

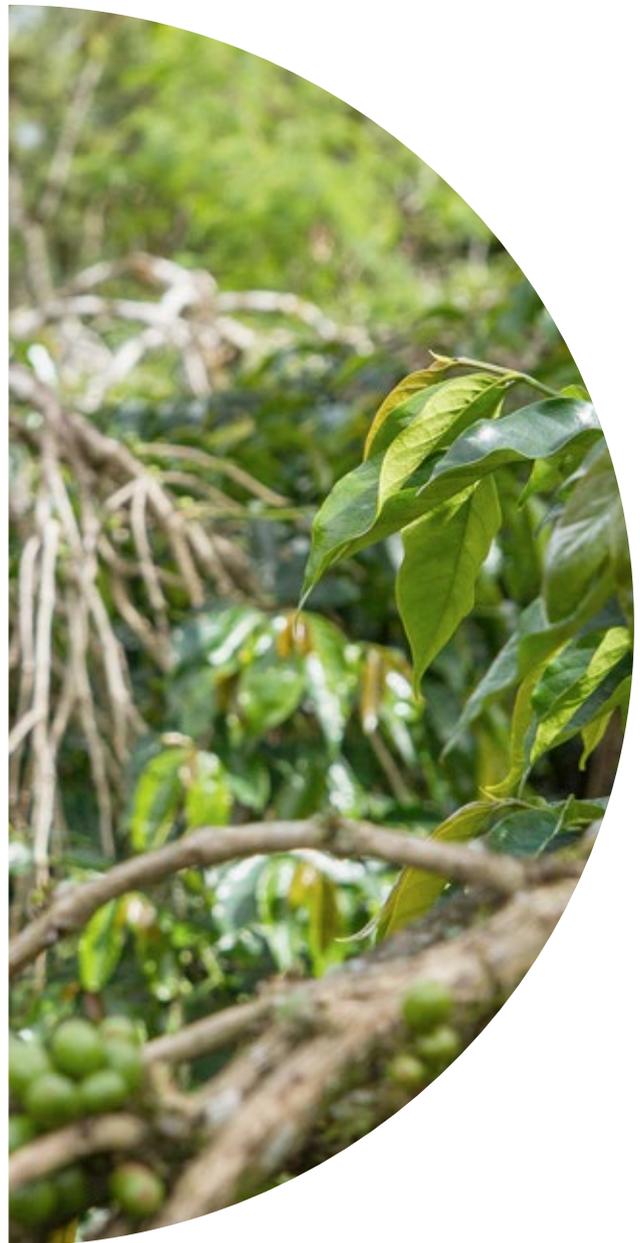
Indonesia

A business case for sustainable coffee production



March 2014

An industry study by TechnoServe for the
Sustainable Coffee Program, powered by IDH.



- Indonesia is the world's 2nd largest exporter of Robusta. However, the country could become a net Robusta importer within 10 years. Domestic coffee consumption is growing rapidly, while overall production is flat.
- Indonesia has 3x as many smallholder coffee farmers as Vietnam but 1/3 the coffee. Low farmer output and the highly fragmented nature of Indonesia's production base make sustainability programs significantly more expensive than in Vietnam.
- We estimate at least 7% of Indonesia's coffee exports are currently certified or verified "sustainable." Exporters have been the primary investors in sustainability programs to date. If the Indonesian coffee sector continues its current course, with exports declining in significance, sustainability efforts are likely to plateau.
- Maintaining Indonesia's position as a leading Robusta exporter will require boosting smallholder yields. There is potential to double yields for half a million farmers and generate an incremental 6 million bags of Robusta. This vision could be achieved by 2023, but would require action now.
- The international coffee industry has a rare opportunity to catalyze this change and invest in smallholder training. Boosting yields would address root issues in the sector, raise farmers' incomes by 70%, and improve the business case for supply chain actors to co-invest in sustainability efforts.



Executive Summary

Global demand for sustainable coffee is rising. Under the IDH umbrella, major coffee roasters have set a goal of increasing global sustainable coffee sales from 8% to 25% by 2015. This ambitious target can only be met through coordinated effort on the part of stakeholders and targeted investments at different stages in the supply chain.

Indonesia is currently the world's 2nd largest Robusta exporter and 3rd largest producer. As such, it could play an important role in meeting demand for additional sustainable coffee. Current production costs are competitive relative to other origins and the sector is fully liberalized.

However, Indonesia could become a net Robusta importer within 10 years. Production is flat and constrained by low farm yields, while domestic consumption is rising at a pace similar to other Southeast Asian countries like Malaysia and the Philippines. Without Indonesia's export base, or the emergence of a new low-cost producer, the international coffee industry is likely to encounter a substantial supply gap in the next 10 years. Supply to international buyers would likely be consolidated into Vietnam's Central Highlands, a region that has succeeded at increasing its production for 30 years but now faces environmental challenges that could cap or reduce future production.

At first glance, the business case for investing in coffee sustainability in Indonesia appears weak, especially compared to other origins such as Vietnam. Exporters (both local and international) have invested in most sustainability programs to date, but may be deterred from future investment due to high transaction costs and the diminishing size of the export market. Indonesia's large number of farmers and low farm output reduce economies of scale and increase the costs associated with certification / verification. Other functions, such as aggregation, are also more expensive in Indonesia, as infrastructure is

less developed. In addition to a declining export sector, Asia recently replaced Europe as the largest market for Indonesian coffee. This market typically has less demand for sustainably certified / verified coffees.

The business case for sustainability can be improved by boosting farm productivity. Yields for half a million small-holders could be doubled through improved agricultural practices. This could lift farmers' incomes by 70% and generate an additional 6 million bags of Robusta supply. Raising farm productivity would also dramatically improve the economics of certification / verification and lay the groundwork for exporters and other private sector players to co-invest in additional sustainability programs in the future.

Boosting farm productivity represents an attractive investment that could be catalyzed by the international coffee industry. The total cost of training half a million farmers is estimated at \$95 million over 10 years, but could generate an additional 6 million bags per year, worth \$630 million. Similar-sized investments could be made in other Robusta producing nations (e.g. Uganda, Vietnam), but offer less potential for new supply. We recommend the international coffee industry lead this investment, as it has much to gain from a diversified supply base. Co-investment from exporters and the private sector, and enabling support from the Government of Indonesia, are also necessary to achieve broad and sustained impact for the sector.



Context

Global demand for sustainable coffee is rising

Under the IDH umbrella, major coffee roasters have set a goal of increasing global sustainable coffee sales from 8% to 25% by 2015. This ambitious target can only be met through coordinated effort on the part of stakeholders and targeted investments at different stages in the supply chain.

Not all countries and producers will be able to meet this demand

Many of the world's coffee farmers will find it challenging to be verified or certified. These difficulties vary by country and type of producer. In some cases, rising costs of production make it hard to absorb the additional cost of sustainability certification or verification relative to the economic benefits. In other situations, farmers are not of sufficient scale or are not aggregated in such a way that the economics can be justified.

Indonesia is likely to face challenges attracting investment in sustainability

Despite its significance as the second largest exporter of Robusta, Indonesia initially appears to be a less attractive destination for sustainability investments when compared to other origins. Indonesia has significantly higher verification costs than Vietnam, driven in large part by having three times as many smallholders and one-third the average output per hectare. Indonesia's export base is also declining due to a fast-growing domestic market (see Exhibit 1). Furthermore, investors are likely to face challenges in leveraging substantial government support as Robusta coffee plays a minor role in Indonesia's agricultural export portfolio. Greater emphasis has been placed on other cash crops (see Exhibit 2) and on the Arabica sector. These factors increase the cost of producing sustainable Robusta (relative to other origins) and make it challenging to accelerate certification / verification.

Indonesia's focus is also moving away from traditional markets, like Europe

Asia's rising per capita incomes and the growing popularity of processed packaged coffee products have driven rapid expansion in regional demand for traditional coffee exports from Indonesia. As a result, Asia has overtaken Europe as the primary destination for Indonesian Robusta exports. Asian markets have historically shown less demand for sustainability-verified products than European markets. If this continues, the Indonesian industry's interest in certification / verification may wane. A renewed focus on sustainability will need to be catalyzed by the international coffee industry.

The international coffee industry will need to act if it seeks to change this trajectory

Support for Indonesia's coffee sector is critical as there are few alternatives available to the international coffee industry if Indonesia's Robusta exports tail off. Without Indonesia's export base, or the emergence of a new low-cost producer, Robusta supply is likely to be consolidated in Vietnam's drought-prone Central Highlands. This would leave the global coffee sector vulnerable to supply-side shocks and could deepen price volatility. The international coffee industry has much to gain from maintaining a diversified supply base and should therefore act as the catalyst for restoring growth to Indonesia's export sector.



Exhibit 1: Indonesia is on track to become a net Robusta importer within the next ten years

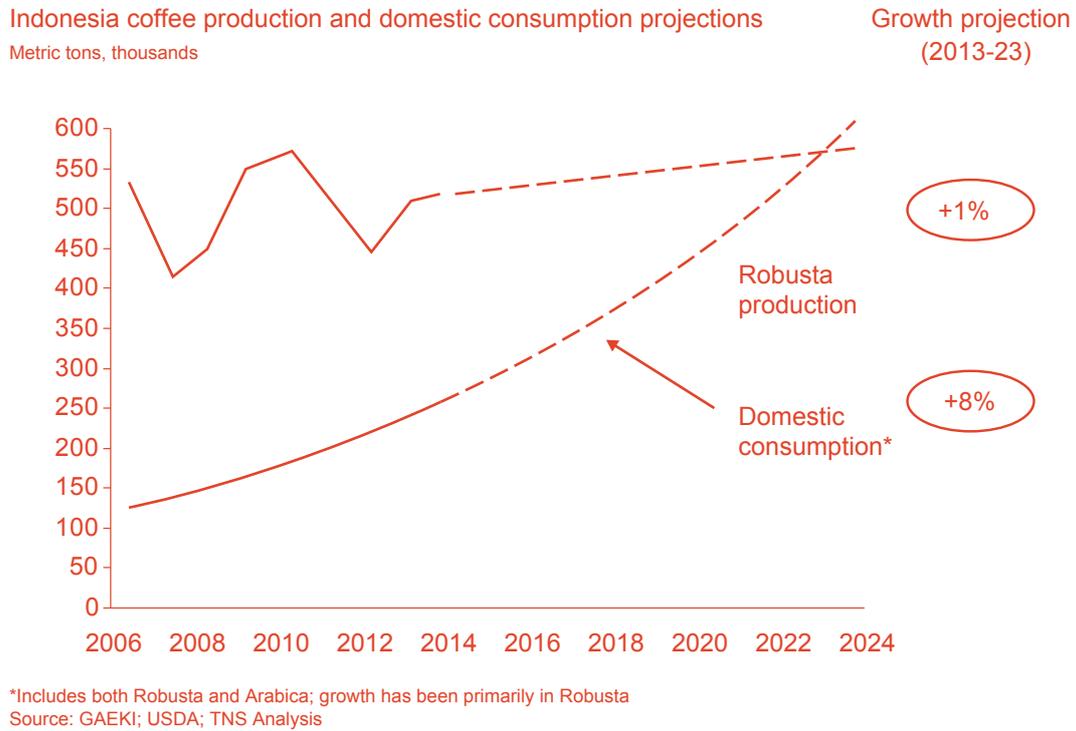


Exhibit 2: Over the next decade, Indonesia’s coffee consumption is likely to catch up with other Asian countries’



* Modeled at current population growth rates
Source: International trading houses; USDA; GAEKI; World Bank; TechnoServe analysis

Economics of Coffee Production in Indonesia

A smallholder crop

Indonesian coffee is produced by an estimated 1.5 million smallholder farmers, with farm sizes averaging less than one hectare of coffee. Over 60% of Robusta coffee production is concentrated in Southern Sumatra. Not all coffee farmers are “active” and dependent on coffee as a meaningful part of their household income. We estimate there are 0.5 million “active” Robusta farmers. Coffee’s comparative advantage in key growing regions has weakened despite its competitive income potential for smallholders (see Exhibit 3).

A liberalized operating environment

Indonesia has a liberalized coffee sector wherein both local and international exporters operate freely. Most farmers are unorganized and cooperatives are weak. Farmers sell their coffee in unprocessed form to aggregators who hull, transport and sell it to exporters in green form. Additional processing is performed by exporters to remove defects and prepare green coffee to export standards.

Limited government interest in the sector

While Indonesia is an important supplier of coffee to the world market, coffee only accounts for 1% of export revenues and is not a strategic priority for the Indonesian government. State support has targeted commodities that comprise a larger portion of exports or the local tax base such as palm oil and cocoa. The rise of palm oil most clearly demonstrates the ability of

Indonesian agricultural markets to respond effectively to incentives (see Exhibit 4) if the right enablers are in place.

Low productivity

Indonesia’s farm productivity is significantly lower in comparison to Vietnam. In Vietnam, farm sizes are similar (about 1 hectare per household) but average yields are more than three times higher than yields for Indonesia’s “active” farmers. Vietnam has been successful at steadily increasing yields over the past 30 years whereas Indonesia’s yields have stagnated (see Exhibit 5).

Minimal fertilizer use (both organic and inorganic, e.g. NPK) keeps production costs low, but leaves coffee plants undernourished. The productive potential of Indonesia’s aging tree stock has been further limited by the low adoption rate of good agricultural practices, such as pruning and integrated pest control.

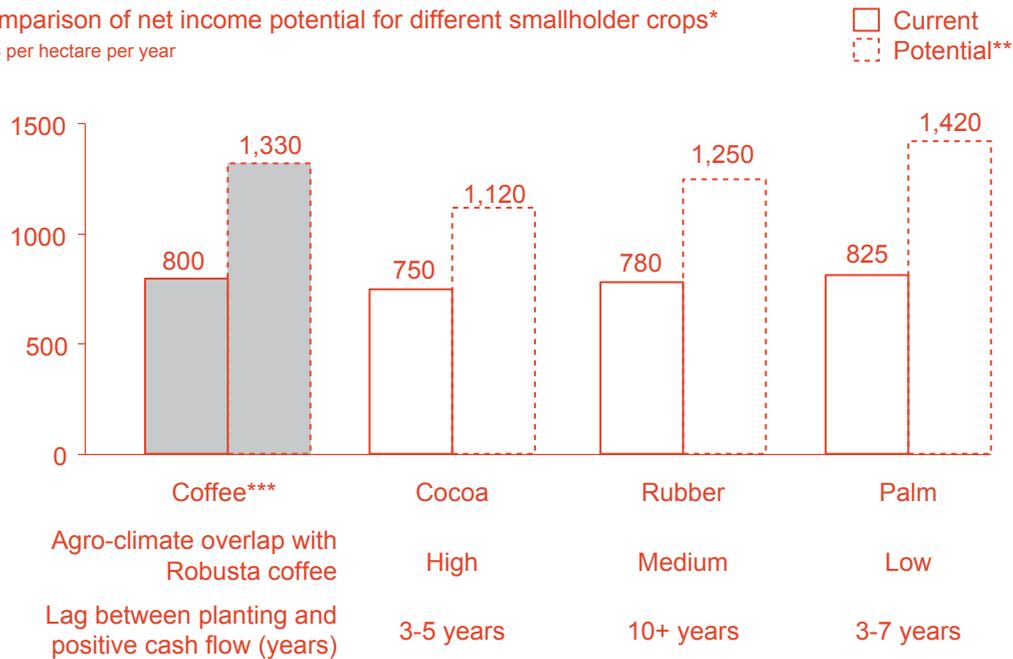
Opportunities to increase yields and farmer incomes

Low farming costs are counterbalanced by low yields and reduce coffee’s profitability per hectare (see Exhibit 6). There is, however, potential to increase farmers’ yields while maintaining a fairly low cost base. This can enable farmers to earn a greater profit from coffee production.



Exhibit 3: Coffee is competitive from the farmer perspective relative to other cash crops in Indonesia

Comparison of net income potential for different smallholder crops*
US\$ per hectare per year



* Based on available data and literature review

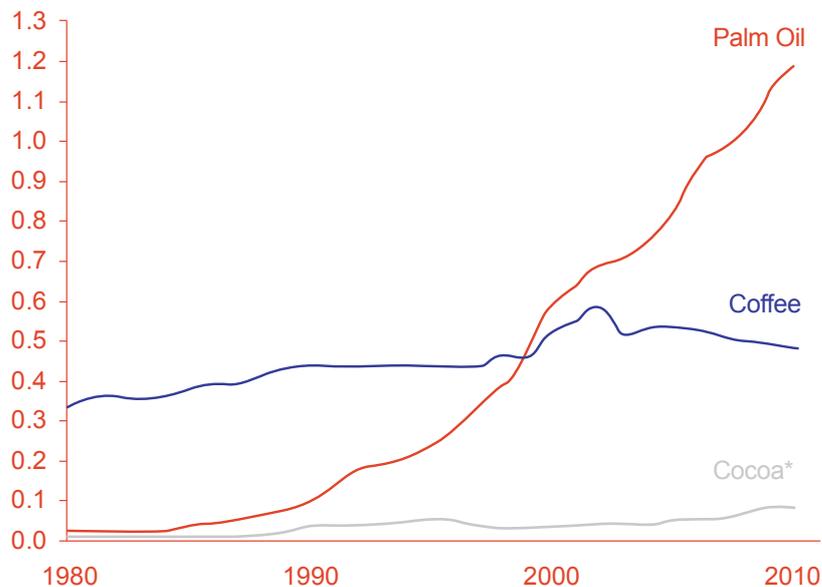
** Assuming modest improvements in agronomy, quality, efficiency; not necessarily the best practise achieved on research plots or private estates

*** At Robusta LIFFE price of \$1700 per ton

Source: Veco; Round Table Cocoa; World Bank/ FSG; IIED; FAO; NAFRI; Interviews; technoServe analysis

Exhibit 4: Land dedicated to palm oil has expanded rapidly compared to coffee

Arable land use in Southern Sumatra
Hectares, millions



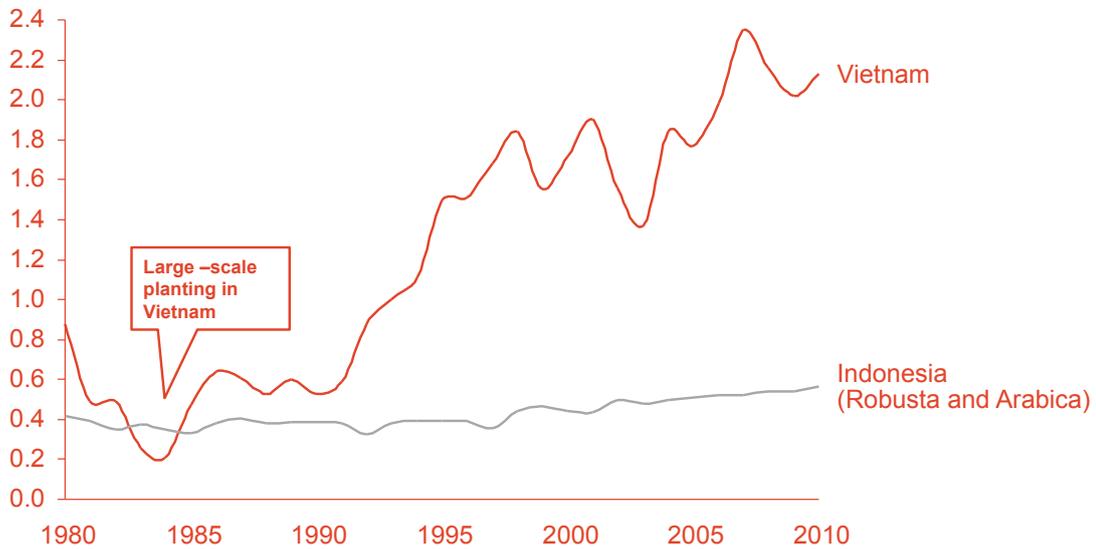
* Preliminary data for 2010

Source: Ministry of Agriculture; TNS analysis

Exhibit 5: Yields are low relative to Vietnam, and have stagnated

Average farmer coffee yield*

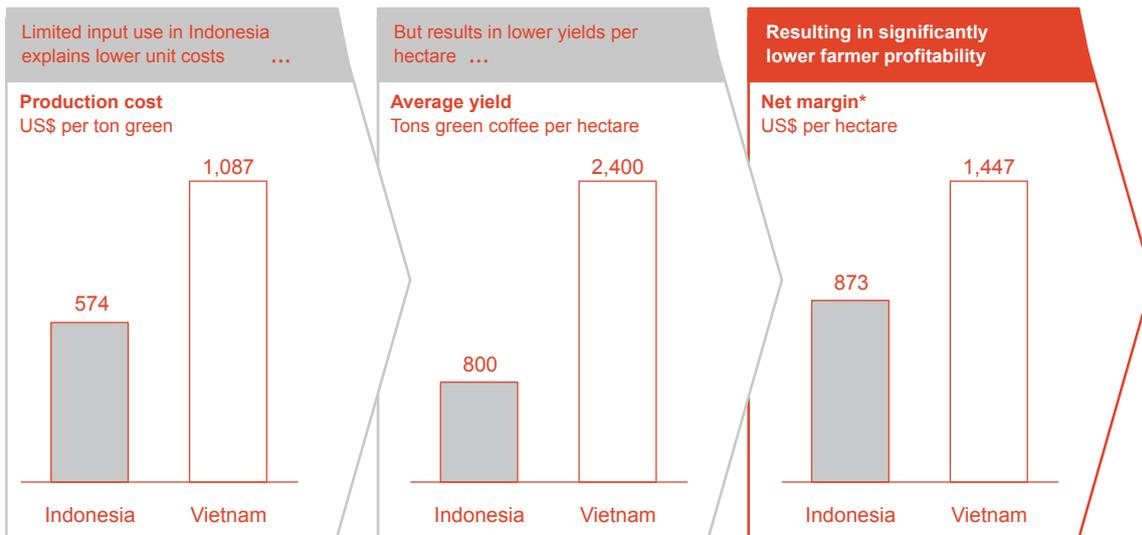
Metric tons per hectare (green coffee)



* National average, i.e. captures all archetypes (smallholders, State Owned Enterprises, Robusta and Arabica)

Source: Directorate General of Estate Crops; USDA; Anthony Marsh / FAO; DCP-MARD; IPSARD; Kuit Consultancy; TechnoServe analysis

Exhibit 6: Low productivity makes coffee farming less profitable in Indonesia under most price scenarios



* Based on 2013 average monthly LIFFE price of \$2075/MT

Source: Interviews with industry stakeholders and project visits; TechnoServe analysis

Emerging Sustainability Trends

7% of exports currently certified / verified “sustainable”

Sales of sustainable coffee have increased in Indonesia in recent years. By the end of 2012, an estimated 7% of Indonesia’s coffee exports were certified / verified as sustainable, just below the global average. Within the Robusta segment, 5% of Indonesia’s sales are certified / verified.

Most sustainability programs have been financed by exporters

Most certification / verification programs in Indonesia have been funded and run by private exporters (both local and international). Under such programs, exporters typically invest in organizing farmers, training them, and certifying / verifying that practices are sustainable. The business case for the exporter is typically premised on growing market share and/or passing the added cost down the supply chain.

The business case for exporters to continue investing in sustainability is not attractive

Exporters’ investments in sustainability programs have been tentative and focused on a few specific roasters. While Indonesia’s smallholders are not likely to face significant challenges meeting baseline sustainability criteria, the business case for exporters to continue investing in certification / verification programs appears questionable.

(1) Traditional export markets are shrinking

Green coffee exports are declining in significance for Indonesia. Overall production growth has been slow and domestic demand has surged. Indonesia also has a fast-growing soluble (instant) coffee manufacturing industry that now represents over 20% of the country’s total coffee distribution. The local and regional markets where these products are sold have historically had less demand for sustainability.

(2) Costs are higher

Low output per farmer and high aggregation costs also make it more expensive (on a per ton basis) for exporters to fund certification / verification programs in Indonesia than in other producer countries, notably Vietnam (see Exhibit 7). International exporters typically have a presence in both Indonesia and Vietnam, but appear to have made greater sustainability investments in Vietnam to date.

(3) There is less public sector leverage

As the Indonesian government is less engaged in supporting the Robusta sector, private coffee companies are unable to build off of a foundation of government extension to enhance their training activities. Historically, there has been greater emphasis on Arabica in the regions where it can be grown.

A better business case starts with improving yields

While certification / verification efforts provide a framework for sustainable production, they are unlikely to alleviate Indonesia’s most pressing problem: low farm productivity. Boosting yields would reduce the cost of certification / verification and improve the business case for exporters to commit to further investments into sustainability.



Exhibit 7: Low output per farmer makes verification relatively more expensive in indonesia

Group verification costs
US\$ per ton green



¹For archetypical Robusta farmer in Southern Sumatra (i.e., 1 hectare and 800 kg/ha yield)

²Average of Ethiopia and Uganda smallholders

³Annual cost; includes auditing, one training session (group, classroom-based), and basic Internal Control System (ICS) management

⁴Kgs; assumes 25% of farmers' total verified production is exported as "sustainable"

Source: TechnoServe analysis



Boosting Yields and Farmer Incomes

Potential to add 6 million bags of Robusta by 2023

Yields could be doubled for over half a million Indonesian smallholders. The current average Robusta yield is around 800kg/ha. With improved farming practices, yields of +1,500kg/ha are attainable (see Exhibit 8). A doubling of yields could bring an extra 6 million bags to the market annually by 2023.

Enhancing awareness and adoption of improved farming techniques

A farmer training program designed to boost yields would improve farming practices, particularly fertilizer use (both organic and inorganic), tree rejuvenation (e.g. pruning, grafting, new planting) and integrated pest management. In addition, farmers could be trained to gradually replace damaged tree stocks with higher-yielding and disease-resistant varieties. Adherence to these practices will lay the foundation for certification / verification efforts in the future.

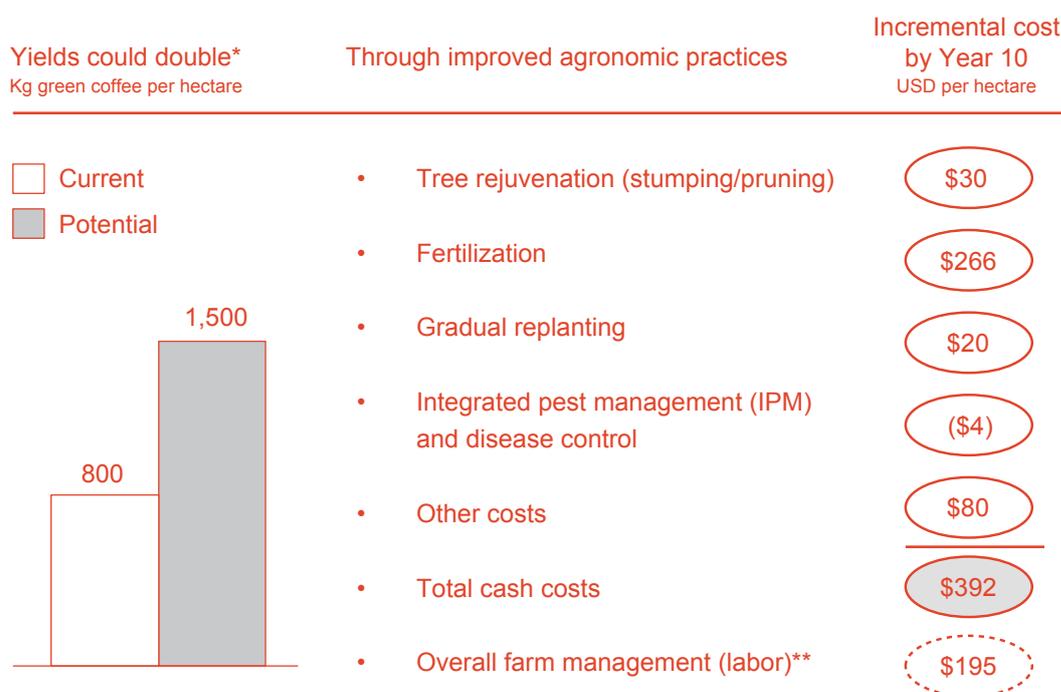
Minimal upfront farmer cash outlay: gradual replanting and intensification of input use

Farmers will likely be reluctant to adopt practices that

require significant upfront cash outlays. Indonesian smallholders have minimal disposable incomes and limited access to formal financial networks. Increasing access to finance is challenging due to the high risk environment and limited presence of agricultural development banks in coffee growing regions.

In the absence of financing, agronomic practices could be intensified gradually so as to minimize the need for large cash expenditures upfront. For example, yields could be increased initially by improving husbandry methods (e.g. pruning, weeding, mulching), while minimizing the use of related inputs, such as herbicide. This would provide farmers with additional income to invest at later stages to expand fertilizer use, or to offset income lost during replanting phases.

Exhibit 8: Improved agronomy could nearly double yields



* According to stakeholder interviews and ongoing projects visited

** Mix of family and paid labor, so not entirely a cash cost

Source: Interviews with farmers, industry stakeholders and project visits; technoServe analysis

Strategies for Reaching Farmers

High-impact, intensive farmer training

Existing farmer training programs in Indonesia have predominantly employed classroom-based teaching models. Such programs have the advantage of being relatively inexpensive to run; however, to effectively change smallholder farming practices, a more intensive approach is recommended. The “farmer field school” method, for instance, features local trainers and participatory teaching methods delivered to small training groups on a frequent (e.g. monthly) basis. Such programs offer lasting impact on yield and farming practices and typically cost up to \$200 per farmer for two years of training.

Focus on Southern Sumatra’s half a million active farmers

Training could be prioritized towards Southern Sumatra’s half a million “active” farmers (see Exhibit 9). These farmers are more likely to be committed to coffee farming and thus interested in adopting changes to farming practices. Less active farmers are typically found outside of Southern Sumatra and include farm-

ers who are not reliant on coffee as a primary source of income, as well as farmers who do not have many coffee trees (i.e. less than 0.25 hectares planted or 500 trees).

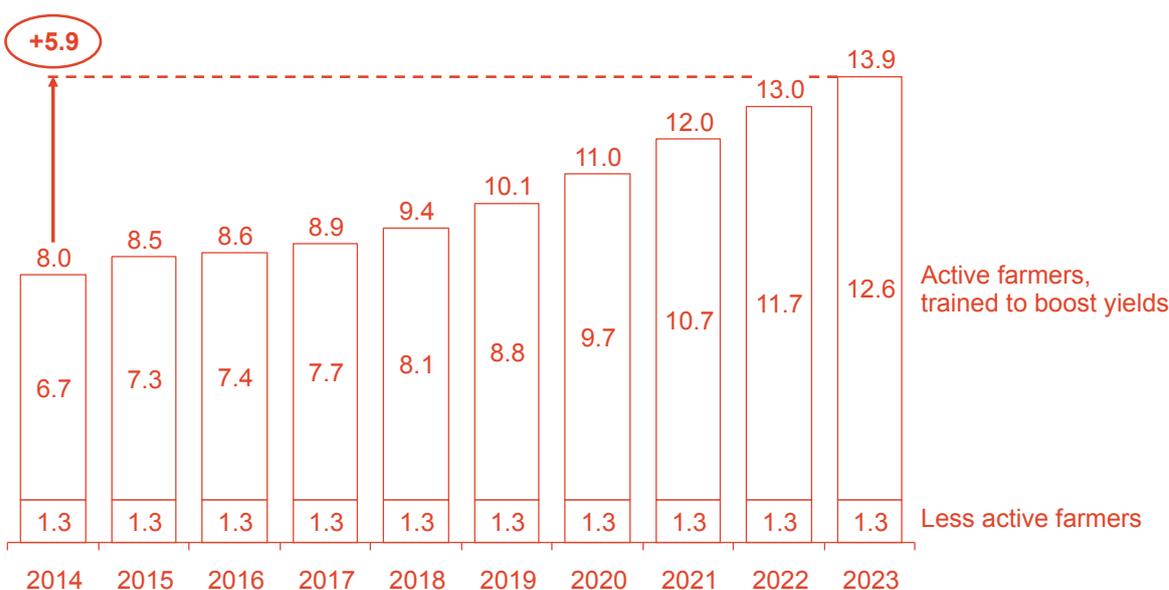
Closely involve women

Women play a significant role within Indonesia’s agricultural sector, performing an estimated 40% of farming activities. Targeting female farmers alongside male farmers will be important to ensure broad adoption of improved agricultural practices, as well as to enhance progress in combatting gender inequality in rural areas.

Exhibit 9: An ambitious training program could reach Southern Sumatra’s half a million “active” coffee farmers over a 10 year period

Potential production from Indonesia over next 10 years

Bags (60-kg), millions



Source: Interviews and TechnoServe analysis

Returns on Investment

The international coffee industry can catalyze this work

The international coffee industry's role as a catalyst is critical in the face of limited government interest in the sector. Investing in improved productivity represents an opportunity to increase farmers' incomes, to achieve progress towards sustainability goals and to maintain a diversified supply base of green coffee.

An investment of \$95 million in training

The total cost of providing intensive training to Indonesia's half a million most active coffee farmers is estimated to be \$95 million over a 10 year period. This investment is equivalent to a cost of \$26 per ton of green coffee across Robusta exports of 6 million bags per year.

A return of \$250 million in farmer income

An investment of roughly \$200 per farmer has potential to double yields and eventually increase farmers' incomes by \$500 per year. This represents a 70% increase in coffee income, from a base of about \$700 per year. Higher farmer revenues would more than offset increased expenditure on farming practices such as fertilization and tree rejuvenation. If scaled out to half a million smallholders, then a total of \$250 million in added income could be created.

Improved economics of certification / verification

A farmer training program designed to boost farm productivity can vastly improve the economics of certification / verification for local supply chain actors. The cost of supply-chain led certification / verification could be halved with a doubling of yields, and per unit transaction and other supply chain costs would likely decrease with higher volumes.

A diversified supply base

The international coffee industry requires a diversified supply base to mitigate risks and market volatility. The

world's Robusta supply is already highly concentrated in Vietnam's drought-prone Central Highlands. If Indonesia's export base disappears, the coffee industry has few alternative options.

An attractive opportunity to grow global supply

World Robusta demand is projected to increase by 15 to 30 million bags over the next 10 years. Without intervention, the global coffee industry may experience significant supply shortages.

Indonesia represents a cost-effective opportunity to boost global supply. An estimated 6 million bags of Robusta – 20% to 40% of expected growth in global demand – could be generated over the next 10 years with appropriate investment.

An attractive opportunity relative to other options

Other Robusta origins require investment, but offer less upside potential for the coffee industry (see Exhibit 10). Vietnam's growth prospects are limited as yields are already the highest in the world. These yields may not be sustained in the long-term, as Vietnam's tree stock ages and farms face growing environmental constraints (e.g. declining soil fertility, water scarcity). Brazil may also struggle to increase production, as its coffee sector faces competitiveness issues and fast-rising production costs. African producers, led by Uganda, have potential to increase output, though this will require an even greater investment per ton of coffee produced.



A Road Map for the Sector

Phased scale up of farmer training program

Intensive training for Indonesia's half a million active Robusta smallholders could be implemented across three phases. The first phase would include pilots to test training approaches, refine curriculum, and create infrastructure necessary for scaling. The second phase would be focused on rolling the training program out across the full set of 500,000 farmers. The third and final phase would concentrate on embedding trainers into permanent roles within the supply chain and industry, so that the knowledge created by the program can be sustained.

A collaborative framework to assist implementation

Effective implementation will require collaboration between private and public groups across the supply chain. The Sustainable Coffee Program is investing in a collaborative framework among stakeholders in Indonesia and the international coffee industry to embark on this path.

Government role in developing supportive policies

The government of Indonesia can play an important

role in supporting growth of a sustainable coffee industry across multiple dimensions, including:

- Creating a strong enabling environment for stakeholder investment
- Enacting regulatory changes to support farmer adoption of improved agricultural practices and to deter unsustainable practices, such as production inside the buffer zone of protected forests and the use of banned pesticides
- Promoting policies and programs to increase the presence of formal financial institutions in rural areas

A catalytic role for the international coffee industry

The international coffee industry can play a catalytic role in realizing this opportunity by developing public-private partnerships across industry players, state institutions in coffee consuming countries, and Indonesia's local private sector. These actors all have a strong interest in maintaining the vitality of Indonesia's export sector, and a public-private partnership of this kind could help to leverage greater support from the Government of Indonesia in the future.

Exhibit 10: Indonesia represents a cost effective option for expanding the global Robusta supply base

Current and potential Robusta supply after 10 year farmer training program*
Bags (60-kg), millions

▨ Sustainable
□ Other sales



* Does not consider interventions in Brazil, which are premised on a conducive macroeconomic environment, or in a new origin, which is likely to cost over \$100M and have less certain supply potential
Source: TechnoServe analysis

Acknowledgements

Key sources

Institutions:

4C Association; Armajaro; Directorate General of Estate Crops; Ecom Trading; Food and Agriculture Organization (FAO); Indonesian Coffee Exporters Association (GAE-KI); Indonesian Coffee and Cocoa Research Institute (ICCRI); Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD); Louis Dreyfus Commodities; Mondelez International; Nestle; OLAM; PT Indo CafCo; Rainforest Alliance; Sarimakmur; UTZ Certified; Volcafe.

Data:

Bank Sentral Republik Indonesia (BI); International Institute for Environment and Development (IIED); International Coffee Organisation (ICO); Kementerian Pertanian Republik Indonesia; Tropical Commodity Coalition (TCC); United States Department of Agriculture (USDA); VECO Indonesia; World Bank

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About IDH, The Sustainable Trade Initiative

The Sustainable Trade Initiative (IDH) accelerates and up-scales sustainable trade by building impact oriented coalitions of front running multinationals, civil society organizations, governments and other stakeholders. Through convening public and private interests, strengths and knowledge, IDH programs help create shared value for all partners. This will help make sustainability the new norm and will deliver impact on the Millennium Development goals.

About the Sustainable Coffee Program

The Sustainable Coffee Program (SCP) is a global, pre-competitive, public-private initiative; which involves industry and trade partners, (local) governments, NGOs and standard setting organizations in the coffee sector. Our ambition is to help bring global sustainable coffee production and sourcing practices to scale, by aligning stakeholder investments in producer support programs, which aim to improve farmer livelihoods, enable coffee producers to become more resilient in an ever-changing market and increase sustainable yields to meet growing demand. Members of the SCP Steering Committee include: Mondelēz International, Nestlé, D.E Master Blenders 1753, Tchibo, The European Coffee Federation (ECF), and IDH, The Sustainable Trade Initiative.

About TechnoServe

TechnoServe is a non-profit organization that works with enterprising people in the developing world to build competitive farms, businesses and industries. TechnoServe develops business solutions to poverty by linking people to information, capital and markets. Our work is rooted in the idea that hardworking people can generate income, jobs and wealth for their families and communities. With more than four decades of proven results, we believe in the power of private enterprise to transform lives.



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