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# INDONESIA COCOA BEAN VALUE CHAIN CASE STUDY

microREPORT #65

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# ACRONYMS AND ABBREVIATIONS

AMAP	Accelerated Microenterprise Advancement Project
APIKCI	Indonesian Cocoa and Chocolate Industry Association
ASKINDO	Cocoa Association of Indonesia
CPB	Cocoa pod borer
MT	Metric ton
SUCCESS	Sustainable Cocoa Enterprise Solutions for Smallholders
USAID	United States Agency for International Development

# EXECUTIVE SUMMARY

Indonesia is the third largest producer of cocoa in the world after Ghana and the Ivory Coast, and the most significant cocoa bean supplier in East Asia. Indonesia's biggest competitive advantages include its low cost, high production capacity (availability of supply), efficient infrastructure and open trading/marketing system (business environment).

Although the cocoa value chain in Indonesia has experienced phenomenal growth over the past few decades, its continued competitiveness is threatened by inconsistent and poor quality production. Widespread pest infestation, especially from the cocoa pod borer (CPB), is a primary cause of poor cocoa bean quality. In order to address the problems of CPB infestation, various public and private sector initiatives have been undertaken to conduct research, train and improve the traditional practices of smallholder cocoa farmers in Indonesia. Despite these efforts, adoption of improved production and post-harvest skills by cocoa farmers has been limited.

This fact raises two questions: 1) What are the incentives and risks that various market actors in the Indonesian cocoa bean value chain have for investing in improved consistency of cocoa bean quality? and 2) How are the actors responding to these incentives?

With multiple levels of local and international cocoa bean buyers fiercely competing on price, a smallholder cocoa farmer in Indonesia has many selling options and market channels for his/her production. Within such a market-based environment that differentiates little for quality, Indonesian smallholder cocoa bean farmers have little incentive to upgrade or adopt more labor-intensive (and costly) production and post-harvest practices. Similarly, cocoa bean collectors and traders have few incentives to invest in upgrading their supply channels.

In contrast, processors and/or manufacturers have clear incentives to establish closer, more directed supplier relationships in order to improve the quality and consistency of their raw materials. However, these incentives are not yet strong enough for them to transform their procurement operations, especially when faced with opposition from local traders. Lead firms must be convinced that moving procurement closer to their suppliers is worthwhile from a cost-benefit perspective.

In addition, cocoa bean price alone may not provide sufficient incentive to promote process upgrading. Smallholder farmers must also have the capacity (skills and knowledge) to access and adopt improved practices and be able to respond to opportunities to increase their returns.

# I. INTRODUCTION

The cocoa bean value chain in Indonesia has experienced phenomenal growth over the past few decades, but its continued competitiveness is threatened by inconsistent and poor quality production. Why have efforts to improve the production and post-harvest skills of smallholder cocoa farmers been limited? This case study explores this question and examines how value chain governance<sup>1</sup> and incentives at all levels can influence industry-wide upgrading and the adoption of improved practices by smallholder farmers.

An overview and description of the cocoa bean value chain in Indonesia is first presented, followed by analysis of the key drivers and threats to its competitiveness. This is followed by analysis of the risks and incentives for actors throughout the value chain to invest in improving cocoa bean quality and maintain competitiveness. The central theme of this case is that market signals and the governance of relationships drive incentives for various market actors in Indonesia to change behavior and invest in upgrading.

The final section describes some of the lessons derived from this case for development practitioners. These include:

- the need for development practitioners to understand the risks and incentives of market actors (at all levels in the value chain) in order to effectively promote improved production practices and smallholder producer upgrading; and
- the need for lead firms and industry leaders in a value chain to recognize the cost/benefit of improving product quality before they will commit to such investments.

The case also illustrates an example of a lead firm's efforts to provide commercial market incentives for smallholder farmers to supply them with higher quality cocoa beans.

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<sup>1</sup> "Governance" here refers to the nature of relationships between buyers and sellers, including the extent and type of their interactions with one another.

## II. COCOA BEAN VALUE CHAIN CONTEXT

With over 450,000 metric tons (MT) of cocoa beans produced in 2005/06, Indonesia is the third largest producer of cocoa in the world after Ghana and the Ivory Coast, and the most significant cocoa bean supplier in East Asia. In addition to raw cocoa beans, Indonesia also produces and exports a small volume of processed cocoa products including powder, paste/liquor, cake and butter. Total Indonesian cocoa exports (cocoa beans and processed cocoa products) are valued at approximately \$600-700 million per year and provide the main source of income for over 400,000 smallholder farmers and their families. Smallholder farmers working on plots ranging from 0.5 to 1.5 hectares grow over 85 percent of Indonesian cocoa beans on the island of Sulawesi.

### A. END MARKETS FOR COCOA

The U.S. imports 136,000 MT of Indonesian cocoa and is the most important market for cocoa beans from Indonesia. (The U.S. is the second largest buyer of cocoa beans in the world.) Other major buyers of Indonesian cocoa beans include Brazil, China and the Philippines. Markets in Asia (most notably in Malaysia and Singapore) also offer expanded export opportunities for Indonesian cocoa beans.

U.S. chocolate manufacturers are the largest international buyers of processed cocoa products from Sulawesi, purchasing about 40 percent of total cocoa butter exports, followed by European and Southeast Asian buyers. The market for Sulawesi cocoa powder is split fairly evenly between buyers in the U.S., Southeast Asia and Europe.

Sulawesi cocoa is traded on the global market as an unfermented, fat, bulk bean. Processors and manufacturers use Sulawesi bean as filler, due to its sufficient fat content and lower cost, and blend it with other fermented beans that add flavor. Global demand for these unfermented bulk beans has become relatively inelastic and is not significantly affected by changes in price.

### B. INTER-FIRM COOPERATION

There are a numerous functions and actors involved in the Indonesian cocoa value chain. A summary of the key functions, actors performing them, and their primary transactional (buying and selling) relationships is presented below. A graphic depiction of the vertical inter-firm linkages is also shown on a value chain map (Figure 1) on page 6.

#### 1. COCOA BEAN PRODUCTION

There are approximately 400,000 *smallholder farmers* in Sulawesi producing bulk, unfermented cocoa beans. Average yield on these farms ranges from 400 to 800 kilograms per hectare. Farmers sell to local collectors at farm-gate or directly to local traders. There are few examples of cooperative-type horizontal linkages or group marketing among smallholder farmers in Sulawesi; most smallholder farmers prefer to deal independently with private collectors and traders.

## 2. COLLECTING/BULKING

*Local collectors* are usually cocoa farmers themselves or rural entrepreneurs with a motorbike (or sometimes a truck) who purchase cocoa beans directly from farmers. The scale of these purchases is small and turnover is rapid. *Local traders* purchase cocoa beans from local collectors or, to a lesser extent, directly from farmers, and are usually engaged in a variety of other businesses (e.g., general merchants, vehicle hire, etc.). These traders sell most of their cocoa beans to local exporters although a smaller amount flows to local processors.

Collectors and traders do not need licenses or permits to operate so competition is fierce with few barriers to entry.

## 3. LOCAL PROCESSING

Cocoa processing, or grinding, entails the transformation of dried cocoa beans into a variety of processed products including cocoa paste or liquor, cake, powder and butter. Processors have strict quality standards and expect their suppliers to meet these standards. Only 10 percent of Sulawesi cocoa bean production is processed locally, the rest is exported as raw beans. In Sulawesi, one of the largest processors is *PT Effem* (a subsidiary of Mars/Masterfoods). PT Effem sells processed cocoa products to other Mars manufacturing plants in the U.S., Brazil and other parts of Southeast Asia—as well as to the Ceres Group. The *Ceres Group* is the only fully integrated cocoa processor and cocoa product exporter in Indonesia. Ceres has a local manufacturing plant and has expanded its processing operations in Malaysia.

## 4. EXPORTING

*Local exporters* buy from collectors and traders who deliver beans to their storage facilities. Many of these local exporters have found it increasingly difficult to compete with the large-scale international exporters and have begun to sell to them rather than continue to export independently. Approximately 80 percent of Indonesian cocoa beans are sold by the five main *multinational affiliate exporters* in Sulawesi: EDF & Man, Olam, Cargill, ADM and Continaf (these firms have offices worldwide engaged in international commodity trading). These large-scale exporters purchase bulk beans from traders who deliver to their warehouses, sort and grade for quality, and sell to buyers (primarily in the U.S., Malaysia, Singapore and Brazil) for processing.

## 5. INTERNATIONAL TRADING/PROCESSING/MANUFACTURING

Once cocoa beans are exported from Indonesia they become part of the global trade in cocoa which includes multinational traders, processors and manufacturers. *Multinational traders* sell cocoa beans to processors and manufacturers around the world. *Multinational processors*, including Cargill, are major producers of processed cocoa products (cocoa liquor, butter and cake). *Multinational manufacturers*, such as Hershey's, are dedicated chocolate producers and are generally located close to their final consumer markets. There are also *integrated multinational processors and manufacturers* who are involved in multiple functions of processing and manufacturing of final products. One of the largest, Mars, has significant presence and representation in Indonesia.

## C. SUPPORTING MARKETS AND PRODUCTS

ASKINDO is the national cocoa association but most of its members are local traders and exporters.

ASKINDO facilitates horizontal linkages among cocoa traders in the industry and provides a variety of technical and advocacy support services including: extension research and dissemination, model cocoa bean production pilots, and quality management techniques. Another association, APIKCI, was recently established to represent cocoa processors and manufacturers.



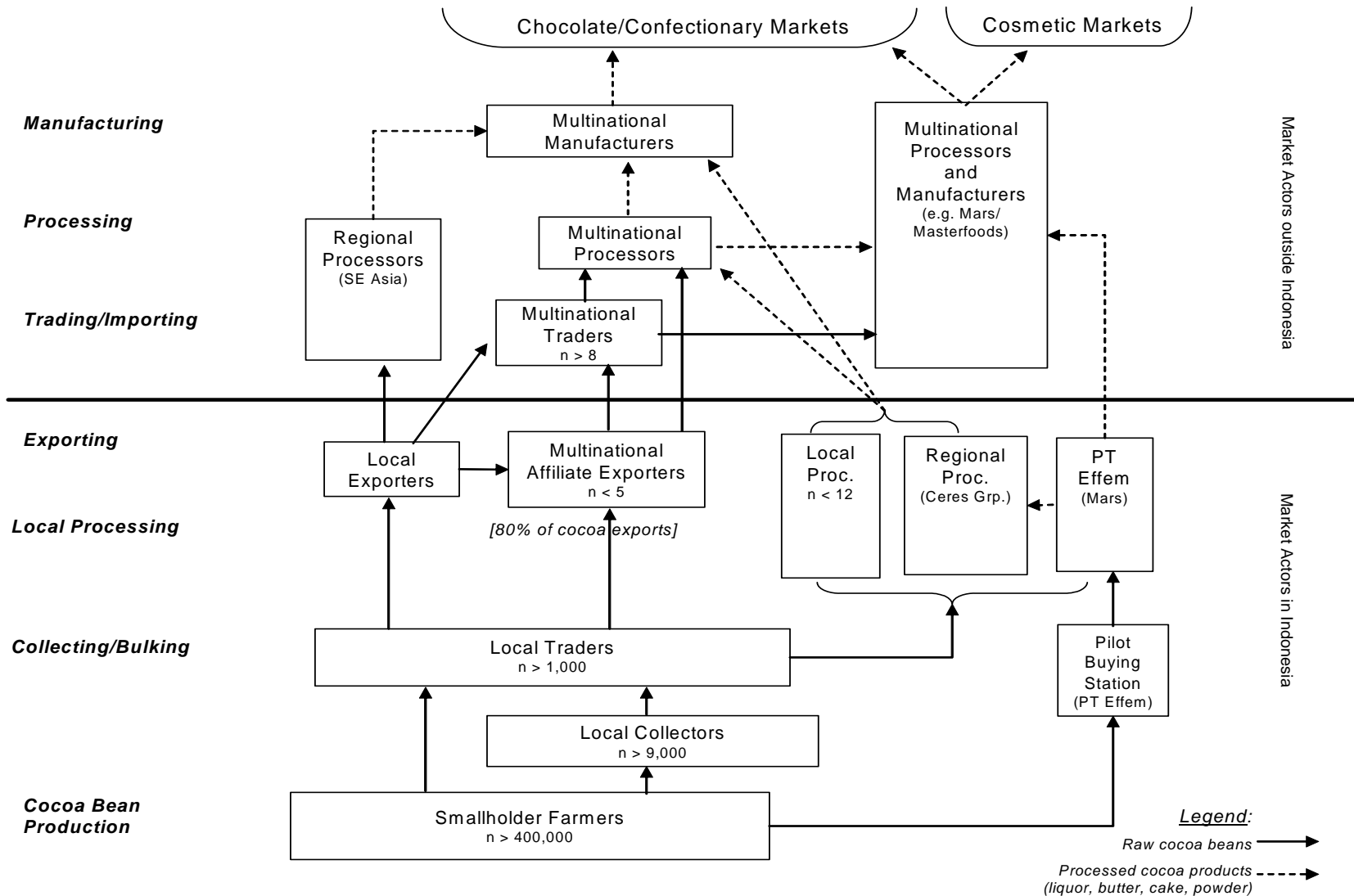
## **D. ENABLING ENVIRONMENT**

The Indonesian cocoa value chain is generally unregulated with limited government policy interventions to date. Unlike other export commodities in Indonesia, cocoa has not been affected by price controls, trade licensing requirements or direct involvement of government-sponsored procurement or logistics agencies. In fact, limited government involvement in the cocoa bean value chain has been a factor in its growth and competitiveness. The “hands off” approach of the government, combined with vibrant marketing channels, have allowed cocoa farmers to receive a higher percentage of the international price (approximately 75-85 percent of the prevailing export price versus 50-65 percent for farmers in West Africa) albeit for a lower quality product.

## **E. VALUE CHAIN MAP**

A map of the value chain for cocoa beans from Indonesia is shown in Figure 1 on the following page. It is a graphical representation or snapshot of the various functions in the value chain, key participants performing those functions and their dynamic inter-relationships.

Figure 1: Cocoa Value Chain Map



# III. INCENTIVES FOR UPGRADING

## A. FACTORS OF COCOA BEAN VALUE CHAIN COMPETITIVENESS

This section describes the characteristics or qualities that global cocoa bean buyers tend to seek in their suppliers (i.e., characteristics that determine the global competitiveness of the cocoa bean value chain). Global buyers have stated that suppliers of cocoa beans in every country have their relative strengths and weaknesses regarding these characteristics, so there is no ideal combination that all suppliers or countries should strive to possess. Nonetheless, it is useful to look at these aspects to understand where Indonesian cocoa beans are competitively positioned.

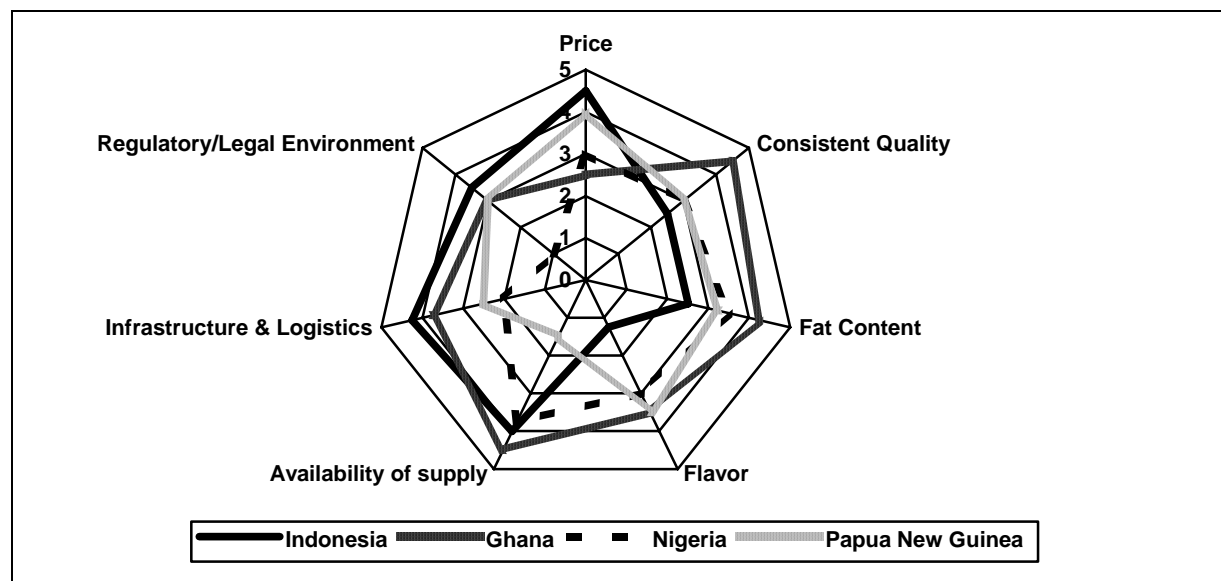
**Table 1. Competitiveness Characteristics of Cocoa Beans in the Global Market**

Competitiveness Characteristics	Description
Consistency of Quality	<ul style="list-style-type: none"> <li>- This is based on generally accepted parameters and indicators of cocoa bean quality used in the trade, including bean count (number of beans per 100 grams; &lt;110 beans), moisture content (&lt;7.5 percent), and percentage of waste materials (&lt;10 percent).</li> </ul>
Fat Content	<ul style="list-style-type: none"> <li>- Percentage of fat content refers to the amount of fat or cocoa butter that can be extracted from the beans during processing. A high fat content is preferable.</li> </ul>
Flavor	<ul style="list-style-type: none"> <li>- Flavor can be accentuated with proper fermentation but is primarily a genetic trait of the cocoa bean itself.</li> <li>- Stronger flavor beans are required for higher quality food and pharmaceutical cocoa products.</li> </ul>
Price	<ul style="list-style-type: none"> <li>- The price per MT of cocoa beans is a strong determinant of value chain competitiveness (though not one that can be looked at in isolation).</li> <li>- Cocoa beans from Sulawesi are globally traded as "Sulawesi FAQ" on the New York Commodities Exchange.</li> <li>- Price often reflects other characteristics (i.e., a lower price may reflect inconsistency of quality, low fat content, etc.), and is not considered in isolation by global buyers.</li> </ul>
Availability of Supply	<ul style="list-style-type: none"> <li>- The availability of cocoa bean supply depends to a large extent on the amount of land in production and the production yield. Farmers in Sulawesi have some of the highest cocoa bean yields in the world and one of the largest areas under production.</li> <li>- The reliability of cocoa bean exporters is also an important aspect of supply that global buyers appreciate.</li> </ul>

Competitiveness Characteristics	Description
Infrastructure and Logistics	<ul style="list-style-type: none"> <li>– Efficiency and availability of transportation and infrastructure to move beans from producers to the global buyer</li> <li>– This also includes the efficiency of port operations, inspection services, and other logistical export services.</li> </ul>
Legal/Policy Environment	<ul style="list-style-type: none"> <li>– This includes government and public sector policies and regulations (taxation, support and/or interference, standards, contracts, certification, etc). The legal and policy environment can have a positive or negative influence on competitiveness.</li> </ul>

The performance of Indonesia in relation to other cocoa exporting countries measured according to the competitive characteristics described above is illustrated in Figure 2. Rankings were based on discussions and interviews with major global cocoa bean buyers, using a scale from one to five (with 1 = weak and 5 = strong). Ghana is widely recognized as a significant supplier of high quality cocoa beans and is a good overall global benchmark for many exporting countries.

**Figure 2. Relative Performance of Indonesia vs. Other Cocoa Bean Exporting Countries**



Indonesia’s biggest competitive advantages include its low cost, high production capacity (availability of supply), efficient infrastructure and open trading/marketing system (business environment). As the largest producer of unfermented bulk beans, Indonesia currently occupies a strong position with few competitors in this segment of the global market.

## B. GAPS IN INDONESIAN COCOA BEAN COMPETITIVENESS

Indonesia's biggest competitive gap (as shown in Figure 2) is the inconsistency of cocoa bean quality. According to one multinational manufacturer, even a lower quality cocoa bean can be used as long as its specifications are known and consistent. It is not possible, however, to adjust the manufacturing process to compensate for fluctuations in waste percentages.

Widespread pest infestation, especially from the cocoa pod borer, is a primary cause of poor cocoa bean quality. Over the past few years, increased CPB infestation and poor production practices of smallholder farmers in Sulawesi have led to decreased cocoa bean yields and reduced quality. In order to address the problems of CPB infestation, various public and private sector initiatives have been launched to conduct research, train and improve the traditional practices of smallholder cocoa farmers in Indonesia. Based on extensive research and field trials, a basic system<sup>2</sup> of improved techniques in crop husbandry and integrated pest management was developed that can effectively mitigate and/or control the negative impact of CPB infestation. However, although a development program was able to successfully train numerous smallholder farmers in these improved techniques, adoption and application of these practices by cocoa farmers in Sulawesi has been limited.

This fact raises two questions: 1) What are the incentives and risks that various market actors in the Indonesian cocoa bean value chain have for investing in improved consistency of cocoa bean quality? and 2) How are the actors responding to these incentives?

## C. INVESTMENTS IN UPGRADING

### 1. PROCESSORS/MANUFACTURERS

Cocoa processors and manufacturers transform raw cocoa beans into a variety of value-added cocoa products and therefore seek steady suppliers of raw materials with consistent quality. When processors and/or manufacturers buy cocoa beans, their needs and product specifications dictate the governance and nature of their supplier relationships. Such buyers have clear incentives to establish closer, more directed supplier relationships in order to improve the quality and consistency of their raw materials.

PT Effem wanted to develop closer relationships with its cocoa bean suppliers and invested in a pilot “buying station” in central Sulawesi. By offering slightly higher prices and a relatively more transparent buying process, PT Effem hoped to provide commercial market incentives for smallholder farmers to consistently supply them with higher quality cocoa beans.

The initial establishment of this buying station was not easy for PT Effem, however, and also threatened the livelihoods of existing cocoa bean collectors and traders. PT Effem envisioned these facilities as a complement to—rather than a substitute for—their prevailing supply channels, but local traders and collectors vehemently opposed (sometimes violently) the buying station in central Sulawesi. At the time of writing this case study, PT Effem was still assessing the cost-benefit of its investment to set-up direct buying

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<sup>2</sup> This system is commonly known by its Indonesian acronym, PsPSP, and consists of improved production practices including: (i) frequent harvesting, (ii) pruning, (iii) clearing pod husks and leaf litter, (iv) fertilizing and (v) preserving natural enemies. [Source: SUCCESS Alliance Project documents; ACDI/VOCA, 2002]

relationships with cocoa bean farmers and was in the process of deciding whether this model should be replicated elsewhere.

## **2. PRODUCERS/TRADERS**

The governance of cocoa bean trading is generally price-driven and market-based. The Indonesian cocoa bean value chain is globally competitive due to its ability to provide large volumes of a low cost filler bean in a relatively efficient manner. With a large number of smallholder farmers and multiple levels of local and international cocoa bean buyers fiercely competing on price, a smallholder cocoa farmer in Indonesia has many selling options and market channels for his/her production. Moreover, existing demand even for poor quality cocoa beans (especially from buyers in China) means that global buyers are not willing to offer a quality premium for Sulawesi beans.

Within such a market-based environment, with minimal differentiation for quality, Indonesian cocoa bean collectors and traders have little incentive to invest in upgrading their supply channels. Similarly, smallholder cocoa bean farmers have little incentive to upgrade or adopt more labor-intensive (and costly) production and post-harvest practices unless there are clear price premiums for improved quality. In fact, since transactions in market-based governance relationships depend heavily on volume, there is the incentive for some market actors to manipulate volumes by mixing cocoa beans with waste and other foreign materials in an attempt to increase their income.

Finally, cocoa bean price alone may not be a sufficient incentive for smallholder farmers to adopt improved production and post-harvest practices. The sometimes modest role of cocoa bean sales in relation to overall household income may also explain the hesitancy of some smallholder farmers in Sulawesi to invest in upgrading.

# IV. LESSONS LEARNED

## A. INCENTIVES FOR CHANGE IN MARKET-BASED RELATIONSHIPS

The overall structure of the cocoa value chain in Indonesia continues to be rationally driven by volume and price-based transactions. Conformance to quality specifications is not important since a market exists for almost all levels of quality. Although global buyers (multinational traders, processors and manufacturers) have expressed frustration with the inconsistent quality of Sulawesi beans, most of them continue to source from Indonesia.

There are incentives for some actors in the cocoa bean value chain, especially processors and manufacturers, to invest in improving supply channels, but in Indonesia, these incentives are not yet strong enough for them to transform their procurement operations and expand into more directed buying relationships with their suppliers. Lead firms must be convinced that moving procurement closer to their suppliers is worthwhile from a cost-benefit perspective. They may need to experiment with this model for some time before replicating it on a large-scale basis.

It is also important to note that cocoa bean price alone may not provide sufficient incentive to promote process upgrading. Smallholder farmers must also have the capacity (skills and knowledge) to access and adopt improved practices and be able to respond to opportunities to increase their returns.

## B. EFFECTIVE PROMOTION OF IMPROVED PRACTICES AND UPGRADING

This case demonstrated that unless market signals from multinational buyers of cocoa beans change, there is limited scope for a development program to facilitate greater adoption of upgrading by smallholder farmers. By understanding incentives and risks at all levels in the value chain early on, development programs can make the most appropriate decisions for their program interventions.

Oftentimes lead firms have incentives to invest in the upgrading of value chain operations, but face risks and have questions about the cost-benefit of such operations. In these cases, development programs can help to mitigate risks and support trials that will demonstrate the cost-benefit of the operations to lead firms.

Development programs can also promote inter-firm cooperation by improving the level of trust and transparency in the value chain. This is especially important for buyers seeking to improve quality by establishing closer, more directed relationships with suppliers. In Indonesia, PT Effem took the initiative to conduct their own trials, but in other scenarios development programs could play a third-party role in facilitating new relationships between value chain actors.

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