,681	176,147,501	12,636,548	24,975,258	106,420
Colombia	181,427	29,148,092	25,156,068	3,507,425	38,105	340,669
Ecuador	95,240	4,486,868	5,240,000	808,856	54,350	198,580
Total	9,982,055	238,077,641	206,543,569	16,952,829	25,067,713	645,669

Source: http://data.worldbank.org/country/brazil, http://data.worldbank.org/country/ecuador, http://data.worldbank.org/country/colombia.

There is some overlap in the main agricultural exports of the three countries (Table 3). Cattle ranching is the largest category of land use in all three countries, while the export of cattle products is most important in Brazil. Other major commodities for Brazil include soy, sugar and green coffee beans, while the most important exports for Colombia are coffee (high grade), bananas and sugar. Ecuador's main exports are bananas, cocoa beans and palm oil. There is similar diversity in the relative importance of the four commodities studied here. Brazil is a dominant world producer and exporter of sugar cane products, beef and soy, but is far behind in palm oil production. Ecuador and Colombia produce more palm oil than Brazil, but soy production is of little significance. Of the four commodities, those most relevant to all three countries are palm oil, sugar cane products and beef.

7. Brazil

While contract farming is widely employed in Latin American agriculture, there is relatively little information on the overall importance of contract farming in the agricultural sectors of the three countries. One problem is that CF contracts vary considerably in objectives and content, as indicated by the five types described earlier. In the case of Brazil, we found evidence of CF arrangements in the production of a wide range of commodities; however, the Brazilian agricultural census only distinguishes some kinds of Management Specification Contracts (see discussion below). In the absence of such information, we have focused on smallholder participation in the production of each commodity and supplemented this with information available on CF arrangements associated with each commodity.

7.1 Importance of Contract Farming in the Brazilian Agricultural Sector

In this section we summarize information on contract farming contained in the 2006 Agricultural Census, the most recent census with data on CF arrangements in Brazil. It should be noted here the data refer to the Management Specification Contract described earlier, called Empresa Integradora (Integrator Company) in the Census. This type of contract can be considered the tip of the iceberg of CF arrangements in the primary sectors (agriculture and forestry) of the three countries. As noted earlier, in this system the farm is essentially a production unit of the company with relatively little autonomy in the choice of seed varieties and breeds, inputs, and cultivation practices.

TABLE 4 | Degree of market integration.

Degree of Market Integration	N° Farms	Percent
Very Integrated	44,590	8%
Integrated	151,232	28%
Not Very Integrated	336,756	63%
Total	**532,578**	**100%**

Source: IBGE Censo Agropecuário 2006.

While Brazil has one of the most dynamic agricultural sectors in the world, ranking third behind the US and the EU in terms of agricultural export value (Valdes 2012), smallholder participation in the development of the agricultural sector has been limited thus far. For example, in a sample of 533,000 farms, only slightly more than a third reported that they were integrated into the market, while 63% stated that they were not very integrated (Table 4). While this sample only covers about an eighth of the total number of farms in the 2006 Census, the proportions are consistent with the size distribution of farms in Brazil (Table 1).

TABLE 5 | Importance of Integrator Companies by Productive Sector.

Economic Activities	Integrated Company			
	Farms	Value (R$)	Farms %	Value %
Cattle & animal husbandry	40,965	5,719,336	23%	87%
Prod annual crops	5,677	201,547	3%	9%
Prod Perennial Crops	1,763	25,617	6%	9%
Horticulture & floriculture	296	3,127	4%	3%
Aquaculture	256	154,302	33%	97%
Silviculture	170	4,773	3%	3%
Natural Forest	146	332	1%	0%
Fisheries	23	17	1%	0%
Seeds & seedlings	9	93	8%	6%
Total/Average	**49,305**	**6,109,144**	**9%**	**24%**

Source: IBGE Censo Agropecuário 2006.

As Table 5 shows, CF arrangements consistent with the IBGE definition are found throughout the agriculture sector; however, their importance in terms of the percentage of the total number of establishments and sales within each sub-sector varies considerably. For example, while 23% of establishments in the livestock sector (large and small) sell their output to CF companies, they account for 87% of total sales, probably due to the importance of this contract model in intensive poultry and hog production. There is a similar pattern in other sub-sectors. For example, in the aquaculture sector, 33% of establishments account for 97% of total sales. In other sectors CF arrangements are less important, but still account for a larger than proportionate share of sales. For example, 6% of farms sell perennial crops to CF companies, but they account for 9% of total sales. Similarly, for annual crops the 3% of establishments that sell to CF companies account for 6% of total sales. Overall, for the nine categories included in this Table, Integrator Companies comprise 9% of the total number of establishments but 24% of total value.

Perhaps the major obstacle to smallholder development in Brazil is the limited access to technical assistance of any kind. According to the 2006 Census, only 22% of Brazil's five million farmers reported having any access to technical assistance. This is one of the main areas in which contract farming could make an important contribution to improving smallholder production.

TABLE 6 | Sources of technical assistance.

Source	Number	Percent
Government funded[1]	583,588	48%
Producer[2]	250,241	21%
Cooperative	225,521	18%
Integrator Company	153,858	13%
Total number of Farms	1,213,208	100%

Source: IBGE Censo Agropecuário 2006.
1. Included here government programs and government funded programs, for example NGOs are most likely funded by the State to provide extension programs. 2. Refers to situations in which farmers contracted technical assistance.

Of the 22% of farms that did receive some form of technical assistance, government funding accounted for about half the total, and the next three sources, cooperatives, producers and integrator companies for the other half (Table 6). Cooperatives are the second most important source of technical assistance contributing about 18%. Integrator Companies, as defined by the Brazilian Census (2006), provided technical assistance to 13% of respondents.

Considering all sources of technical assistance, of the 22% who did receive some assistance, almost 58% reported having occasional technical assistance and only 42% reported having regular visits from agricultural extension agents. These proportions are reversed for Integrator Companies. Here 64% reported having regular technical assistance and only 36% occasional visits. Because it is in the interests of integrator companies to ensure that production volume and quality meet their requirements, there is an incentive to provide adequate and regular technical assistance throughout the production cycle.

7.2. Contract Farming in the Four Commodities

7.2.1. SOYBEANS

Brazil produced 65.8 million tons of soybeans in 2012, for a total value of US$ 24.7 billion. Production grew by an average of 5.08% per year between 2002 and 2012 (IBGE 2012), although there was a 12% drop in production between 2011 and 2012. Despite this drop, the Ministry of Agriculture (2011) estimates that by 2020/2021 Brazilian production will reach 86.5 million tons of soybeans.

Participation of small producers: Soybean cultivation in Brazil occurs predominantly on large properties. According to the 2006 Agricultural Census, around 65% of soy production in Brazil is on farms greater than 500 hectares, while areas up to 50 hectares accounted for 10% and those up to 100 hectares for only 15% of production (6.6 million tons). Production on family farms occurs mainly in the southern states of Rio Grande do Sul and Parana, which account for 91% of the family farms cultivating soybeans (IBGE 2006). In these states soybeans have traditionally been a component of diversified smallholder farming strategies.

Contract Farming: Three types of contracts are used in soybean production, which correspond to types in the CF classification described earlier: 1) future sale (Market Provision), 2) pre-financing (Short-Term Resource Provision), and 3) Long-term Resource Provision. Market provision contracts are strictly commitments from farmers to sell a specified quantity at a given price and time to the contracting company. Pre-financing contracts, or short-term resource provision contracts, provide for the advance of inputs or cash loans to the farmers from the contracting company. In this case, the producer commits a portion of the grain from the future harvest as payment of the debt and payment is made in soybeans (personal communication with John Shimada, Earth Innovation Institute). The final type of contract, long-term resource provision, is employed by companies participating in the Brazilian Biodiesel Program (Programa Nacional de Produção de Biocombustíveis, or PNPB). These contracts involve the provision of technical assistance by the contracting company. In addition, farmers participating in the PNPB are eligible for low interest loans through the government loan program for family farmers, Programa Nacional de Fortalecimento da Agricultura Familiar (PRONAF). The producers receiving these loans are responsible for all production costs, must follow the company's technical guidelines, use the inputs provide by the company, meet specified quality standards and sell exclusively to the company.

7.2.2. SUGAR CANE

Brazil produced 721 million tons of sugar cane in 2012, with a total value of US$ 19.8 billion dollars (IBGE 2012). Between 2002 and 2012, production increased at an annual rate of 7%. The State of São Paulo is the largest producer with 50% of the total cultivated area dedicated to sugar cane. Sugar cane is cultivated for sugar and alcohol. In the year 2012/2013 Brazil produced 38.3 million tonnes of sugar and 23.64 billion liters of alcohol. The Ministry of Agriculture (2011) estimates that sugar production will reach between 42.3 and 52.2 million tons by 2020/2021.

Participation of small producers: In Brazil sugar cane production is generally a large-scale activity. Smallholders cultivating up to 50 hectares of sugar cane account for only 5.6% of production and medium-scale producers with 50 to 200 hectares for another 10%. Producers cultivating more than 200 hectares accounted for the remaining 85% (IBGE Censo Agropecuário 2006).

Contract Farming: Four types of contracts are employed in sugar cane production: 1) contracts without provisions for harvesting, loading and transport (*corte, cargo e transporte,* or CCT), essentially Market Provision Contracts), 2) Contracts with provisions for CCT (Resource Provision), 3) Agricultural Partnerships, in which the company pays most production costs and the farmer receives a percent of output (Management Specification), and 4) Land Lease, in which farmers rent their land to the company and the company assumes responsibility for cane production.

Pedroso Junior (2008) compared contract farming arrangements in two regions, one with a tradition of small-scale sugar cane production and another in which sugar cane cultivation was more recent. He found that in older areas of cane production, Market Provision and Resource Provision contracts predominate, while in the newer producing regions where sugar cane production is expanding into areas of smallholder settlement, contracts tend to be of the Agricultural Partnership and Land Lease types. In these areas where farmers do not have a tradition of cultivating sugar cane, they tend to prefer renting land for sugar cane production as it provides a higher income than raising beef cattle, the most common alternative land use. In most cases contracts are for five years, usually involving three harvests. This is a good example of how familiarity with a crop and not direct economic attributes can be a significant factor in the choice of contract arrangements.

7.2.3. BEEF

Ranching is the largest land use category occupying 204 million hectares, or roughly 62% of the total land in production. Brazil has the world's largest commercial herd, estimated at 210 million head, and is also the world's largest beef exporter (Walker 2013). Of a total of 138 million animals on farms with 50 or more head, 81% are for beef production, 16% for dairy and the remaining 3% are classified as work animals (IBGE 2006). Ranching is also the major driver of deforestation, accounting for 65-75% of annual deforestation over the last few decades (Alencar et al. 2004).

Participation of small ranchers: Given the size and ubiquity of cattle ranching, it is not surprising that there are enormous contrasts within the sector, with a large proportion of establishments following traditional management practices characterized by low productivity pastures and breeds. Furthermore, an estimated 25% of the cattle industry operates clandestinely (Walker 2013). However, the beef sector is undergoing rapid modernization with improved breeds, and better herd and pasture management. One of the most important trends in recent years has been the intensification of beef production, so that while the cattle herd has increased, the rate of deforestation has fallen (Nepstad et al. 2013b). In recent years, the Brazilian cattle industry has become increasingly formalized and regularized, presenting new challenges for small-scale ranchers. For example, properties must be registered via the CAR (Cadastro Rural Ambiental, or Rural Environmental Registry) and the CAR helps slaughterhouses, in theory, verify ranchers' adherence to environmental and social standards. Recent sustainable supply chain initiatives, such as the Grupo do Pecuaria Sustentável, as well as Brazil's largest supermarkets, have pledged to purchase only "zero-deforestation" beef.

Raising cattle for beef and milk chains is a pervasive feature of smallholder farming in Brazil. There are 2.14 million farms (80% of the total) with between 1 and 49 head (average of 14 head), which account for 17% of the total herd. For smallholders, cattle are primarily a savings strategy rather than an income source, although milk and other byproducts may be sold on a regular basis (Alves-Pinto et al. 2013). In general, cattle ranching at this scale is hampered by low productivity due to poor quality animals, poor health standards, inadequate herd management and low productivity pastures.

Contract Farming: While raising cattle is widespread among smallholders, we did not find evidence of contract farming arrangements in this sector and several informants confirmed that contract farming is not practiced. Instead, in many areas of Brazil a class of intermediaries, *marchantes*, buy cattle from farmers to form lots, which they sell to slaughterhouses. These intermediaries play an important role for smallholders because slaughterhouses prefer homogeneous lots of animals and most smallholders sell only one or two animals at a time, which may or may not be of similar age and size. Intermediaries form the homogeneous lots slaughterhouses prefer and also provide liquidity to the local cattle market, enhancing the savings value of small scale beef production.

While modern contract farming arrangements seem to be rare in the Brazilian beef industry, there is a tradition of cattle partnerships, known as "Sociedades" (Merry et al. 2004). In these arrangements, individuals with cattle loan a number of cows and bulls to a farmer who cares for the animals during a given period, usually three years. At the end of the contract the farmer returns the original herd and any calves produced during the contract are divided between the two parties. This is a system that enables owners with little or no land to expand herds and provides a way for families with pasture to build their own herds with little initial investment.

While not strictly a contract farming initiative, Aliança da Terra, a Brazilian NGO, is working with smallholders in an INCRA colonist settlement to produce calves of improved breeds, which they sell to soy farmers interested in taking advantage of residual soy to diversify their operations (www.aliancadaterra.org).

7.2.4. OIL PALM

Brazil produced 1.23 million tons of oil palm coconuts in 2012 with a production value of U.S. $ 157.7 million (IBGE 2012). Total area under oil palm cultivation was approximately 140,000 hectares. The average annual growth rate of oil palm production between 2002 and 2012 was 18%. The state of Para accounted for 83% of production in 2012 and the State Secretary of Agriculture (SAGRI) predicts that by 2020, the total area of oil palm in the state will reach 329,000 hectares, more than double the present area under cultivation (Glass 2013)

Smallholders and Contract Farming: The recent growth in smallholder oil palm production is related to the inclusion of oil palm in the biodiesel program (PNPB) as of 2010. According to Glass (2013) there were 20,200 ha of oil palm being cultivated by smallholders in 2010 when the PNPB program began. Between 2010 and 2012 the Banco da Amazônia (BASA) provided financing to 581 families with contracts with local mills to plant 5,810 ha of

oil palm, a type of Long-Term Resource Provision Contract. By 2013, BASA expected to have provided financing to an additional 1,610 families to plant a total of 15,300 ha for a total area of 41,300 ha under smallholder production. Smallholder oil palm plantations average roughly 10 ha for the families financed by BASA between 2010 and 2013 (Glass 2013). We have no information on the smallholders responsible for the 20,200 ha planted prior to 2010.

Contracts between small-scale palm producers and oil palm mills are Long-Term Resource Provision contracts and have a duration of 25 years, the average productive life of an oil palm. The company provides training and technical assistance, inputs and in some cases equipment. The contracts also qualify producers to access financing via the special PRONAF program for the PNPB. As with soybeans, participating farmers are responsible for production costs and must use the agricultural inputs provided by the company, follow specified management practices, maintain the quality standards stipulated in the contract, and sell all their output to the company. As an incentive to farmers, companies also adjust the price according to product quality.

7.2.5. OTHER COMMODITIES

Information was obtained on contract farming arrangements involving a large number of commodities including poultry and hog production (Management Specification Contracts), silviculture (Resource Provision), natural forest management for timber and non-timber products (Resource Provision), tobacco (Management Specification), dairy (a range of contract types) and aquaculture (Management Specification).

8. Colombia

In 2010 the Republic of Colombia had a population of 46 million people, of which 11.5 million (25%) lived in rural areas of the country. In 2010 50% of the rural population was living below the poverty line. Colombia has 37.6 million hectares (2010) in production, of which 11% is in agriculture and 77% in pasture. In 2011 annual crops such as rice, maize, and potatoes accounted for 38% of land in crops, while perennial and semi-perennial crops such as coffee, cocoa, and sugar cane accounted for the other 62% (MADR 2011). According to a study by IFAD, there are 1.8 million landholdings of 1 to 50 hectares, accounting for 89.3% of total farms and 27.6% of total farmland (Berdegué and Fuentealba 2011). Land tenure in Colombia is complicated by decades of civil war and ongoing conflict with several guerilla organizations in the country has made legal land titling difficult. In 2013 Colombia had between 4.9 and 5.5 million displaced persons (Nepstad et al. 2013a).

8.1. Contract Farming in the Four Commodities

As in Brazil, CF arrangements are widely employed in the production of crops and livestock for domestic and export markets. The Ministry of Agriculture and Rural Development (MADR) has a major program in support of contract farming, Proyecto de Apoyo a Alianzas Productivas (PAAP), which is briefly described in section 15.2.

SOYBEANS

Colombia is a minor producer of soybeans, with 32 thousand hectares harvested in 2011, and imports over 90% of the soy consumed annually. Soy is an important additive in animal feed in Colombia. We did not find information on CF arrangements in soy production.

SUGAR CANE

In 2011 approximately 181,000 hectares of sugar cane were harvested in Colombia, mostly in what is known as "the cluster" in the Valle del Cauca Department (Covaleda 2005, Nepstad et al. 2013a). Smallholders play a significant role in sugar cane cultivation with producers cultivating up to 50 ha of sugar cane accounting for 49% of all farms, but only 13% of total area. Those cultivating up to 100 ha of sugar cane comprise 74% of farms but only 32% of total area (Covaleda 2005). Two organizations, Cenicaña and Tecnicaña, provide technical support. Smallholders are organized into some 100 cooperatives, and are represented by the union Procaña.

Three types of contracts between sugar cane producers and mills are employed: 1) Market Provision Contracts in which independent smallholders sell their cane to the mill, 2) Participatory contracts (equivalent to Resource Provision or Management Specification Contracts), in which the mill pays for inputs, technical assistance and transportation, and the farmer provides the labor, and 3) Land Lease Contracts, in which the mill rents the land from the smallholder and takes responsibility for cane production.

BEEF

Cattle ranching is the dominant land use in Colombia; 77% of farmland, or 29 million hectares, is in pasture. Colombia has 25 million head of cattle, of which 48% are for beef, 16% for milk production, and 36% for both meat and dairy. The situation with regard to contract farming is similar to that in Brazil. There is a large smallholder sector with an average of 14 head per farmer, supplying local slaughterhouses indirectly via intermediaries. These intermediaries seem to operate in much the same way as they do in Brazil.

Beef production in Colombia is generally of low productivity (Zulaga presentation, 18/09/2014). The Colombian Federation of Ranchers (Federación Colombiana de Ganaderos, or FEDEGAN) is implementing a national program to increase the productivity and sustainability of beef production in the state. A major component of the program involves implementation of silvo-pasture systems and improved breeds and herd management. In a separate initiative involving dairy farming, Nestlé also has a Silvopasture Program in the Caquetá region involving 13 pilot farms to promote better pasture management among dairy farmers supplying the company (Nestlé 2013).

OIL PALM

In 2011 a total of 341 thousand hectares of palm oil were harvested in Colombia. The average size of an oil palm plantation in Colombia is 525 hectares (Nepstad et al. 2013a). Small- and medium-sized producers account for 15% of the total area in oil palm production (FEDEPALMA 2010).

FEDEPALMA is a government program founded in 1962 to support oil palm producers. Today FEDEPALMA has approximately 1,000 associated farms that are categorized as "small" or "medium" sized. Affiliated properties must have the proper government licensing. Contracts between farmers and mills have a duration of 20-25 years and include technical assistance. The State can finance up to 100% of production, and 60% of the loan must be repaid within 4 years with the remaining 40% considered a subsidy.

A 2010 study of 3,905 smallholders found that farmers cultivated an average of 12 hectares of oil palm. These 3,905 families were organized into 91 producer organizations. While small-scale oil palm producers cultivated 15% of the land in oil palm, they accounted for only 9% of production. The study found that 57% of smallholders involved in contract farming failed to meet their production targets, although some smallholders exceeded the national production average. The study concludes that lack of financing and technical assistance were the main reasons for the low productivity (FEDEPALMA 2010). According to our interviews, the biggest concern among oil palm producer associations is lack of government support.

9. Ecuador

Smallholder participation in the production of the four commodities studied here is quite variable. Farms up to 20 hectares in size account for 35% of beef production and 27% of soy, but only 6% of sugar cane and 2% of oil palm production[2]. In contrast, they are responsible for 64% of potato and 71% of milk production. They are also important producers of cocoa and coffee, but only account for 14% of banana production. Smallholders are also the main producers of many vegetable crops (Chiriboga 2004).

9.1 Contract Farming in the Four Commodities

Approximately 80% of producers who cultivate less than five hectares sell to middlemen and do not have direct contracts with companies (Chiriboga 2004). Most of those organizations involved in contract farming seem to be in the coastal departments and in the Sierra region. We did not find information on contract farming in the Amazon region. While contract farming may not play a major role in smallholder farming, an increasing number of organizations are experimenting with variations on the contract farming model and over the last decade and a half have made significant impacts on a local scale. There are at least two major programs that support contract farming each focusing on a specific crops. The PRONERI works with approximately 500 cocoa farmers and *Plataformas* with a similar number of potato farmers. The *Plataformas* program is described in Section 15.3.

2 Unsure of this data. Estimates for oil palm production given here seem low compared to data on farm size in ANCUPA 2005. See below.

SOY

Ecuador has approximately 54,000 hectares planted in soy and in 2009 it was the 13th largest soy exporter. Smallholders with farms up to 20 ha account for 27% of national soy production. We did not find any information on contract farming arrangements in soy production (Chiriboga 2004).

SUGAR CANE

Sugarcane is an important agricultural commodity for Ecuador, which harvested approximately 95,000 hectares in 2010. Although the amount of sugar cane harvested in hectares has only changed incrementally over the last decade, technological advances over the last three years have increased yields from 70-75 MT per hectare to 90 MT per hectare[3]. In addition, the Sugar Cane Research Centre (Centro de Investigación de la Caña de Azúcar del Ecuador, or CINCAE), Ecuadorian agricultural Research is developing pest- and disease-resistant varieties that reduce production risks to producers.

Smallholders account for only 6% of national sugar cane production. Several different types of contracts are used by sugar cane producers. The smaller the producer, the less training, mechanization, and financing are available. For the most part small producers operate with Market Provision contracts. Medium and large-scale producers are more likely to have Resource Provision contracts, receiving loans and technical support, assistance with mechanized harvest, and in some cases transport of cane to the mill. A more involved relationship between the contracting mill and medium to large scale producers appears to make economic sense; their up-front investment in these larger producers entails less risk than providing up front investments to smallholders. However, this logic undermines contract farming's potential role in addressing the needs of smallholders.

DAIRY AND BEEF

As noted above, smallholders are the main producers of milk and account for 35% of beef production. As with Brazil, CF arrangements are more prevalent in the dairy sector than in beef production.

OIL PALM

Ecuador is the largest palm oil producer in South America. In 2013 the oil palm sector employed 140,000 people (direct and indirect) and exported 525,000 MT of crude palm oil (FEDEPAL 2013). There are 207,283 ha in oil palm on a total of 5,515 farms (ANCUPA 2005). Farms up to 20 ha account for 63% of oil palm producers, but only 16% of the total area in production. Farms between 20 and 200 ha account for 34% of farms and 58% of total area under cultivation. Farms over 100 ha account for about 5% of the total number of farms, but 42% of total area in production (ANCUPA 2005) and according to Chiriboga (2004) for 76% of palm oil production.

Most smallholders negotiate the sale of their harvest with the nearest mill. In addition to buying from local farmers, some mills also maintain their own oil palm plantations. In some areas producers have joined cooperatives to increase their bargaining power in contract negotiations. Contract farming in the oil palm sector involves Resource Provision contracts, which provide limited technical assistance. As is the case elsewhere, small-scale producers tend to be less efficient than larger scale producers. To address this problem, the Asociación Nacional De Cultivadores De Palma Africana (ANCUPA) has developed an innovative program involving the training of local expert farmers who work with neighboring farmers to improve practices and raise productivity.

10. Main Barriers Faced in Producing Commodities

1) Regional infrastructure for energy, communications, road networks and public transportation: In many areas of smallholder settlement and especially on the frontier, the basic regional infrastructure required for modern production systems is highly deficient. Many smallholder settlements have only rudimentary road access, and roads may be unpassable in the rainy season when many crops are harvested. Few settlements have telephones, although with the spread of cell phones, there is less need for fixed line telephones. Electricity may be available for only a few hours a day, if at all. These infrastructural deficiencies often make it difficult for farmers to process crops on farm or in the settlement, monitor prices and transport output to market in a timely fashion.

2) Land tenure: This is a major problem in the Amazon region and more generally in frontier regions of the three countries. It is particularly acute in Colombia as a result of several decades of civil war that has forced almost

3 http://www.ecuadorinmediato.com/index.php?module=Noticias&func=news_user_view&id=205441&umt=produccion_cana_azucar_se_incrementa_en_ecuador

10% of its rural population to abandon their lands and move to safer areas. Land tenure insecurity has a cascade of affects including access to government loan programs and other government benefits and is also a barrier for participation in formal CF arrangements.

3) Formalization of production and marketing: The formalization of markets and supply chains has meant that access to markets requires smallholders to demonstrate compliance with national fiscal, labor, sanitary and environmental regulations. In many cases complying with these new demands has greatly increased transaction costs, including multiple trips to regional centers. Consequently, transaction costs of dealing with government in both money and time are very high as smallholders lose many working days trying to get routine operating authorizations out of indifferent government bureaucracies.

4) Inaccessible and unresponsive government agencies: The problems described above are often exacerbated by unresponsive and inaccessible government agencies that make little effort to facilitate smallholder efforts to comply with legislation or in some cases to perform the functions and services they are legally obligated to provide (e.g. technical assistance). The quality of government services at the local level is a critical linkage in the entire supply chain. However, the strategic importance of these linkages for increased smallholder participation in formal markets is rarely given adequate attention by government bureaucracies.

5) Organizational capacity: Organizational capacity is one of the main factors in the ability of smallholders to integrate competitively into regional supply chains and markets. The fragility and limited functionality of most smallholder organizations limits their capacity for effective and sustained collective action and severely constrains smallholder ability to pool costs and output, negotiate more favorable contracts and lower transport costs. While CF arrangements can include many of the functions provided by producer cooperatives and other organizations, some basic level of organizational capacity is often a precondition for company-farmer contracts, as companies rarely want to deal with large numbers of unorganized small-scale farmers.

6) Business and negotiation skills and understanding of markets and supply channels: Smallholders often do not have the business and negotiating skills or knowledge of modern supply chains needed to access modern markets at normal costs and are likely to negotiate less favorable contracts with buyers. A recent report on small-holder financing found that many farmers lacked the financial administration skills needed to obtain credit (Rainforest Alliance 2013). Bundling business-oriented skills, such as adequate record keeping and budgeting, with technical assistance for smallholders could improve access to credit, as well as make smallholders more capable partners in contract farming arrangements.

7) Technical assistance in production: Lack of access to technical assistance is a major bottleneck to smallholder ability to meet market standards for output quality, quantity and cost efficiency. The absence of technical assistance makes access to credit difficult and can also be associated with high rates of delinquency on loans.

8) Access to quality seeds, animals and production inputs: The lack of access to high quality seeds, livestock breeds and specialized inputs, which are essential to producing crops and livestock that meet modern market standards, is a critical bottleneck for many smallholders.

9) Lack of Equipment and farm infrastructure: In most cases, the level of mechanization among smallholders is very low. The great majority have only basic hand tools and rely on their own labor with and without animal traction. In addition, farm infrastructure is in many cases rudimentary. The lack of modern equipment and infrastructure, is another factor that contributes to low productivity and deficiencies in product quality that make it difficult for smallholders to meet the expectations of buyers and to compete effectively in modern markets. Quality farm infrastructure can be an important factor in company selection of suppliers.

10) Transportation: Few smallholders have trucks or other vehicles that could be used to transport output to market. In the Amazon, the harvest season for many fruits and other crops often coincides with the rainy season. Roads can be impassable just when farmers' crops mature and entire crops can simply rot on the farm, only a few kilometers from an asphalt highway.

11) Financing: Financing for production, equipment and farm infrastructure can be provided by government sources or in some cases, companies. In Brazil, government financing is usually sufficient to meet farmer needs. However, access to loans was identified as a major constraint for medium and small-scale farmers in Colombia and Ecuador. In Brazil, while financing is available, the abundance of credit without proper technical orientation has led to excessive deforestation for pasture formation and a high rate of default on loans.

12) Political economy: A major barrier to the widespread adoption of contract farming arrangements is related to the historically antagonistic relationship between smallholders and larger landholders. All three countries have powerful grassroots movements for land reform. Many leaders of smallholder organizations, their political allies and government policy makers responsible for programs have an ambivalent attitude towards markets, one consequence of the history of conflict between the rural poor and rural and urban elite. From their perspective, smallholder communities should remain "independent" of the private sector and policy should concentrate on strengthening the capacity of community/smallholder organizations to process and market smallholder output.

On the other side, agribusiness companies are often distrustful of and averse to dealing with smallholders and their producer organizations, which they consider to be complicated and unreliable commercial partners. This mutual distrust exacerbates the perception (dominant on the left) that both sides are locked in a zero-sum game in which any gain by one side comes at the expense of the other. There is little recognition of the possibility for win-win solutions in which both sides benefit because cooperation leads to an expanding pie.

11. How Contract Models Address Barriers

Contract farming has the potential to directly address key bottlenecks and barriers related to production and supply chains. In addition companies and farmer organizations together can play a critical role in working with other actors to leverage government support to improve the enabling environment.

1) Regional infrastructure for energy, communications, road networks and public transportation: While these infrastructure investments are the responsibility of federal, state and municipal governments, local producer organizations, NGOs and business partners can work together to pressure the government agencies responsible. In some cases, companies can require governments to make certain infrastructure investments as a condition for investing in a region.

2) Land tenure: Government agencies are responsible for issuing documents; however, in many cases companies and NGO partners can assist in negotiations with government agencies, orient farmers regarding procedures and facilitate the release of the required documents. Further, contract farming arrangements can bolster land tenure security by enabling smallholders to improve productivity and remain on their farms, rather than selling out or becoming victims of illegal land grabs. De Schutter analyzed global concerns about food security and found that large-scale agricultural expansion is much more about securing and investing in land and water rights than about producing commodities. Increasingly active land markets present risks for smallholders who may be squeezed out of commodity markets. He envisions a possible scenario in which large-scale farmland investment coexists with smallholder production and in which contract farming arrangements between the two allow smallholders to capture a larger proportion of their production value (De Schutter 2011).

3) Market Formalization and Commodity Roundtables: Resolution of this problem requires a joint effort involving local producer organizations and relevant government institutions. Often agribusiness companies, which have a vested interest in ensuring suppliers have the necessary documentation, may assist in educating farmers regarding their rights and responsibilities, and provide loans to purchase equipment needed to comply with sanitary regulations.

4) Inaccessible and unresponsive government agencies: Producer organizations, local NGOs and agribusiness partners can help to pressure government agencies into being more responsive in providing farmers with the documents they need to produce, transport and market farm output.

Barriers NGOs and Government Agencies can assist in overcoming

5) Organizational capacity: While in some cases companies provide technical assistance to develop producer organizational capacity, this kind of assistance is best provided by an NGO or other institution that specializes in organizational development.

6) Business and negotiation skills and understanding of markets and supply channels: Assistance in developing skills and negotiating contracts is best provided by an NGO or a cooperative or other producer organization, although in some cases specialized government agencies may provide this kind of assistance.

Government Extension Programs and Agribusiness Companies

7) Technical assistance in production: Short- and medium-term technical assistance is a critical need that companies can help meet through contract farming arrangements. Company-sponsored technical assistance can often be more useful than government assistance because it is more likely to be focused on developing farmer capacity to meet the specific market standards for the products included in the contract.

8) Access to quality seeds, animals and production inputs: Providing high quality inputs that make it possible for farmers to produce to market standards is in the interests of the contracting company. In many cases, provision of these inputs provides a mechanism for companies to recover some of the costs of providing technical assistance and others kinds of support.

9) Lack of Equipment and farm infrastructure: Companies may loan or finance the purchase of the equipment and infrastructure needed to enable farmers to produce to company standards and production schedules. Cooperatives may devise innovative schemes to rent or share equipment, helping smallholders overcome technical and economic barriers.

10) Transport: Most small-scale farmers do not have regular access to reasonably priced transportation to deliver their product to market. It is often in the interests of the company to ensure that products reach them in a timely manner. This is especially important for perishable products that must be processed within a short time of harvest.

11) Financing: Financing for production and infrastructure can be provided by government loan programs or CF companies. In Brazil, government financing is usually sufficient to meet farmer needs. In some cases, such as the biodiesel program for soy and palm oil, the existence of a contract is a prerequisite for farmers to obtain loans through the PRONAF loan program for oil palm. Financing is a more significant bottleneck for smallholders in Colombia and Ecuador.

12) NGOs: There is a strategic role to be played by NGOs or other organizations that are able to promote and facilitate discussion between the three main actors, smallholder organizations, agribusiness companies and government agencies. The ability of these stakeholder groups to discuss relevant issues and negotiate solutions is critical to the development of a more supportive regional environment for equitable contract farming arrangements.

12. CF and Commodity Roundtables

While contract farming is not a silver bullet, it can play an important role in improving smallholder ability to participate in formal supply chains. Participation in certified sustainable supply chains requires compliance with national regulations and documentation and is therefore a prerequisite for integration. This is an area in which the Roundtables could play a strategic role by a) facilitating smallholder formalization and b) defining principles for equitable contracts between companies and farmers and incorporating them into certification standards.

Explicit Roundtable support for the governance conditions that make equitable CF arrangements more likely, could facilitate smallholder integration into modern national and international markets and serve as a major driver of socially responsible smallholder rural development that goes far beyond eliminating slave labor.

13. Country-Specific CF Legislation and Policies

We were unable to find specific legislation regulating contract farming in the three countries. In Brazil there is a legislative proposal (PL 6459/2013), which seeks to regulate Management Specification contracts, especially for intensive poultry and hog production. Here key issues are: 1) contracts that progressively reduce returns to labor and capital, and 2) the risk of company relocation, leaving producers with specialized investments that cannot easily be adapted for other uses.

While the problems this legislative proposal seeks to resolve are important and may in fact require some kind of regulation, the current version of the proposed legislation places far too many regulatory demands on contracting companies. If passed in its present form, it is likely to make these kinds of Management Specification contracts unattractive to agribusiness companies, curing the problem by killing the patient.

14. Government Financing Programs for Small-Scale or Family Agriculture

Smallholder access to subsidized loans is often a major bottleneck for agricultural development. As noted throughout this report, access to financing that meets the needs of smallholders varies considerably among the three countries.

14.1 Brazil: Programa Nacional de Fortalecimento da Agricultura Familiar (PRONAF)

The major federal government initiative in this area is the Programa Nacional de Fortalecimento da Agricultura Familiar (PRONAF) (National Program for the Strengthening of Family Agriculture). PRONAF was created in 1995/6 and has evolved over time to correct design problems and include special credit lines for specific activities. Interest rates are highly subsidized ranging from 1.5-3% depending on the activity and value of the loan. In 2012 PRONAF distributed a total of R$16 billion ($7 billion at the current exchange rate) through 1.8 million contracts. Financing is separated into two main categories, operational expenses and investment, which received roughly the same amount of funding, although there were almost twice as many contracts for investment. PRONAF has two major programs, Agriculture and Ranching, which received 57% and 43% respectively of total funding (Schons et al. 2013).

14.2 Colombia

Colombia's three largest banks hold the bulk of banking assets and some 90% of commercial loans go to just 7% of borrowers (IMF 2013). FINAGRO, a public-private partnership between the Colombian government and commercial banks, is the main domestic funding mechanism for agriculture in Colombia. In 2012, FINAGRO dispersed 3.6 billion in loans (Nepstad et al. 2013a). In order to qualify for loans, producers must have legal land title and a credit history. Given that more than 50% of Colombia's land does not have formal titles, the land title requirement bars access to many smallholders. Recent protests against the Colombian government over agricultural policy (Law 970) has resulted in promises of more funding to the agriculture sector and improved access to credit for smallholders (Acosta and Murphy 2013).

14.3 Ecuador

According to the 2000 Agricultural Census, an estimated 93% of agricultural producers did not have access to credit in Ecuador, and those who did access credit did so through private banks or the central bank (Banco Nacional de Fomento, Proyecto SICA). This situation changed with the election of Rafael Correa in 2007 and the approval of a new constitution in 2008, which introduced reforms to the economic foundation of the country. Through his plan for a solidarity-based economy, Correa sought to catalyze entrepreneurship by providing access to credit and microfinance resources under the broad policy umbrella of the Plan Nacional para el Buen Vivir (2009-2013). Specific programs included the National Program of Popular and Solidarity Finance (Programa Nacional de Finanzas Populares, Emprendimiento y Economía Solidaria) and the National System for Microfiance (Sistema Nacional de Microfinanzas). Correa's government created a $40 million fund for microfinance and established performance indicators for microfinance institutions based on international social audit protocols (Bédécarrants et al. 2013). Ecuador's Rural Finance Network (Red Financiera Rural) is a national microfinance network that oversees most of microfinance institutions, provides training for lenders and borrowers, and plays an intermediary role between microfinance institutions and government. In addition, there is a government credit program known as 5-5-5, or $5000 for 5 years at 5 percent annual interest rate (Bédécarrants et al. 2013). We were unable to find current information regarding how these funds have been disbursed and what impact these programs have had on smallholder access to credit.

15. Important CF Support Programs: Brazil, Colombia and Ecuador

All three countries have one or more programs that support contract farming initiatives. The programs described here are representative of two overlapping approaches to promoting contract farming initiatives. The first takes a supply-chain approach in which the focus is on integrating smallholders into supply chains for a specific commodity. The second has a stronger emphasis on the enabling environment. In addition to integrating producers into the supply chain this approach places a greater emphasis on developing local/regional conditions that support the development of CF initiatives. As noted, these are not mutually exclusive approaches. The supply-chain approach does need to take into account the broader environment in which a particular CF initiative is

being developed, and the regional approach involves developing CF arrangements that integrate farmers into the supply chains of specific commodities.

15.1 Brazil

The National Program for the Production and Use of Biodiesel (PNPB), is the major government program supporting contract farming as a mechanism for integrating smallholders into the oilseed supply chain for biodiesel production. The PNPB was created in 2004 and began operations in 2005. It has four main objectives: 1) structure the supply chain for biodiesel, 2) promote the use of a variety of oil seeds so as to include species that are cultivated in the major regions of the country, 3) promote social inclusion and regional development in underdeveloped areas of the country, and 4) support the production of a new source of fuel.

A key element of the program is the mandatory mixture of biodiesel in diesel fuel, a captive market of approximately 2.4 billion liters of biodiesel per year, distributed through 38 thousand gasoline stations throughout the country. The program also includes a contract farming component, which is based on the Social Fuel Certificate created by the Ministry of Agrarian Development (MDA). To be certified for this program, biodiesel producers, must obtain 15-30% of their oil seed via formal contracts with smallholders.

Financing is provided by a special biodiesel program of the National Program for the Strengthening of Family Agriculture (PRONAF). To be eligible farmers must present a signed contract with a processing company and the DAP (a document showing that the farmer is authorized to cultivate a specified crop), legal title to the property and be registered in the CAR (Rural Environmental Registry).

The PNPB involves a number of different oil seeds, including soybeans, sunflower seeds, castor seed, oil palm, peanuts, cotton seed and *Jatropha curcas* (Curcas Nut). Of these, soybeans are the most important, accounting for 80-85% of the oil used for biodiesel production.

The PNPB is based on a regional approach to promoting contract farming. Oil seed production under the program is organized into "Biodiesel Production Poles". This regional approach is intended to increase the number of small-scale farmers in the PNPB and strengthen rural co-operatives and associations[4]. By December 2010, there were 63 poles integrating 1,091 Municipalities throughout Brazil. Between 2005 when the program was launched and 2010, the number of farmers involved in the program increased from 16,328 to 109,000. Average income per farmer is estimated to have increased from R$1,690 in 2006 to R$13,270 in 2009 (da Silva Júnior et al. 2012).

15.2 Colombia

The main government program in support of contract farming is the Proyecto de Apoyo a Alianzas Productivas (PAAP), which began as a World Bank project and is now administered by the Department of Agriculture and Rural Development (MADR). The PAAP seeks to promote the establishment of productive partnerships between organized small farmers and private companies, and includes other relevant stakeholders (including public entities, NGOs and other members of the supply chain).

Productive Partnerships are defined as formal agreements between a smallholder organization and an agribusiness company in which the two partners agree to produce and purchase a given quantity of product of a specific quality at an agreed reference price during a certain period. The overall objective of PAAP partnerships is to develop business activities in which all partners invest and share the risks and benefits. This strategy seeks to generate income, create employment and promote social cohesion of poor rural communities in an economic, social and environmentally sustainable manner.

Partnerships involve a large number of agricultural, forest and animal products. Of the total number of CF initiatives under PAAP, 68% involved tree crops, of which cocoa (24%) and fruits (24%) were the two largest categories with premium coffee following at 10%. Agroforestry products and rubber account for 5% each. Dairy accounts for 9% followed by vegetables (7%), aquaculture (6%) and beef cattle (1%) (Barrantes 2007, MADR 2012).

By January 2012, 369 partnerships were under implementation, involving 26,003 smallholder families, 50,817 hectares and a total investment of roughly US$ 422 million, of which slightly less than 25% was provided by the program. The program was operating in 27 of 31 Departments and in 350 municipalities (MADR 2012).

4 It should be noted that noted that none of the company and NGO representatives working with oil palm in NE Pará were aware that the region was a "Biodiesel Pole"of the PNPB. The only evidence of government involvement was the PRONAF biodiesel financing program administered by BASA.

15.3 Ecuador

Plataformas began in 1998 as part of the Papa Andina Partnership Program (PAPP), an applied research program funded by the International Potato Center and the Swiss Agency for Development and Cooperation. Since then, it has evolved into a process involving multiple stakeholders and has led to various commercial, technological and institutional innovations (Devaux et al. 2011). The logic of PAPP was based on the idea that incorporating smallholders into market chains involves more than providing technical assistance to increase productivity. The main objective of the *Plataformas* program was to make smallholder potato producers a viable option for high-value buyers by reducing transaction and production costs (Cavatassi et al. 2011).

The *Plataformas* program has had several important outcomes for participating smallholders and has significantly improved the welfare of participants. Participants earned premium prices for their potatoes, some 30% above the going market rate, and overall their profits were six times those obtained by non-participants (Cavatassi et al. 2009b). *Plataformas* helped to reduce transaction costs between producers and researchers and extensionists, as well as directly link producers and buyers by convening multi-stakeholder groups. In addition, the *Plataformas* experience led to the creation of a national organization to support joint marketing activities called CONPAPA, or the Consortium of Small Potato Producers. In August 2011, CONPAPA had over 500 affiliated smallholder farms (Cavatassi et al. 2009a).

15.4 Summary of Support Programs

The three programs described here all have elements that address important aspects of a policy framework in support of equitable contract farming arrangements. These include:

1) Promoting communication and collaboration within commodity supply chains: In all three cases there is an emphasis on getting different actors talking to each other and developing a culture of collaboration in support of contract farming which involves businesses and business organizations, smallholders and their organizations, government agencies and civil society organizations.

2) Building Local Institutional Capacity to Support of Equitable CF arrangements: In the PAAP there is a strong emphasis on local capacity-building and on the development of local teams composed of representatives of key government and non-government institutions, so that the PAAP program can be increasingly decentralized as local PAAP teams gain the capacity to support CF initiatives. This local capacity is critical to consolidating a national culture of contract farming.

3) Regional approach: While the focus is on specific commodities and on developing support for contract farming initiatives involving the commodities, the PAAP and the PNPB programs also place great emphasis on developing a supportive regional environment. In both cases one objective is to achieve progressively more comprehensive regional coverage.

4) Longterm investment: Another important lesson from the PAAP is that consolidating individual contract farming initiatives can take a long time, up to five years. During this phase significant support is required to ensure the success of the initiative.

5) Significant private sector involvement: One of the successful elements of the PAAP is that while it is a government program based in the Ministry of Agriculture and Rural Development, it has significant local private sector involvement. This gives the program credibility with the private sector and addresses business concerns of political influence in selection processes and other technical aspects of the program.

16. Recommendations

CF arrangements are employed throughout the agriculture and renewable resources sectors of the three countries, including grains, vegetables, the four commodities studied here, intensive poultry and hog production, tobacco, aquaculture, fruit trees including coffee and cocoa, silviculture and natural forest management for timber and non-timber forest products. In fact, while the relative importance of contract farming varies it seems to be present in virtually all sectors. Furthermore, there is a diversity of contractual arrangements in the production of most commodities, reflecting not just the production characteristics of each commodity, but regional infrastructure and institutional development, and the different needs and capabilities of local farmers and agribusiness companies, as well as the influence of government policies.

There is a general consensus that CF arrangements can play an important role, if only because the alternatives for driving sustainable smallholder development, such as a major increase in the quality and quantity of government support for smallholder development or a comparable increase in the effectiveness of smallholder producer organizations, are even less promising. The case studies described here and the broader literature on CF arrangements in different regions of the world have identified a wide range of issues affecting the performance of CF arrangements and also of mechanisms through which to address problems and increase the beneficial outcomes of CF.

16.1. Small-Scale Farming and Performance of Contract Farming

1) Build broad-based support for contract farming: While there is now considerable momentum in support of contract farming as a rural development strategy for integrating smallholders into modern markets, there is also considerable resistance to such proposals. In Brazil and many other Latin American countries with long traditions of debt peonage and bloody histories of rural land and labor conflict, contract farming is regarded with considerable distrust. While proponents argue that modern contract farming is fundamentally different from debt peonage and related company-farmer arrangements of the past, many supporters of smallholders are not convinced. They point to the large differences in knowledge of agribusiness markets and supply chains and in the bargaining power needed to negotiate equitable contracts. They argue that modern contract farming is just the most recent face of an old relationship, one that has kept rural smallholders in poverty for centuries. They are quick to point to examples of the apparent failure of contract farming to deliver on its promises.

There is a need to promote a balanced discussion and assessment of the state of small-scale farming and the efficacy of current government policies, as well as, a critical evaluation of the potential and challenges of a rural development strategy based on contract farming in order to identify the critical ingredients of successful CF development policies.

2) Smallholders and economies of scale in commodity production: Conduct a review of the technical/academic literature to better tease out the factors that influence the competitiveness of small-scale production of the major commodities, and to identify those commodities and associated conditions in which small-scale producers can compete effectively.

3) Case studies of contract farming in the production and marketing of specific commodities and policy briefs that draw on case studies: There is a large and growing technical and practitioner oriented literature on contract farming based on experiences in different regions and countries throughout the developing world. However, we did not come across any such publications on contract farming in the three countries studied here. Since there are a number of publications in Spanish based on experiences in other Latin American countries, the most acute deficiency is in the availability of such materials in Portuguese. Towards this end a series of case studies of experiences involving different commodities should be developed that provides a detailed description of contract farming arrangements, evaluates their performance and factors that influence performance, identifies bottlenecks and opportunities, discusses the main lessons learned and where appropriate presents suggestions for expanding the role of contract farming in the production of the commodity.

16.2. Design and Implement Programs to Support Contract Farming

1) Designing effective support programs: All three countries have major programs in support of contract farming involving one or more commodities. Much can be learned from these experiences to design national policies, programs and institutional arrangements that favor smallholder integration into modern supply chains via contract farming. In Brazil, SEBRAE (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas) is probably the logical federal organization to play the leading role in developing and implementing such a program. In addition to

fostering development of commercial partnerships, such a program could help develop local capacity to foster the development of contract farming initiatives.

2) Training courses to develop institutional capacity to promote contract farming: A key deficiency is the limited number of professionals with experience in contract farming and programs in support of local contract farming initiatives. To fill this gap, we recommend organizing a series of training courses for representatives of key institutions. The courses would focus on important aspects of contract farming, the characteristics of equitable contracts, negotiating contracts, elements of effective partnerships, financing arrangements for contract farming, among others. Such training programs would involve representatives of private sector companies that work directly with producers, government agencies involved in extension, finance and smallholder development and smallholder producer and political organizations.

3) Exchange program for practitioners and policy makers of the three countries: Organize exchanges in which contract farming practitioners and policy makers visit their counterparts in other countries, in this case between Ecuador, Brazil and Colombia and possibly other countries to learn about their contract farming initiatives, share experiences and lessons learned, and facilitate the transfer and replication of innovative CF strategies.

16.3 Contract Farming, Deforestation and Low Emissions Rural Development

1) Oil Palm: In the context of the objectives of this project, promoting smallholder development while reducing deforestation, oil palm production is a promising alternative for integrating small-scale producers into the supply chains of a major global commodity that is expanding rapidly in tropical forest regions of all three countries. The crop is appropriate for small-scale production and can be integrated into diversified household economic strategies that avoid over-dependence on oil palm income, provide for subsistence security and enable producers to adjust to price fluctuations. However, the viability of smallholder production depends on the provision of adequate technical assistance and high quality varieties and the negotiation of equitable contracts that adequately protect smallholders from market and production risks. In Brazil the main risk may be political, related to changing government interest in adequately supporting small scale biofuel production.

2) Smallholder Beef Production: The most strategic sector for addressing the combined objectives of reducing deforestation and promoting smallholder development through contract farming is smallholder production of beef cattle. All three countries have significant numbers of smallholders involved in raising cattle for beef and milk. While contract farming is widespread in the dairy industry, it is far less prevalent in raising beef cattle. There is an urgent need to develop programs for promoting contract farming in smallholder beef production that seek to address the problems of low productivity and income and the high rates of deforestation that are associated with smallholder livestock raising. Towards this end, a study should be undertaken to identify bottlenecks and opportunities for integrating small-scale beef producers into modern beef supply chains that could provide the basis for the development of pilot contract farming projects.

3) Contract Farming and Smallholder Colonization: In all three countries there are significant flows of smallholders out of densely populated areas into frontier regions of the Amazon. In the case of Colombia, some 5 million rural families displaced by decades of civil war must be resettled, and many are likely to be settled in the Amazon region. In Ecuador, smallholders are moving from the highlands into the Amazon lowlands clearing forest for farms and settlements. In Brazil two decades of intensive settlement creation in the Amazon region have resulted in a huge network of colonist settlements that are a major focus of smallholder deforestation. In virtually all these cases smallholders move into situations with little if any basic infrastructure, receive minimal technical assistance and have difficulties obtaining basic inputs and access to markets for their crops and livestock. Consequently, colonists often adopt short-term opportunistic strategies involving shifting cultivation for annual crops and subsequent conversion of harvested fields to low productivity pastures for raising cattle. Many sell out to others and the original lots are often aggregated into medium sized properties.

Contract farming could play a critical role in helping to redirect this process. A frontier development program with a strong CF element could help colonists make the transition from high emissions land use strategies based on shifting cultivation to more intensive farming strategies that involve different combinations of annual and perennial crop production, small and large animal husbandry, silviculture and management of forest resources.

Such an approach would involve planning colonist settlement and land use at a regional scale to ensure that total regional crop and livestock production is sufficiently large to attract private sector investment for the purchase, storage and processing of local output. By promoting diversified production strategies, farms in these settlements

could supply a range of products to several companies, thereby reducing dependence on individual commodities and companies. The focus of such a strategy would be on consolidating sustainable production and resource management in areas of existing settlement through programs that seek to increase the volume and quality of products with market potential through partnerships involving smallholder organizations, government agencies, and the private sector.

17. Conclusions

Contract farming is widespread in the agriculture and forestry sectors of the three countries studied here. However, its importance varies considerably not just between different products but also between countries for the same product and even between regions in the same country. While there is evidence that contract farming does have a net positive effect on smallholder income and well-being, there is also plenty of evidence of situations in which contract farming has had seriously negative outcomes for participating small-scale producers (Little and Watts 1994). However, in many developing countries there are few if any alternatives to contract farming that are realistically more promising than CF. While there are important exceptions, overall the performance of government policies and programs in support of small scale production and rural development has been dismal, and there is no reason to believe that government efforts will improve significantly in the future. Clearly, other strategies are needed and the most promising involves engagement with the private sector to take advantage of complementarities, minimize conflicts and harness the growth of global commodity markets as a major drive of smallholder development. There is also considerable potential for the further development of contract farming in the production of a wide range of crops, livestock, and forest and fish products for domestic markets. A critical factor in taking advantage of the potential of contract farming is the presence of governance conditions that facilitate the negotiation and execution of equitable contracts.

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