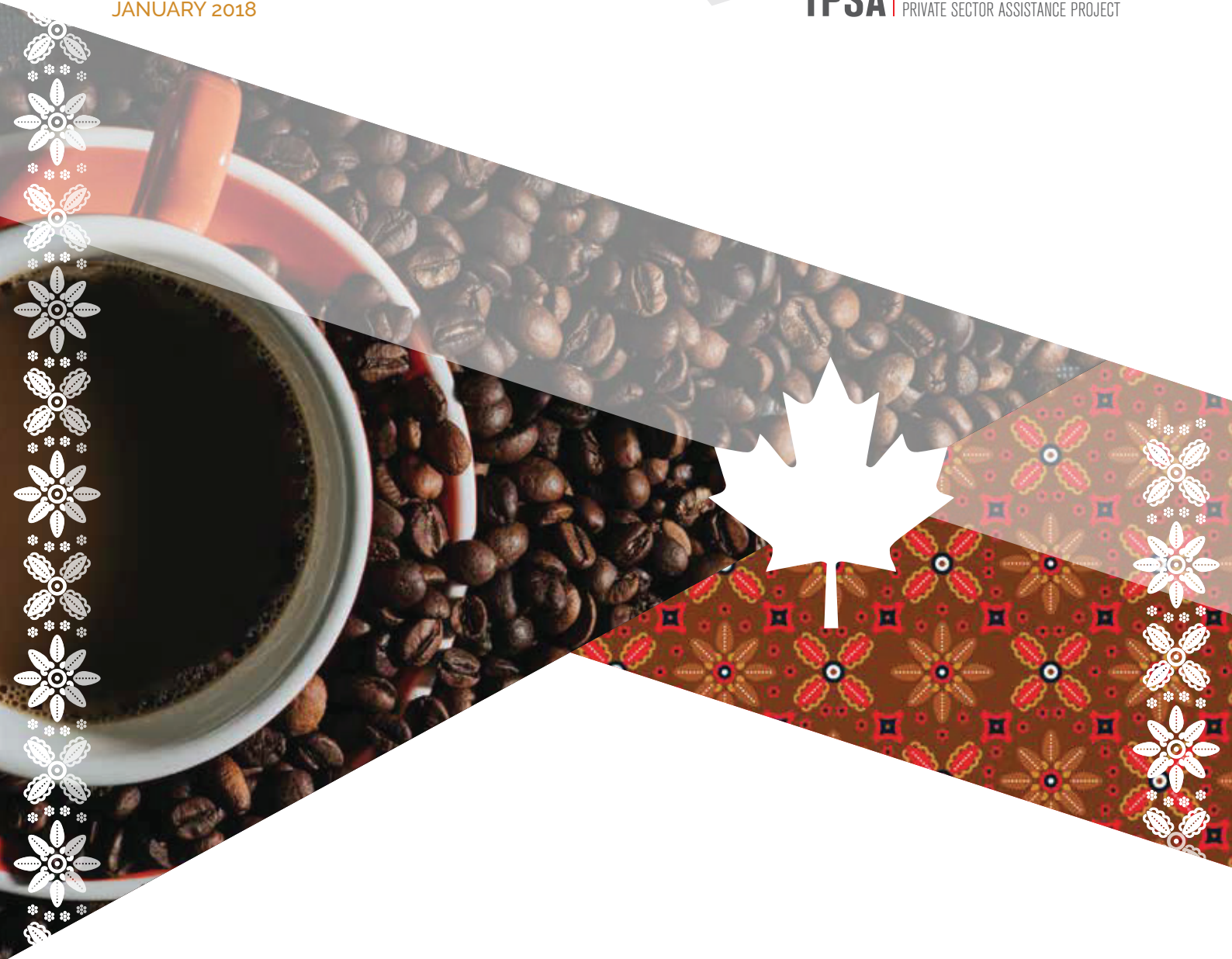


REPORT
JANUARY 2018



TPSA | CANADA-INDONESIA TRADE AND
PRIVATE SECTOR ASSISTANCE PROJECT



An Analysis of the Global Value Chain for Indonesian Coffee Exports

Canada

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An Analysis of the Global Value Chain for Indonesian Coffee Exports

By: The Conference Board of Canada

About the TPSA Project

The Canada–Indonesia Trade and Private Sector Assistance (TPSA) project is a five-year, \$12-million project funded by the Government of Canada through Global Affairs Canada. The project is executed by The Conference Board of Canada, and the primary implementation partner is the Directorate General for National Export Development, Indonesian Ministry of Trade.

TPSA is designed to provide training, research, and technical assistance to Indonesian government agencies, the private sector (particularly small- and medium-sized enterprises, or SMEs), academics, and civil-society organizations on trade-related information, trade policy analysis, regulatory reforms, and trade and investment promotion by Canadian, Indonesian, and other experts from public and private organizations.

The overall objective of TPSA is to support greater sustainable economic growth and reduce poverty in Indonesia through increased trade and trade-enabling investment between Indonesia and Canada. TPSA is intended to increase sustainable and gender-responsive trade and investment opportunities, particularly for Indonesian SMEs, and to increase the use of trade and investment analysis by Indonesian stakeholders for expanded trade and investment partnerships between Indonesia and Canada.

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Executive Summary



This report examines Indonesia's participation in the global value chain (GVC) for coffee exports and outlines the barriers that Indonesian firms face to expanding the overall value generated by the country's coffee sector. Combining information from a wide-ranging examination of Indonesia's coffee sector (including an in-depth supply-chain analysis) with feedback from several in-person interviews and surveys with Indonesian firms, this report also provides evidence-based recommendations for how strategic public policy can alleviate the identified barriers to the export competitiveness of Indonesian coffee exporters.

Coffee is one of the most highly tradeable commodities in the world, and Indonesia is a prominent player in the global market. It accounts for roughly 7 per cent of total global coffee production, and around 6 per cent of global exports. Over the past decade, Indonesia's coffee production has grown at about double the pace of global coffee production, fueled by growth in both domestic and foreign demand. Despite this fact, stakeholders along Indonesia's value chain for coffee face several obstacles to expanding the overall value generated by the sector. Most notably, the coffee sector is hindered by weak and stagnant farm-level productivity; it remains geared towards lower-value Robusta coffee; and it faces significant slack in its supply-chain structure, largely due to its geographical circumstances.

In the absence of capacity expansion across the globe, growth in global coffee demand is set to outpace growth in supply in the future. Against this backdrop, Indonesia has significant opportunities to expand its footprint in the global coffee market, especially if it can address the unique challenges that inhibit success for firms along the coffee value chain. Key recommendations for addressing the sector's identified barriers to competitiveness include promoting the diffusion of good agricultural practices (GAP) throughout the sector, facilitating more widespread certification of coffee, and continued commitment to better road and port development.



Introduction

According to estimates by the International Monetary Fund, Indonesia accounts for 1.3 per cent of global economic output and is the world's 16th-largest economy in nominal terms and the eighth-largest when adjusted for relative purchasing power.¹ The Indonesian economy has nearly tripled in size since 2005, and the country's exports have played a prominent role in this dynamic. Exports totaled an estimated US\$173 billion in 2015, 82 per cent higher than in 2005, and the country's trade balance over that period is estimated at a cumulative US\$129 billion. Moreover, trade-related industrial output is a huge source of current employment and foreign exchange for the country.

Given the importance of trade to the Indonesian economy, and against the backdrop of slowing global trade volumes in the post-financial crisis period, it is useful to understand Indonesia's participation in global value chains (GVCs) to help inform macroeconomic policy-making. Specifically, this report aims to help readers better understand the GVC for Indonesian coffee, which represents one of the three strategically important export commodities (the others being footwear and apparel) identified for Indonesia within our broader value-chain analysis.

As a starting point for the analysis, the Conference Board will define the current state of coffee production in Indonesia, provide an overview of the production structure, examine historical production trends, and assess Indonesia's footprint in the global coffee market. Thereafter, the report will shift to supply-chain analysis for the commodity, identifying key activities along Indonesia's coffee supply chain and illustrating where possible value leakages occur. Lastly, the report will explore the specific areas of non-competitiveness that prevent Indonesia from capturing a greater share of the GVC for coffee. To identify potential logistical bottlenecks, a series of in-person interviews and surveys were conducted with Indonesian firms. The culmination of this research will form the basis for recommendations to Indonesian policy-makers on how to alleviate these barriers.

¹ International Monetary Fund, *World Economic Outlook*, October 2016.





State of Coffee Production in Indonesia

Production Overview

Apart from weather-driven volatility in production (e.g., weaker production resulting from El Niño-related drought²), Indonesia's coffee production has trended upward since 2002. Over the past five years, the Southeast Asian nation produced an average of 11.3 million bags³ per year, roughly 40 per cent more than the average of 7.9 million bags it produced a decade earlier. In addition, Indonesia produced a record 12.1 million bags of coffee in 2015, highlighting the country's overall production capacity.

In contrast to Latin American producers, widely known for their Arabica coffee, the bulk of Indonesia's production is Robusta coffee, which is generally considered to be of lower value. In fact, Indonesia produces more than six times as much Robusta as it does Arabica. (See Chart 1.) The stronger concentration of Robusta production reflects environmental conditions such as warm temperatures, significant rainfall, and lower altitudes—all factors that support the production of Robusta over Arabica coffee.⁴

Yet despite geographic and environmental factors that support Robusta production, there are still more than 20 different varieties of Arabica coffee grown commercially in Indonesia. Arabica coffee, which contains less caffeine and has a milder taste than Robusta, fetches higher prices on the global market, and this has led to farmers favouring Arabica where possible. As a result, growth in the production of Arabica has outstripped Robusta over the past decade, leading Arabica to account for roughly 14 per cent of total coffee production today, compared to only 7 per cent in 2000.

² Vu, "Drought Hurts Coffee Production in Vietnam."

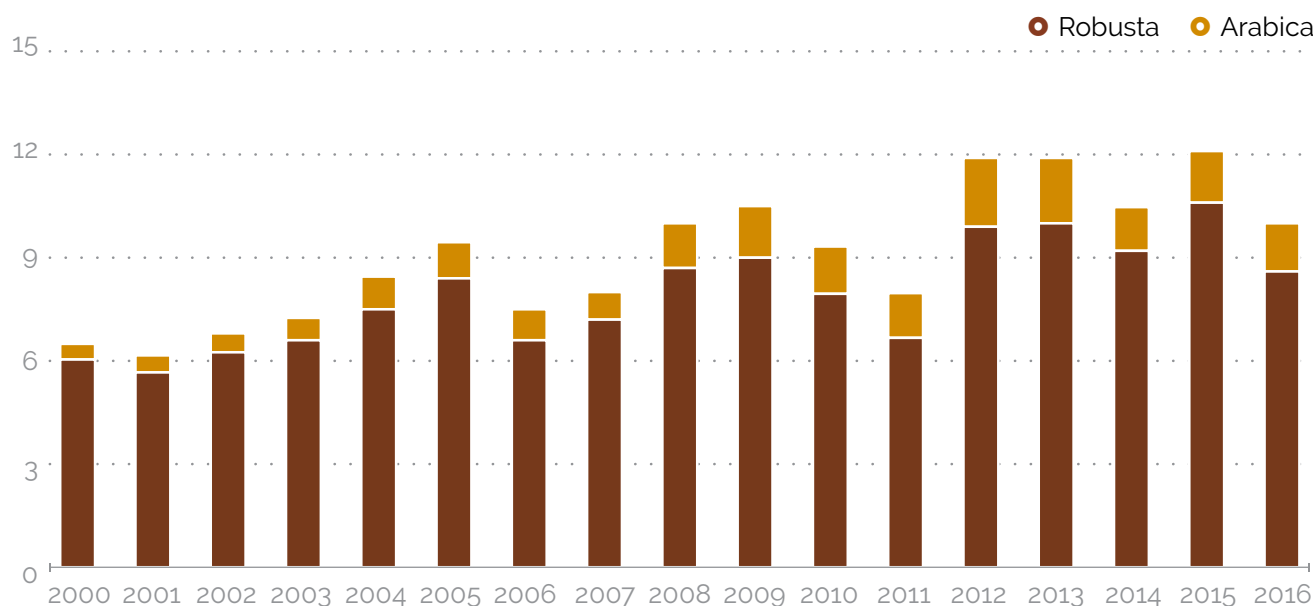
³ Bags are 60 kilograms in weight.

⁴ Coffee Chemistry, "Differences Between Arabica and Robusta Coffee."



CHART 1: ARABICA COFFEE GAINING GROUND IN PRODUCTION MIX, ROBUSTA STILL DOMINATES

(Coffee production, millions of 60-kilogram bags)



Sources: The Conference Board of Canada; U.S. Department of Agriculture.

Indonesia produces several varieties of specialty coffee, for example, *kopi luwak* (which directly translates to civet coffee) which is made from beans that are digested and excreted by a catlike civet. This coffee, considered to be the world's most expensive, can cost anywhere between \$35 to \$100 per cup compared to \$2 to \$5 for a regular cup of coffee.⁵ As well, the country produces several other specialty coffees such as Mandailing and Toraja, which fetch premium prices due to their unique heritages.

Like most other important coffee producers, Indonesia's coffee production is highly fragmented. While large state-owned plantations and a smaller number of private estates do exist, more than 90 per cent of Indonesia's coffee is grown by smallholders on farms. Typically, a small-scale Indonesian coffee farmer will cultivate one hectare of coffee alongside other tree crops, such as cocoa, fruit, and pepper.⁶ In addition, the coffee farmer may produce rice as a means of subsistence.

From a geographic standpoint, Indonesia's coffee production is concentrated in Sumatra, one of the country's largest islands. Situated in western Indonesia, Sumatra produced 460,000 tons of coffee in 2015—equivalent to 69 per cent of Indonesia's total coffee production. (See Chart 2.) The largest-producing provinces on the island include South Sumatra (20 per cent of Indonesia's total coffee production), Lampung (16 per cent), North Sumatra (9 per cent), and Bengkulu (8 per cent). Apart from Sumatra, other important coffee-producing regions across the country include the islands of Java and Sulawesi, which together account for just under one-quarter of Indonesia's coffee production. Robusta production comes primarily from the provinces of Lampung, South Sumatra, and Bengkulu, which combined account for three-quarters of Indonesia's Robusta production. Arabica, on the other hand, is sourced mostly from higher-altitude regions like Aceh and North Sumatra, which together account for almost three-fifths of Indonesia's Arabica production.

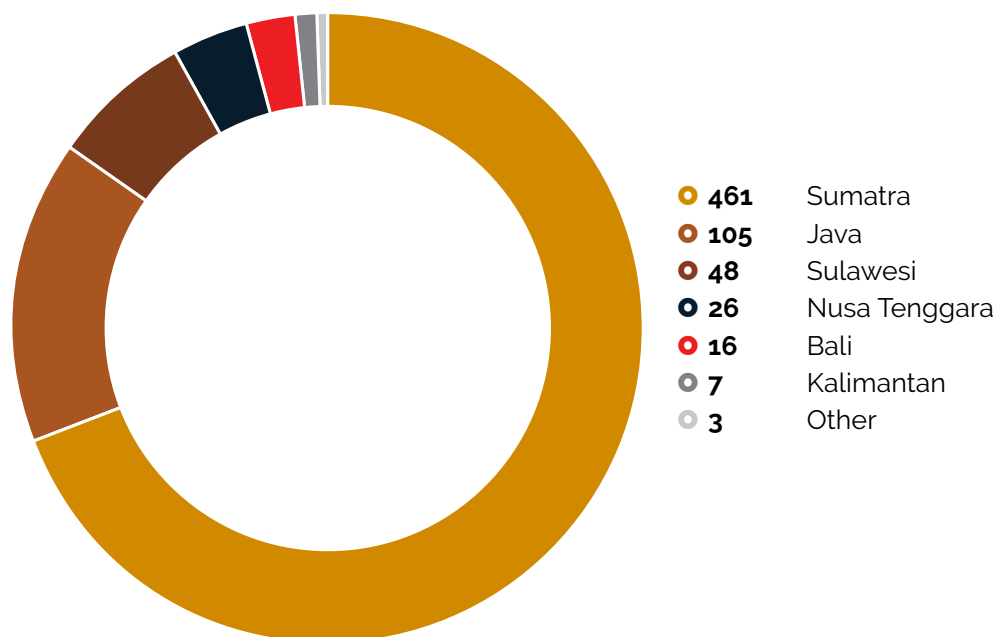
⁵ Most Expensive Coffee, "All About Kopi Luwak."

⁶ Neilson, "The Value Chain for Indonesian Coffee."



CHART 2: SUMATRA ACCOUNTS FOR JUST UNDER THREE-QUARTERS OF INDONESIA'S COFFEE PRODUCTION

(Coffee production by province, 2015, '000s tons)



Sources: The Conference Board of Canada; Statistics Indonesia.

Drivers of Production Growth

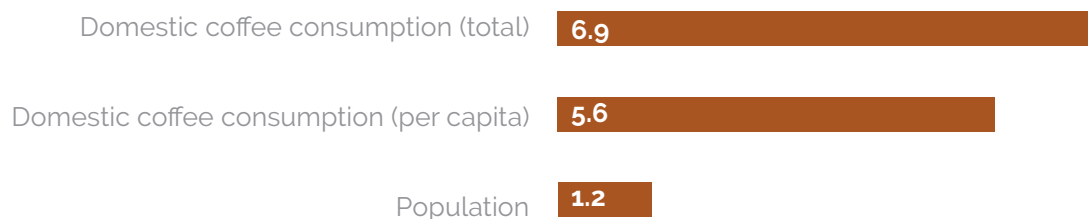
Domestic Consumption

Since the turn of the millennium, a growing share of the country's rising coffee production has been consumed by Indonesians. While coffee exports have increased by an annual average of 5.5 per cent since 2000, domestic coffee consumption has increased by an even-higher 6.9 per cent a year on average. The rapid increase in domestic consumption is due primarily to two factors. The first is the rapidly expanding population, which has increased from 210 million people in 2000 to around 260 million today. The second important contributing factor has been the vast increase in per capita coffee consumption in the country, a direct result of Indonesia's economic development, which has buoyed rising income levels. The emergence of a growing middle class in Indonesia has also supported several lifestyle changes, such as urbanization, that have had a positive impact on domestic coffee consumption. For example, instant coffee, which is sold by the cup in thousands of cafés and corner shops in cities, has become increasingly popular among Indonesians. Higher incomes have also allowed domestic consumers to take a strong liking to coffee shops and specialty coffee blends like *kopi luwak*. As a result of these factors, per capita coffee consumption in Indonesia has increased from 0.5 kilograms per year in 2000 to 1.1 kilograms in 2016. (See Chart 3.) Higher per capita consumption combined with an expanding population means that a high share of incremental coffee production in Indonesia has been devoted to satisfying the domestic market.



CHART 3: EXPANDING MIDDLE CLASS SUPPORTING RISING PER CAPITA COFFEE CONSUMPTION

(Average annual growth, 2000–16, per cent)



Sources: The Conference Board of Canada; International Coffee Organization; Population Reference Bureau.

Exports

United Nations (UN) trade data estimates that Indonesia's exports of coffee grew from an average of 338 million kilograms per year between 2001 and 2005 to an average of 443 million kilograms per year between 2011 and 2015. (See Chart 4.) And while domestic consumption has been expanding more quickly, foreign markets still account for the greater share of Indonesian coffee production. Over the past five years, Indonesian producers have exported an average of two kilograms of coffee for every one kilogram that the country consumes domestically. Importantly, prices have been trending higher for Indonesian coffee exports, which has likely been a key contributor to higher production and export volumes over the past 10 to 15 years. While the volume of coffee exports has increased by 30 per cent, coffee prices have tripled from an average of US\$0.85 per kilogram between 2001 and 2005 to an average of US\$2.10 between 2011 and 2015. These price increases, which reflect factors including supply and demand conditions on the world market,⁷ differences in grade and type of coffee exported,⁸ and exchange rate fluctuations,⁹ have provided a boost to revenues of Indonesian coffee exporters.

⁷ Stronger growth in demand for coffee relative to supply has contributed to upward pressure on coffee prices.

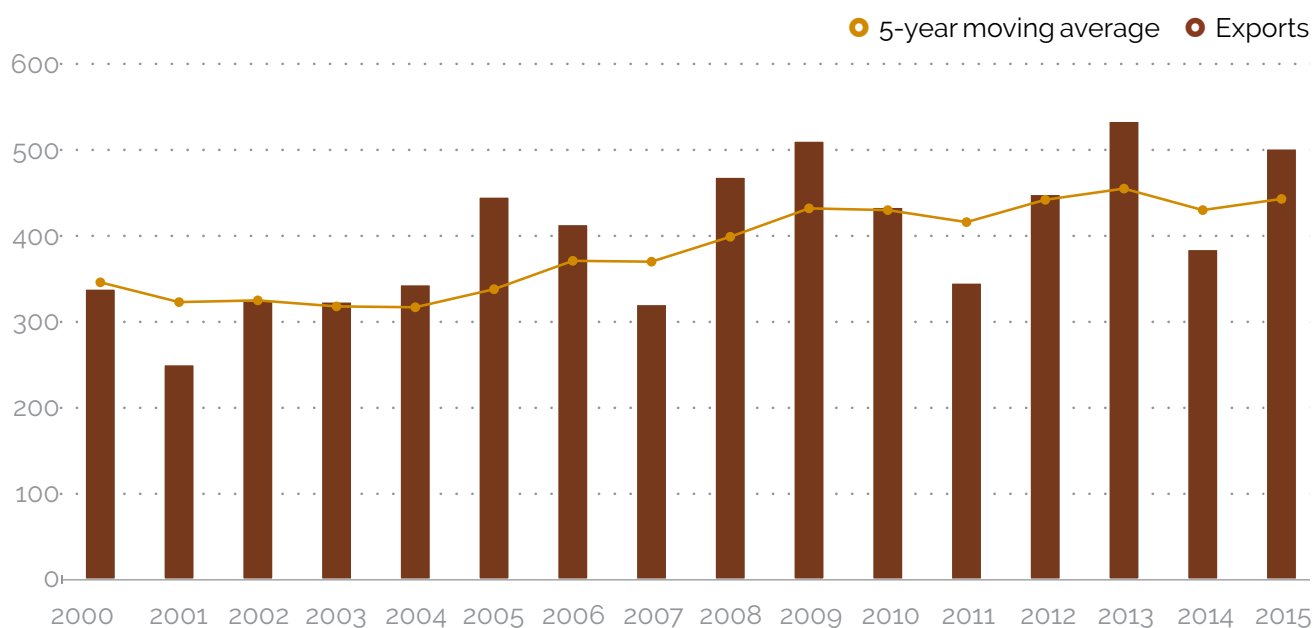
⁸ Evolving export patterns and types of coffee exported influence the prices received by exporters. For example, in 2015, prices of coffee exported to the U.S. were more than double those to Thailand. This could reflect a higher share of Arabica beans in Indonesia's export mix to the U.S., with U.S. consumers more likely to demand Arabica beans, which have a strong international reputation for high quality.

⁹ Commodities, including coffee, are generally priced in U.S. dollars. Consequently, a depreciation in the Indonesia rupiah relative to the U.S. dollar, as seen since 2011, has supported revenues for Indonesian coffee exporters.



CHART 4: VOLUME EXPORTS HAVE GRADUALLY IMPROVED

(Coffee exports, millions of kilograms)

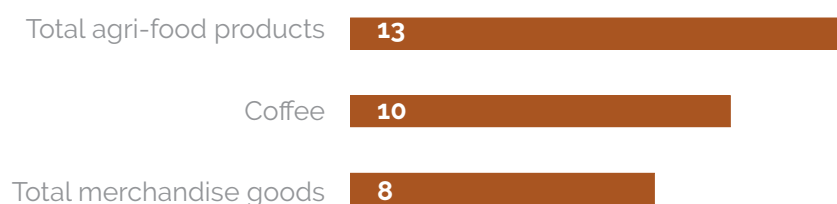


Sources: The Conference Board of Canada; UN Comtrade Database.

Despite its positive influence on Indonesia's agri-food exports, coffee has seen its importance diminish in recent history. Although exports of coffee have outpaced aggregate merchandise exports from the country since 2000, other types of agri-food exports have been increasing even more quickly. (See Chart 5.) For example, while coffee exports more than doubled over the past decade, exports of palm oil, Indonesia's largest agri-food export (both a decade ago and now), have more than quadrupled. Tobacco exports, another key agri-food commodity for the country, have essentially tripled since 2005.

CHART 5: COFFEE NOT KEEPING PACE WITH OVERALL AGRI-FOOD EXPORT GROWTH

(Average annual export growth, 2000–2015, per cent)



Sources: The Conference Board of Canada; UN Comtrade Database.

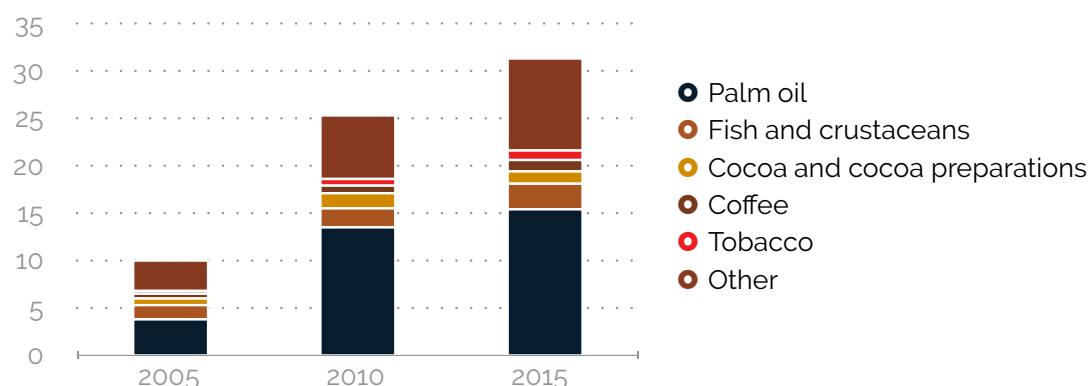
Weaker relative growth has driven coffee's share of overall agri-food exports down from 5.1 per cent a decade ago to 3.8 per cent today. (See Chart 6.) Currently, coffee is the country's fourth most exported agri-food, following palm oil (49.2 per cent of Indonesia's agri-food exports), fish and crustaceans (8.5 per cent), and cocoa and cocoa preparations (4.2 per cent).





CHART 6: INDONESIA'S AGRI-FOOD EXPORTS CENTERED AROUND PALM OIL

(Value of food exports from Indonesia, 2015, US\$ millions)

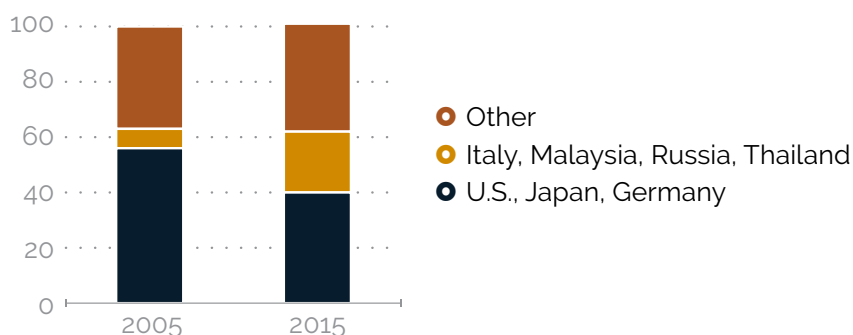


Sources: The Conference Board of Canada; UN Comtrade Database.

The destination of Indonesian coffee exports has changed over time. In 2005, the United States, Japan, and Germany were the destinations for about half of Indonesia's coffee exports. Today, they account for less than a third. (See Chart 7). Part of the reason has been more stringent food-safety regulations in the EU and Japan, which have weighed on Indonesian exports to these regions since 2009.¹⁰ In Germany, for example, these regulations contributed to a fall in imports amounting to 30 million kilograms over the past decade. The other half of the story has been stronger demand from emerging markets in the region, like Malaysia and Thailand, as well as other major regional economies like Russia and Egypt. Exports to Italy have also increased significantly over the past decade, as Italian specialty-coffee makers are using Indonesian Robusta blends in growing quantities. Combined, these five countries now account for 22 per cent of Indonesian export volumes, compared to just 7 per cent in 2005.

CHART 7: INDONESIAN COFFEE EXPORTERS BECOMING LESS RELIANT ON TRADITIONAL END MARKETS

(Destination for Indonesian coffee exports by country, per cent)



Sources: The Conference Board of Canada; UN Comtrade Database.

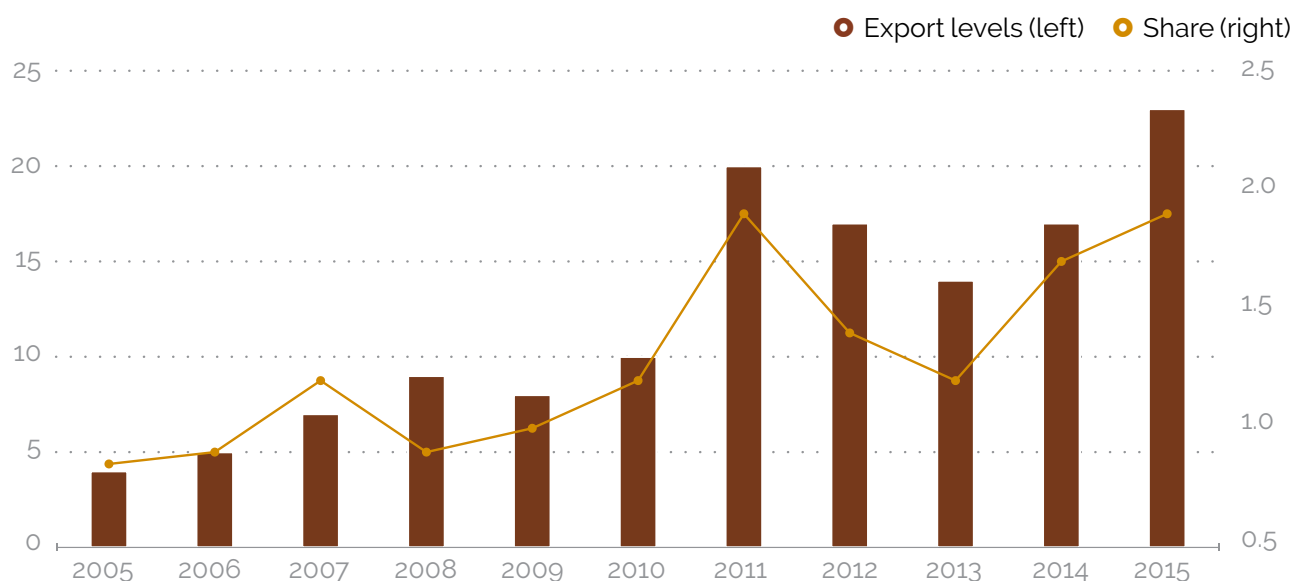
¹⁰ Nugroho, "Economic Analysis on Production Changes."



While Canada represents a small destination for Indonesian coffee, it has become increasingly significant over the past decade. In 2005, Indonesia exported roughly US\$4 million worth of coffee to Canada, making it the 21st-largest export destination for Indonesian coffee that year. Skip ahead a decade, and Indonesian coffee exports to Canada have quintupled to US\$23 million. (See Chart 8.) Due to the sizeable increase in coffee exports destined for Canada over the past decade, Canada now accounts for 1.9 per cent of Indonesia's coffee exports, compared to 0.8 per cent a decade earlier. Furthermore, Canada has moved up the rankings and now represents the 16th-largest export destination for Indonesian coffee.

CHART 8: COFFEE EXPORTS TO CANADA HAVE TRENDED UPWARDS

(Coffee exports to Canada, US\$ millions; share of Indonesia's exports destined for Canada, per cent)



Sources: The Conference Board of Canada; UN Comtrade Database.

Indonesian Production on the Global Stage

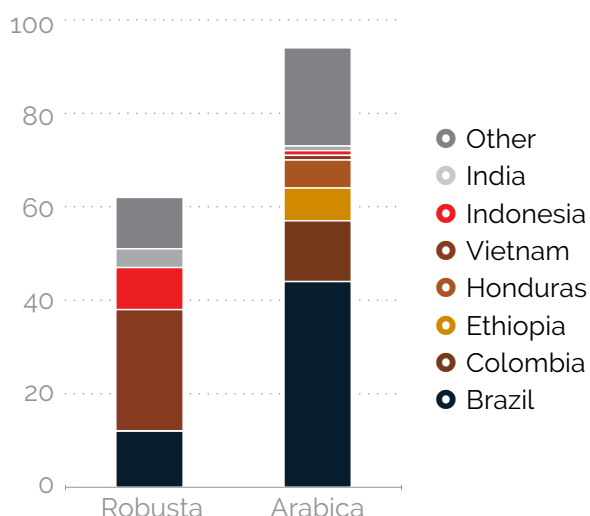
When it comes to coffee production, Indonesia is a significant player on the world stage. The International Coffee Organization estimates that Indonesia produced 10 million 60-kilogram bags of coffee in 2016—equivalent to roughly 7 per cent of global production. By comparison, only Brazil (55 million), Vietnam (25.5 million), and Colombia (14.5 million) produced more coffee, and Indonesia is followed by Ethiopia (6.6 million) as the world's fifth-largest producer. In terms of just Robusta production, only Vietnam and Brazil produce more coffee than Indonesia, which accounted for 14 per cent of global production in 2016. (See Chart 9.) Indonesia also made up 6.4 per cent of global coffee exports in 2016,¹¹ but it is important to note that the country is under-represented in terms of exports of roasted and ground coffee. Although Indonesia accounted for 11 per cent of soluble coffee exports and 6 per cent of bean exports, the nation accounted for a meagre 1 per cent of roasted and ground coffee exports.

¹¹ USDA, "Coffee: World Markets and Trade".



CHART 9: INDONESIA IS A KEY ROBUSTA PRODUCER

(Global coffee production by country, 2016, millions of 60-kilogram bags)

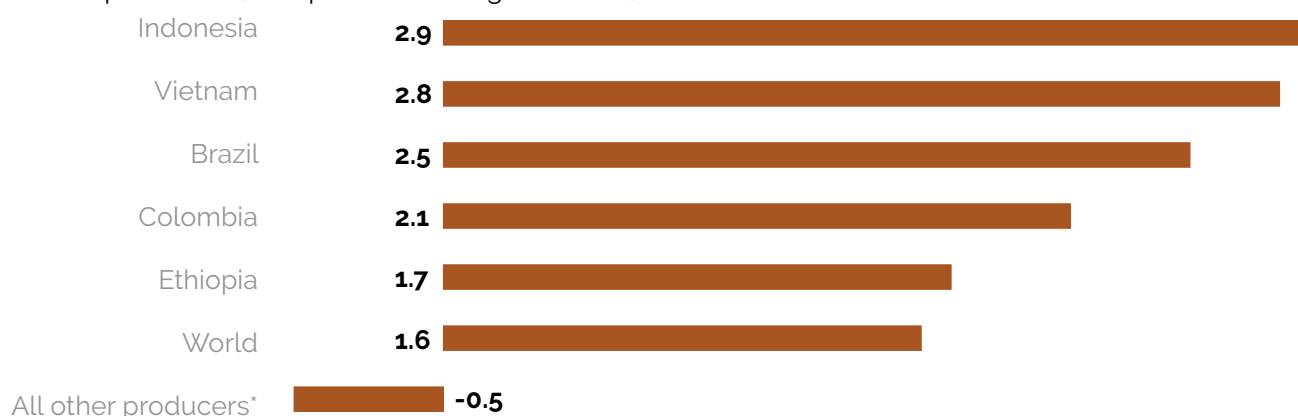


Sources: The Conference Board of Canada; U.S. Department of Agriculture.

What makes Indonesia stand out relative to other large producers, however, is the country's exceptional production growth over the past decade. Overall, coffee production in the Southeast Asian nation has grown by a compound annual growth rate (CAGR) of 2.9 per cent since 2006, compared with 1.5 per cent for the rest of the world. None of the world's other five largest coffee producers have seen stronger gains than Indonesia over the past decade. (See Chart 10.)

CHART 10: INDONESIA REMAINS GROWTH LEADER AMONG LARGE COFFEE PRODUCERS OVER THE PAST DECADE

(Coffee production, compound annual growth rate, 2006–2016)



*All producers excluding top five producers

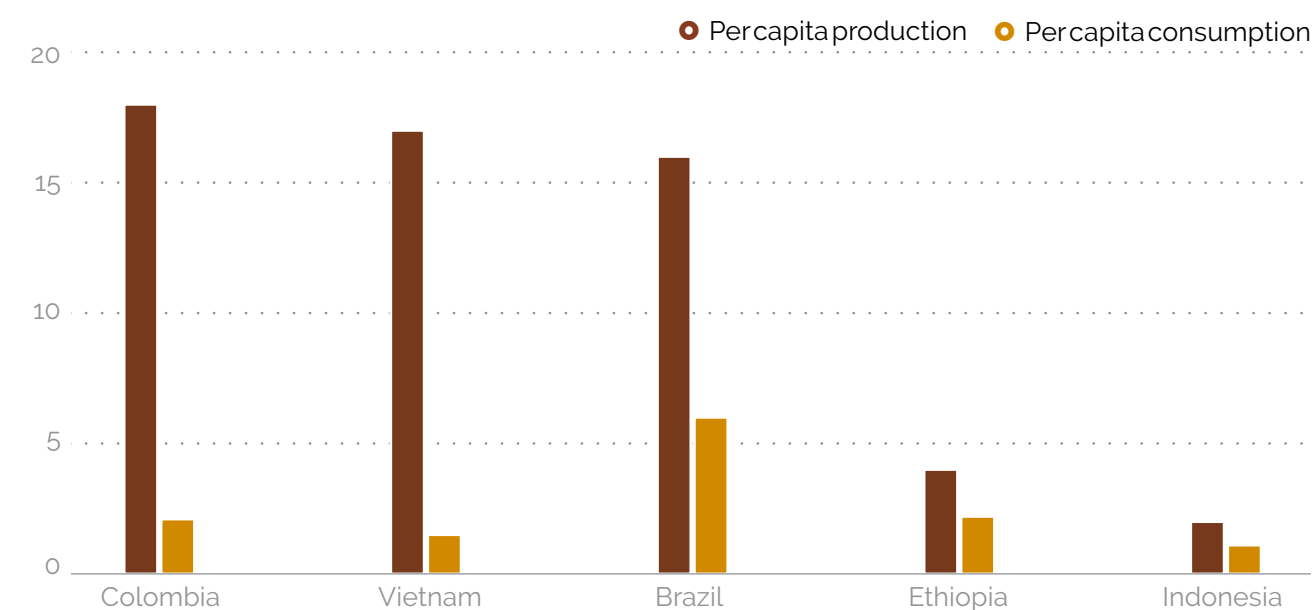
Sources: The Conference Board of Canada; International Coffee Organization.



Indonesia's coffee sector is less export-intensive than other large coffee-producing nations, however. Among the world's five largest coffee producers, only Ethiopia exports a lower share of its production—the East African country exported the equivalent of 46 per cent of its production in 2015.¹² By comparison, Indonesia exported around 65 per cent of its production in 2015, well below the export shares of Vietnam (92 per cent), Colombia (88 per cent), and Brazil (73 per cent). This is explained by the differences in per capita consumption across the different countries, population, and production levels. Chart 11 shows that the resulting surplus¹³ of 1.3 kilograms per person in Indonesia is well below the levels in Colombia (15.7 kilograms per person), Vietnam (15.0), Brazil (10.0), and even Ethiopia (1.7). In essence, Indonesians are consuming more coffee every year, and there are more people in Indonesia than in all of its major competitors. Without significant increases in production, these trends are likely to limit the long-term potential of coffee exports from the country.

CHART 11: LIMITED PRODUCTION SURPLUS RESTRICTS EXPORT CAPACITY

(Production and consumption of coffee by country, 2016, kilograms per capita)



Sources: The Conference Board of Canada; International Coffee Organization; Population Reference Bureau.

¹² Information compiled from the International Coffee Organization's Global Coffee Trade Database.

¹³ Measured as per capita production less per capita consumption.



Indonesia's Coffee Supply Chain

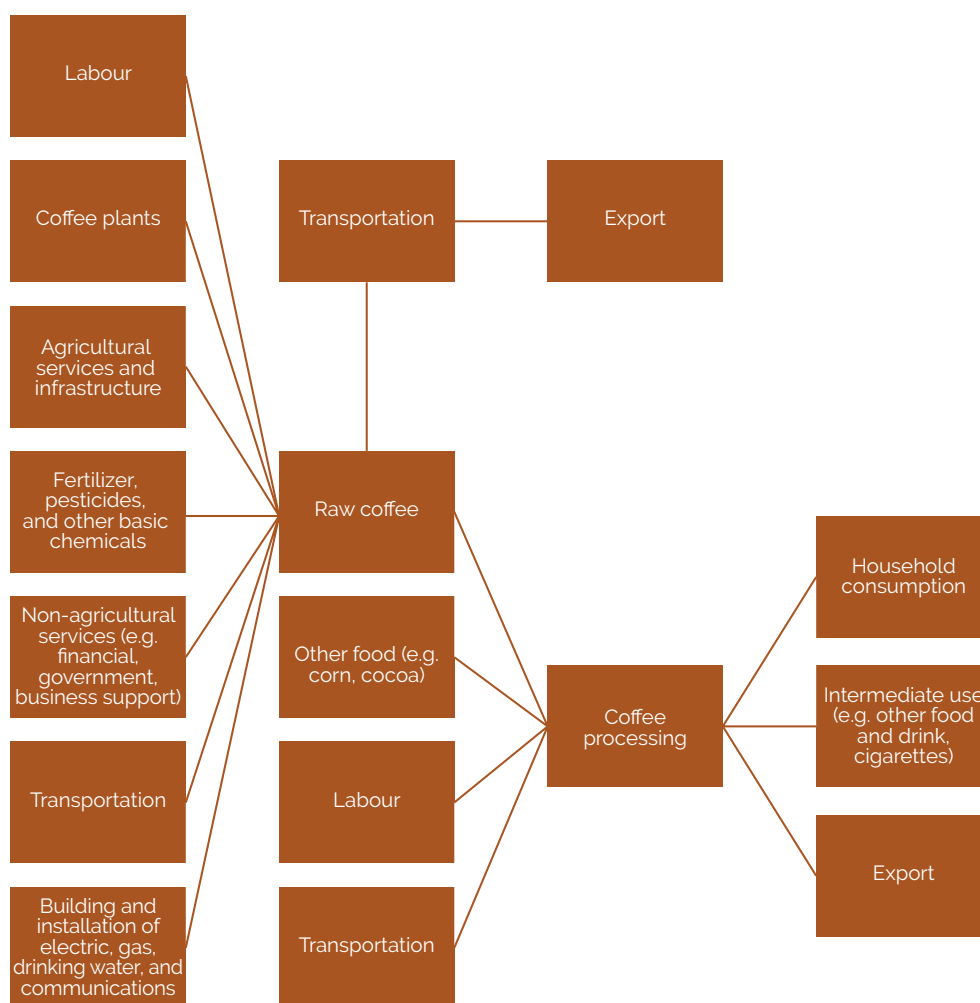
Overview

Like any other product, coffee is part of a supply chain, sometimes referred to as a value chain. The chain represents each of the steps that are linked to the production of coffee, beginning with the sourcing of key inputs and concluding with the product's final end use. Examples of key stakeholders along the global coffee value chain include farmers (smallholder and estate), collectors, processors (e.g., roasters), shippers, wholesale and retail traders, and finally consumers.

To better understand the linkages that occur throughout Indonesia's coffee supply chain, we employ Statistics Indonesia's input-output (I-O) tables. I-O tables provide invaluable information on an industry's structure by decomposing its aggregate income into expenditures of the intermediate goods and services required to support coffee production and the value-added (GDP) that the industry directly produces in terms of labour and corporate income. The I-O tables are also useful insofar as it provides us with an understanding of where output from the coffee sector is ultimately destined (e.g., for export versus domestic household consumption). Using the data from the I-O tables, we can outline a simplified supply chain for Indonesian coffee. (See Exhibit 1.) Importantly, transportation has been omitted from the diagram below to highlight other key aspects of the chain, but it is an important input at every link in the chain.



EXHIBIT 1: INDONESIA'S COFFEE SUPPLY CHAIN



Sources: The Conference Board of Canada; Statistics Indonesia.

A solid understanding of each of the activities within Indonesia's coffee supply chain is necessary to identify areas where the country may be losing potential value (e.g., importing a high share of key inputs) or not maximizing the potential value of its exports (e.g., exporting a good for processing abroad that could be conducted in Indonesia). The remainder of this section provides an overview of the key activities along Indonesia's coffee supply chain, illustrating where possible value leakages occur, and comparing Indonesia's performance to comparator countries including Colombia and India.

Primary Production

The first stage in Indonesia's coffee supply chain is the primary production of coffee. Activities that occur at this stage include the planting of coffee (seeds or plants), the harvesting of coffee cherries, and the initial processing of ripe cherries into green coffee beans (i.e., raw coffee). In Indonesia, coffee is generally planted during the wet season,¹⁴ with most farmers planting their seeds in shaded areas. Traditional farming that does not depend on the use of external inputs remains very common throughout the coffee sector. Nonetheless, some Indonesian farmers do rely on organic and/or inorganic inputs. In terms of time to maturation, coffee plants take three to four years to bear fruit, similar to other key export crops planted in the Southeast Asian nation, like palm oil and cocoa.

¹⁴ Generally considered to be between October and April.





For fruit-bearing coffee plants, the major harvest occurs once a year and happens six to 11 months after the coffee plant begins flowering. Like harvesting in many other coffee-producing countries, this procedure remains exceptionally labour-intensive because coffee cherries are commonly hand-picked to avoid picking unripe cherries. In fact, apart from parts of Brazil, where flat landscapes have facilitated increased mechanization, the topography in most other major coffee-producing nations (including Indonesia) impedes automation in the harvesting process.¹⁵

Right after ripe cherries have been picked, they undergo one of two processes to avoid spoilage. The first, known as the dry method, involves spreading the cherries out on large surfaces to dry in the sun. When the cherries reach a desired moisture content, they are de-hulled in their dry state. This method is used by almost all Robusta farmers across Indonesia and a small number of Arabica farmers in Sulawesi, Flores and Bali. The second method, known as the wet method, involves removing the pulp and skin from the bean mechanically, using rustic pulping machines. The resulting beans, still coated with mucilage, are then stored for up to a day. After this waiting period, the mucilage is washed off and the coffee is partially dried for sale. This method is common to farmers in Sulawesi, Sumatra, Flores, and Papua.

When raw coffee is produced, it generally has one of three destinations. Either it is exported raw, it is processed further, or it is used to grow future coffee crops. However, since the activities that follow coffee farming, including sorting, grading, packaging, quality inspection, and transportation to warehouse, can be done by a variety of actors such as cooperatives, exporters, collector firms, contractors and, more uncommonly, the farmers themselves, it is difficult to specify an exact path coffee takes from the farmer to its next destination. (See "Women in the Coffee Chain: The Story of Hajjah Cuping.") Generally, it is estimated that around "one-fifth of the total price of a cup of coffee sold in consuming countries goes to farmers."¹⁶

¹⁵ National Coffee Association USA, "10 Steps From Seed to Cup."

¹⁶ Thurston, Morris, and Steinman, *Coffee: A Comprehensive Guide*.





WOMEN IN THE COFFEE CHAIN: THE STORY OF HAJJAH CUPING

It's easy to locate Hajjah Cuping's store. Everyone who lives near the Sudu Market knows her. Born in 1953, Hajjah has been involved in the world of coffee since her childhood, as her parents were coffee traders in the region. After finishing her schooling, she established her own coffee business.



Hajjah Cuping talks to Ibu Nurhayati, a coffee collector, in the Sudu Market.

Ibu Hajjah provides coffee collectors (almost all of whom are women) with funding to buy Arabica coffee from farmers in the neighboring Enrekang district, especially in the nearby Kalosi area and Sarudu market, as well as from more distant areas such as Baraka village, located about 1,500 metres above sea level. She then buys the coffee from the collectors.

She also sometimes helps coffee farmers who need cash by lending them money, which will be paid back after harvest, an informal credit practice in rural areas referred to as the *ijon* system.

After buying coffee from collectors, Ibu Hajjah usually sells it to coffee-trading companies such as PT Semangat and PT Megah Putra in Makassar, or to wholesalers and exporters in Medan, North Sumatra. In recent years, she has sold about 80 to 100 tons a year.

On the afternoon that the TPSA team visited Ibu Hajjah at her business premises, three collectors were delivering their coffee beans. One of those collectors, Ibu Nurhayati, started supplying coffee when her children were very young, some 20 years ago. With Ibu Hajjah's encouragement, Ibu's Nurhayati's work as a collector has enabled her to pay for her children's higher education. "Three of my children have managed to earn their bachelor's degrees, and one of them is going to pursue graduate studies. All from coffee," she said. Every day, Ibu Nurhayati drives her motorcycle to collect coffee and brings a measuring cup to determine the amount of coffee she is collecting and purchasing.



"Once purchased, we pick up the coffee by car. We only use a car at that time because the cost of a car rental is very expensive," Ibu Nurhayati said. She also noted that "there are many women working like I do. Only a few men." Ibu Hajjah added, "In Enrekang, it is women who take care of the coffee."

To support her business, Ibu Hajjah also owns a coffee factory in Cakke where coffee is processed with parchment skin and the beans are cleaned using huller machines. Currently, all of the factory's workers are men. At the time of TPSA's visit, 10 men were working in the factory: Some were collecting the dried coffee, while others filled 60-litre gunny sacks with the dried beans and brought them into the warehouse. One worker was operating the huller and filling the sacks with cleaned coffee.



Hajjah Cuping's coffee warehouse.



The coffee-drying facility owned by Hajjah Cuping in the Sudu market area.

Ibu Hajjah says the biggest challenge today is the conversion of land once used for growing coffee to vegetable cultivation, in order to earn income in a shorter period of time. Production is also affected by the increased rainy weather conditions. Both of these factors have led to decreased coffee supply from farmers. To compensate, Hajjah has had to expand her sourcing into other geographical areas.

Yet coffee remains a dependable commodity for Hajjah Cuping, and she hopes that Indonesia's national and local governments will continue to support coffee production.

Given that coffee is a commodity product, it should come as no surprise that key inputs into production of coffee are similar across countries. For example, all producers depend on coffee plants or seeds, fertilizers and pesticides, labour, transportation, and a variety of agricultural services, as well as financial and banking services, to produce coffee. Labour represents the largest input into primary coffee production in Indonesia and in other large coffee-producing countries, which is a reflection of the highly labour-intensive nature of the production process.

Despite these similarities, however, stark differences exist between countries when it comes the relative importance of key material inputs. Most noteworthy are the differences in fertilizer and pesticide usage among major producers. In Colombia, for instance, fertilizers and pesticides make up around three-fifths of the value that producers spend on material inputs. In Indonesia however, fertilizers and pesticides make up only one-eighth of total inputs. This stark difference reflects the fact that Indonesian plantations tend to apply fewer agri-chemical inputs than other countries such as Colombia, Vietnam, and Brazil, even though 70 per cent of Indonesian coffee plantations do use fertilizers.¹⁷

¹⁷ Bultsink, Hoekstra, and Booij, The Water Footprint of Indonesian Provinces.





Another way that Indonesia stands out relative to other important coffee-producing nations is that a share of the total value created in the coffee value chain actually originates within the country. According to the Organisation for Economic Co-operation and Development's (OECD) Trade in Value Added (TiVA) database, Indonesia's domestic value-added (DVA) content of agricultural exports¹⁸ amounts to nearly 95 per cent—above the average of 89 per cent for Brazil, Vietnam, and Colombia, the world's three largest coffee-producing countries. (See Chart 12.) Generally, a high DVA in agricultural exports relative to other goods and services produced in an economy is normal, and reflects the nature of agricultural production which, apart from imported inputs such as fertilizers and pesticides or machinery and equipment, largely depends on a variety of domestically sourced inputs including labour, plants and seeds, and transportation. However, in the case of Indonesia, an exceptionally high DVA share of agricultural exports may in fact highlight an important fact about the country's coffee sector. Indonesian farmers use less fertilizer and pesticides, which are typically imported, than other major producers. There is also very little imported machinery embedded in Indonesian's coffee value chain. Thus, the relatively high DVA share may actually reflect a low uptake of good agricultural technologies and practices. This fact has likely contributed to the stagnant productivity levels within the sector over the past decade.

CHART 12: LOWER RELIANCE ON IMPORTED FERTILIZERS AND PESTICIDES SUPPORTS HIGHER DOMESTIC CONTENT IN INDONESIA'S AGRICULTURAL EXPORTS

(Domestic value-added as a share of gross exports; agriculture, hunting, forestry, and fishing, per cent)



Sources: The Conference Board of Canada; OECD TiVA Database.

Secondary Processing

Secondary processing, one of the downstream stages in Indonesia's coffee supply chain, represents the largest "user" of Indonesia's raw coffee. According to Indonesia's Input-Output data, close to 42 per cent of raw coffee is destined for additional processing—well above the 32 per cent of raw coffee that is exported and 25 per cent that is used for replanting future crops. Activities included in this portion of Indonesia's coffee supply chain include the roasting, grinding, and packaging of coffee.

Coffee roasting involves transforming green coffee beans into roasted coffee products. This process involves inputting green coffee beans into a roasting machine whose internal temperature is set according to the desired degree of roasting. Generally, temperatures will reach upwards of 200°C, with beans constantly being tossed to avoid burning them. After a given period, the green beans will turn brownish in colour as they release an oil known as caffeol, which instills the flavour of the coffee. After roasting is complete, beans are cooled off immediately to stop the roasting process. Throughout the roasting process, beans will increase in size; however, due to the absorption of water and other compounds, they will lose some of their initial weight.

¹⁸ Coffee is included within this category.





While some roasted coffee is distributed directly to retail channels, the rest of it is generally destined to be ground. The process of grinding coffee, which is done to facilitate the brewing process, involves using some form of grinding mechanism (e.g., burr grinding) to grate the roasted coffee beans. The fineness of the grind will depend on the length of time that the ground coffee is expected to be in touch with water. For example, fine grinds are used in espresso machines, while coarser grinds are preferred for French presses. All in all, ground coffee deteriorates faster than roasted beans due to the higher surface area that is exposed to air. This makes it important to package the finished product as fast as possible prior to its distribution to retail channels.

Indonesia also differs from other major producers when it comes to coffee processing. Compared to Colombia, for example, Indonesia has a greater variety of material inputs that go into the processing of coffee. Indeed, coffee beans make up only 38 per cent of material inputs into Indonesia's coffee processing, compared to 80 per cent in Colombia. This is partially due to unique consumption habits within each country. In Indonesia, for instance, instant coffee products such as "three-in-one" coffee (which includes premixed sachets of instant coffee, sugar and milk) are very popular.¹⁹ Such products are more diluted, and thus reduce the relative dependence on coffee as a sole input.

More surprising than the relatively low share of green coffee that goes into coffee processing is the importance of corn in the production of Indonesian coffee. In fact, corn represents the second largest material input into coffee production, accounting for one-quarter of material inputs. Corn and corn mixtures can be used as low-value additions to ground coffee in a variety of blended products.

Exporting Raw and Processed Coffee

After exporters purchase their goods from suppliers, they prepare them for shipping. In the case of raw coffee, additional sorting and grading is done before the green coffee beans are placed into bags. Bags are then loaded into shipping containers, or in some cases the green beans are loaded directly into plastic-lined containers. From there, the cargo is shipped to transshipment points or to their final destination. The activities associated with this exporting process are another important component of Indonesian coffee's value chain.

Household and Industrial Use

The bulk of coffee that undergoes secondary processing will eventually be used somewhere in the domestic economy. Just under three-quarters of processed coffee in Indonesia is ultimately consumed by the domestic population; for example, purchased at supermarkets to take home, or directly from cafés and corner stores around the country. On top of this, another 20 per cent of processed coffee is used in the production process of other industries in the economy. Processed coffee is an important input into food and beverage manufacturing, for example, as well as tobacco manufacturing. Finally, the remaining 6 per cent of processed coffee is exported, which is well below the 32 per cent of raw coffee that is exported from Indonesia. This reflects that fact that roasting activities are generally done in the end market to increase the shelf life of freshly roasted beans. As well, some markets, such as the EU, have escalating tariffs on processed products, hurting the competitiveness of Indonesian roasted coffees in these markets.²⁰

Transportation and Storage

As noted above, transportation and storage activities are important inputs into every stage of the value chain outlined in Exhibit 1. For example, coffee has domestic transportation requirements that include bringing key inputs to the farm gate, but also the transportation required to bring green beans from the farm to domestic processors, wholesalers, or to the port for export. There is also the international transportation activity associated with Indonesian coffee that includes overseas shipping, which is often

¹⁹ Neilson, "The Value Chain for Indonesian Coffee."

²⁰ Ibid.



significant in terms of the time that coffee takes to get to the final market. Some Indonesian coffee travels close to 15,000 km to reach its final market. From the port, the coffee is further shipped to international processors, and again to the final consumer. Throughout this process, warehousing and storage occurs at various points and for different periods of time, depending on the initial harvest and the number of transshipment points the cargo will transit from farm to consumer.





Areas of Non-Competitiveness and Recommendations for Improvement

Fueled by growth in both domestic and foreign demand, Indonesia's coffee sector has enjoyed stellar output gains over the past decade and long-term outlooks suggest that the country will have the opportunity to build upon this historic success. Global coffee demand continues to trend higher,²¹ and supply shortages are increasingly prevalent in large competitor countries like Colombia, Brazil, and Vietnam.²² However, to realize this potential, there are a number of hurdles that will need to be cleared. For one, Indonesia is not immune to the impact of global climate change, which continues to impact the quantity of land suitable for coffee growing across the world.²³ As well, Indonesia faces several internal challenges which hamper the expansion of its coffee sector.

The purpose of this section is to outline some of the unique challenges Indonesian firms face that inhibit their competitiveness in the global coffee market. This section also provides some recommendations to address the identified areas of non-competitiveness. One inherent factor of the coffee industry globally that impacts this analysis is that coffee processing and roasting is almost always conducted where the product is consumed, to increase shelf life. Thus, the opportunity for Indonesian firms to shift into these higher value-added activities is limited unless they are willing to establish a physical presence or partnerships directly in foreign markets. As such, the focus of this analysis puts a greater emphasis on expanding the overall value created by the coffee industry. By maximizing the value of its production, Indonesia can increase its global market share and work to ensure it receives a high price by boosting quality.

Tackling Stagnant Farm Productivity

Overview

Weak farm-level productivity is the number one barrier to increasing the total value generated by Indonesia's coffee sector. According to Statistics Indonesia, the average yield for Indonesian coffee farmers has remained essentially flat since 2005, with annual yields averaging 570 kilograms of coffee per hectare (kg/h). (See Chart 13.) Active Indonesian coffee farmers, or those that are committed to planting coffee over other crops, do fare better, with yields averaging 800 kilograms per hectare.²⁴ However, even these more-productive farmers fall well short of the 2,400 kilograms per hectare in competing Vietnam, which has very similar characteristics in terms of production mix and average farm size to Indonesia.²⁵

²¹ Bloomberg News, "Like a fashion symbol."

²² Almeida, "Cofco sees risk of coffee shortages."

²³ Kennedy, "Coffee, Bees and Climate Change."

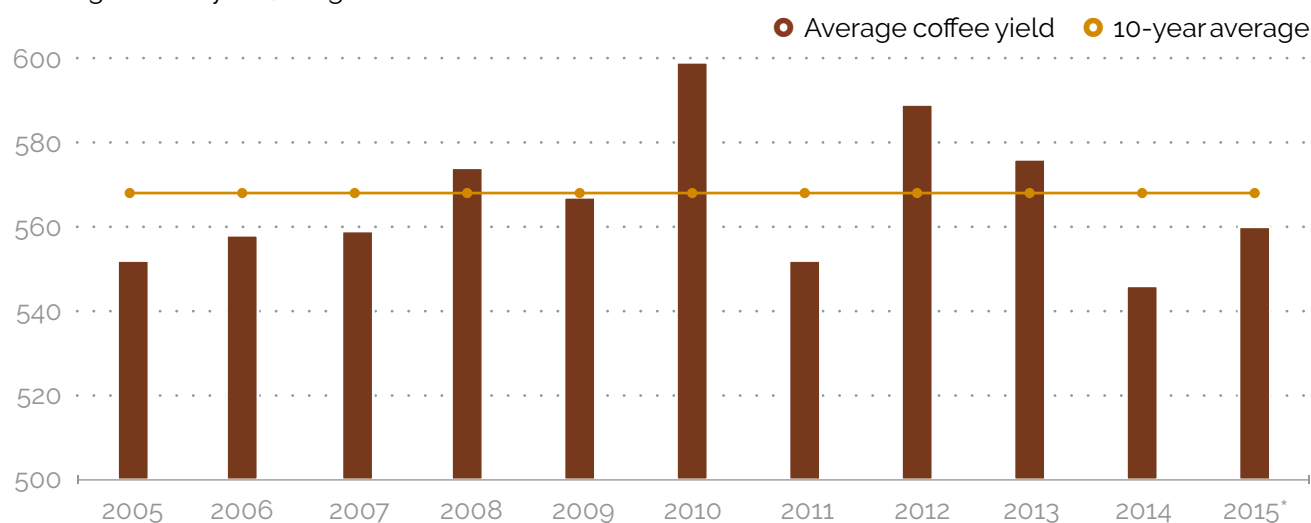
²⁴ TechnoServe, *Indonesia: A Business Case*.

²⁵ Ibid.



CHART 13: AVERAGE YIELDS BARELY HIGHER THAN A DECADE AGO

(Average coffee yield, kilograms/hectare)



*Preliminary figures

Sources: The Conference Board of Canada; Statistics Indonesia.

Part of Indonesia's weak farm-level productivity relative to its peers may reflect environmental factors. Climate factors present a risk to the country's coffee production. Recently, for example, dry weather played a role in disrupting the flowering and ripening stage of coffee cherries in lowland areas of Southern Sumatra and Java,²⁶ while heavy rainfall during the dry season has hurt production in some regions including South Sulawesi.²⁷

Apart from environmental factors, another important reason behind the coffee sector's weak productivity performance is the limited knowledge and application of good agricultural practices by its farmers. Specifically, limited use of fertilizers, combined with lack of pruning, use of poor planting materials, and insufficient investment in replacing ageing crop stock have all contributed to depressed yields for Indonesian coffee farmers.²⁸

Working to boost farm yields would support the country's production profile and increase its ultimate export potential. During our industry consultation process, one of the main themes that emerged from Indonesian coffee export firms was that they had no difficulty selling any quantity of coffee they could secure. In fact, one of the main barriers to increasing exports they identified was insufficient access to reliable high-quality supply. With the global shortage in coffee supply expected to persist in the near term,²⁹ there is an opportunity for Indonesia to boost its global market share by supporting farm productivity and increasing its coffee export capacity.

Recommendations to Increase Farm Productivity

Promote Widespread Use of Good Agricultural Practices

Notwithstanding the importance of addressing environmental challenges, future productivity growth in Indonesia's coffee sector will depend on boosting the share of farms that employ good agricultural practices—particularly among small farms, which account for a significant share of production and are less likely to integrate these into their processes. For example, promoting the use of synthetic and organic fertilizers, something that remains relatively rare at small farms, has the potential to improve soil fertility as well as yields. In addition, encouraging pruning and weeding practices remains critical, particularly in parts

²⁶ United States Department of Agriculture, *Coffee: World Markets and Trade*.

²⁷ Neilson, "The Value Chain for Indonesian Coffee."

²⁸ Ibid.

²⁹ Terazano, "Supply Shortage in World Coffee Market."





of the country where coffee plants continue to be grown in the wild.³⁰ And while general education on erosion control, coffee nutrition, composting, shade management, and pest and disease control all have the potential to benefit overall farm productivity,³¹ ensuring rejuvenation of the country's ageing stock of older and less-productive trees should also be a key priority.³²

The Indonesian government will continue to play a key role in supporting the diffusion of good agricultural practices throughout the coffee sector. Already, the department of agriculture has increased its efforts to supply farmers with inputs into coffee production, including seedlings, liquid organic fertilizer, and traps for coffee borers. Furthermore, the government has engaged in training initiatives that have been well-received, according to those we interviewed who had participated in government-sponsored training programs. However, the success of these programs has not been as widespread as it could be. For one, many farmers continue to be unaware of the breadth of available government programs. Interviewees also expressed a sense that collaboration between industry and government in designing the training and support programs is insufficient; for example, coffee borer traps were provided to farmers in regions that are not infected with the pest, and insufficient instruction has been provided on how best to deploy government-provided materials to farmers.

To align the sector with best farming practices in areas like land management, fertilizer use, pruning, and composting, it will be critical to broaden the scope of training provided to a fragmented coffee sector. One possible avenue to do this would be to facilitate the dissemination of best agricultural practices through cooperatives, which would provide this information to their members. Beyond providing training, it will be important to inform farmers of the opportunity cost of not implementing these practices. Indeed, while farmers may keep a lid on costs by not shifting toward agricultural best practices, they will have undernourished plants, lower yields, and weaker margins.³³ Making a strong business case to farmers in terms of the costs and benefits of implementing good agricultural techniques will go a long way towards securing greater uptake from the industry, particularly among smaller firms, which typically face the greatest constraints on time and resources but also have the weakest productivity, and thus more to gain.

Two examples illustrate the potential benefit that training in best agricultural practices can have on coffee-sector yields. The first is the Farm College training program initiated under the Coffee Initiative in East Africa. Prior to its implementation, per-hectare coffee yields in the region were 50 per cent lower than in Central America, due to the limited use of productivity-boosting inputs.³⁴ All in all, the two-year program helped to train around 140,000 farmers through hands-on training, resulting in average yield increases of 38 per cent for farmers.³⁵ The second example is Vietnam's 10-year plan to improve agricultural productivity in the country, which included a sustained effort to replace ageing coffee trees and provide extension and financing services to farmers. This resulted in measurable increases in the average yield and incomes for farmers. Programs of similar scope are likely to have measurable benefits for Indonesian farms as well, and would start the process of bringing productivity into line with some of its international competitors.

Broaden Access to Finance

It is also crucial to improve farmers' access to finance. The sector's low productivity leaves farmers, particularly small ones, in a paradoxical situation. Income levels and cash flow are limited by weak productivity, and inhibit investment in the very technologies and equipment that would alleviate the productivity problem. Even coffee farmers who do understand best practices in coffee farming find it

³⁰ Neilson, "The Value Chain for Indonesian Coffee."

³¹ TechnoServe, *Brewing Prosperity in East Africa*.

³² TechnoServe, *Indonesia: A Business Case*.

³³ Ibid.

³⁴ TechnoServe, *Brewing Prosperity in East Africa*.

³⁵ Ibid.

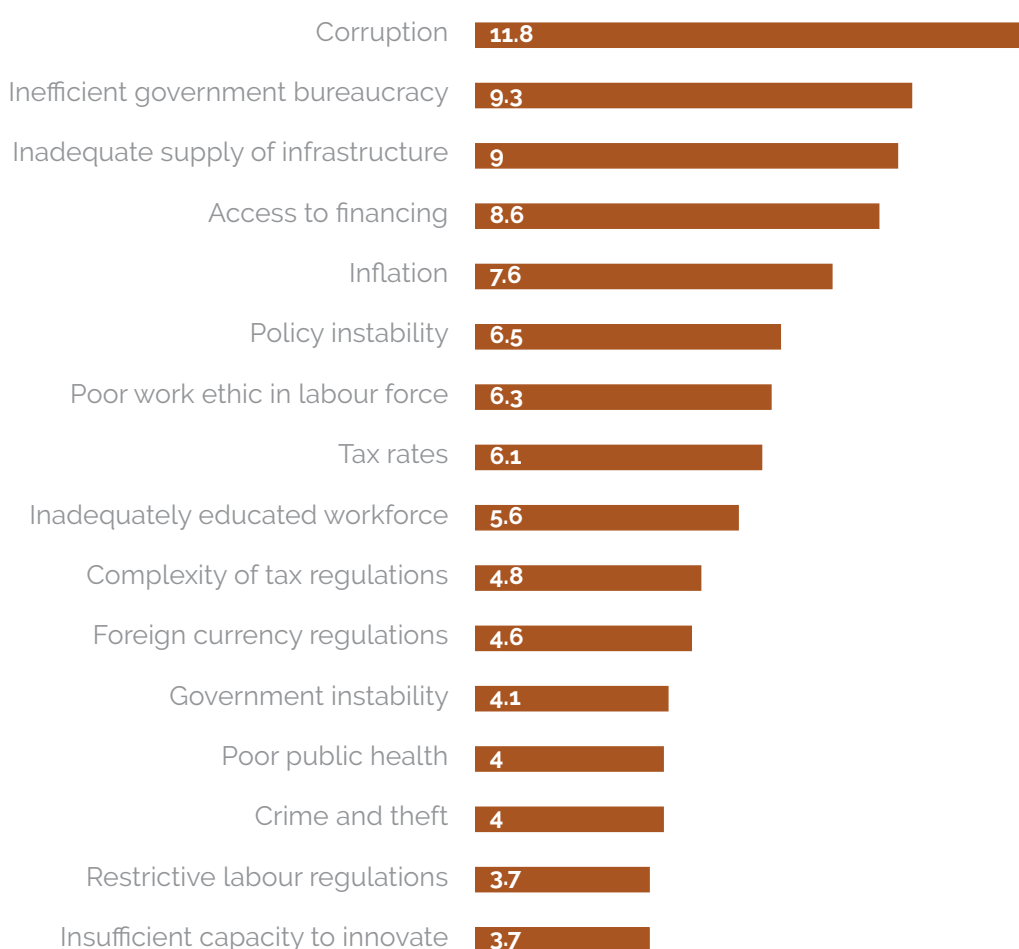


difficult to deploy them due to resource constraints. This situation is compounded by the uneven nature of harvest, sales, and investment in the next crop.

Improving access to capital would allow farmers to make better decisions when it comes to investment in their farms. Many of the coffee farmers we interviewed stressed how difficult it was to secure a loan in the formal sector, with several suggesting the collateral requirements were out of line with the funding they seek. In some cases, financial institutions would require the entire value of a farmer's home as collateral for a small loan, causing many to turn away from the process rather than risk losing their home over one poor crop. In fact, this is not necessarily a situation that is unique to coffee farmers in Indonesia. According to the World Economic Forum, access to financing is one of the most severe impediments to doing business in Indonesia. (See Chart 14). Also evident in our interview process was a general distrust of financial institutions. One respondent explicitly noted that they would never want to pay any interest to the bank. Instead, they would look for informal financing from family and friends, and if that was lacking, would not invest. Ensuring proper access to finance and educating farmers on the potential benefits of investing in their farms go hand in hand toward increasing productivity in the sector.

CHART 14: ACCESS TO FINANCING REPRESENTS KEY HURDLE TO DOING BUSINESS IN INDONESIA

(Problematic factors in doing business in Indonesia, weighted ranking, 2016)



Sources: The Conference Board of Canada; World Economic Forum Global Competitiveness Report 2016–17.



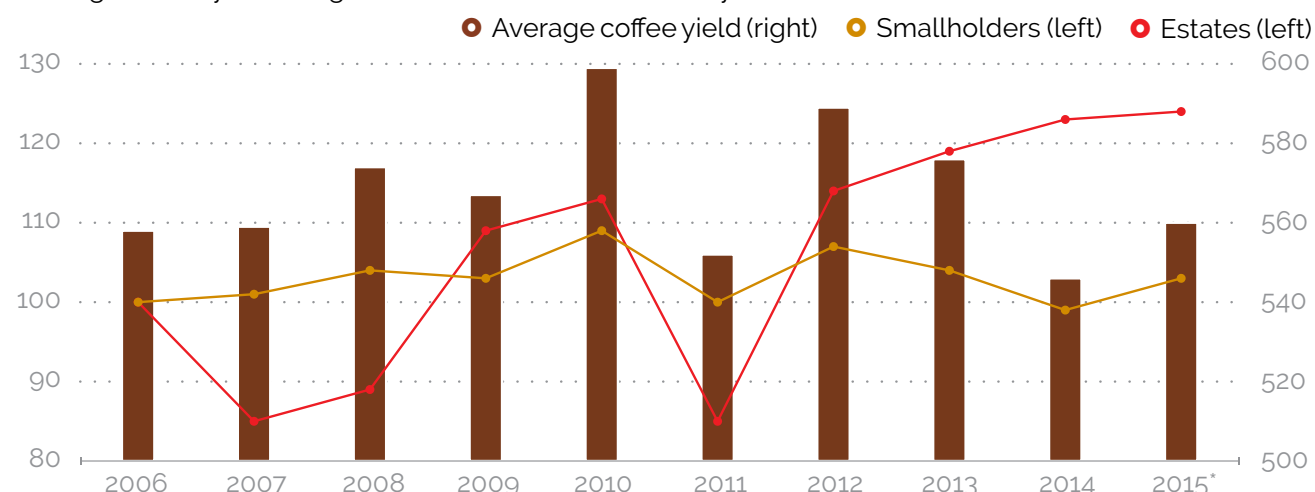
To improve formal access to financial networks in under-served regions of the country, the government of Indonesia should further develop partnerships with financial institutions and agricultural development banks in these regions. Combined with educational programs geared towards explaining how access to credit can benefit their business, this would provide farmers with the tools to manage the uncertainty of their revenue stream. Moreover, it would allow farmers greater financial flexibility to engage in productivity-advancing investments.

Support Collaboration Between Small Farmers

One potential avenue to support productivity growth within the coffee sector is to support greater collaboration between smallholder farmers. Yields at production estates have increased steadily for a decade, from an average of 536 kilograms per hectare between 2006 and 2010 to an average of 609 kilograms per hectare over the last five years. But smallholder productivity has barely changed, from an average yield of 538 kilograms per hectare between 2006 and 2010 to 534 kilograms per hectare between 2011 and 2015. As a result, productivity for small coffee farms is roughly 18 per cent lower today than at estate farms. (See Chart 15.) A greater degree of collaboration between small farms could help provide the necessary scale that would offer a collective of farmers the financial flexibility they need to invest in productivity-enhancing machinery or other value-adding products like fertilizers, which would not be purchased by farms acting unilaterally.

CHART 15: ESTATE YIELDS SIGNIFICANTLY HIGHER THAN AT SMALL FARMS

(Average coffee yield, kilograms/hectare; index of coffee yields, 2006 = 100)



*Preliminary figures

Sources: The Conference Board of Canada; Statistics Indonesia.

Greater collaboration between farmers has resulted in meaningful gains for smallholder farmers in other areas by providing a higher degree of scale. For example, the Fair-Trade Alliance (FTAK) in India is a collective of around 4,500 smallholder farmers that primarily grow spices, but also other staple products like nuts, coffee, and rubber. Through their association, small farmers gain greater market access and negotiating power. It also provided these Indian farmers access to organic seeds that were otherwise too expensive or not available. This allowed the farmers to increase the value of their crops. Over time, the collective expanded to include traditional farmers, who later converted to organic. It also includes local groups providing everything from microcredit for farmers to the preservation of indigenous seeds.³⁶ This

³⁶ Doane, "How a Successful Collective of Smallholder Farmers."





collaborative effort has resulted in FTAK farmers earning annual incomes that are nearly two times higher than the average farm income in India, despite having relatively small farms.

The Indonesian coffee market has many parallels. It is replete with smallholder farmers, which individually have inadequate access to capital, best-quality materials, and information about best practices in agricultural production. Consequently, productivity is lower and farmers receive less income. Gaining scale as a collective would help alleviate these concerns. As a group, farmers would have greater bargaining power and information would flow more freely to small farms on how best to maximize the value of their available land.

The government should therefore look for ways to reduce barriers to horizontal consolidation within the sector, while simultaneously streamlining regulatory issues that impact small farms more heavily due to the greater constraints on time and resources they face. For example, Indonesia still fares poorly on several metrics outlined within the World Bank's Ease of Doing Business Index. For one, the country is bogged down by a tax system that requires a multitude of payments throughout the year. As well, the country imposes a high cost for land registration relative to its peers—in Indonesia, the cost of registering a property amounts to 10.8 per cent of the property's value, compared to 7.5 per cent in India, 3.1 per cent in Brazil, 2 per cent in Colombia, and 0.6 per cent in Vietnam.³⁷ Overall, reducing regulatory barriers to operating a business in the country may encourage small farmers to move beyond subsistence-level operations, expand, and help gain the scale necessary to increase productivity and yields.

Expanding Higher-Value Production

Overview

Beyond Indonesia's considerable potential to expand coffee production through process improvements on farms, opportunities also exist to expand its production of higher-value coffee. Currently, six out of every seven kilograms of coffee produced in Indonesia are Robusta, a lower-value coffee typically used to make instant coffees as well as darker roasts and blends. However, Arabica coffee is worth more on the global market: Historically, it fetches up to \$2.20 per kilogram, or more than double the price of Robusta. (See Chart 16.) This price gap reflects the higher quality of Arabica coffee, which is valued around the world for its variety of flavours and attributes. Given that most of the country's Arabica production is exported, Indonesia can boost the export potential of its coffee sector by expanding its capacity to produce Arabica as well as related specialty coffees.

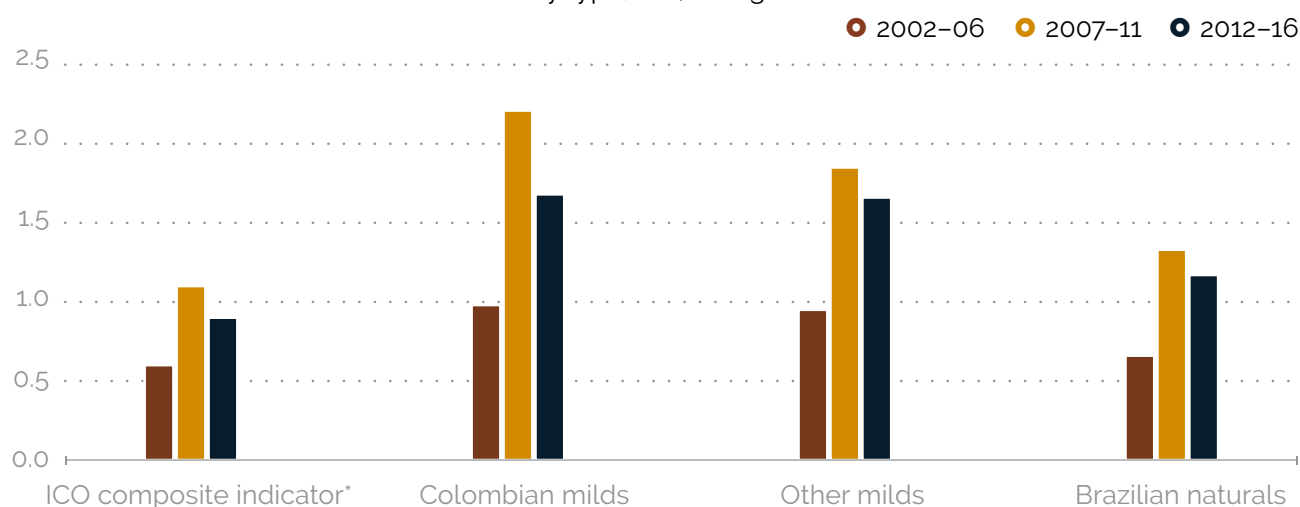
³⁷ World Bank, "Doing Business—Measuring Business Regulations".





CHART 16: ARABICA COFFEE FETCHES PREMIUM PRICES IN WORLD MARKETS

(Price difference relative to Robusta coffee by type, US\$/kilogram)



*Aggregate benchmark for the price of green coffee of all major origins and types
Sources: The Conference Board of Canada; International Coffee Organization.

Recommendations for Expanding Value Encourage Greater Arabica Production

Indonesia would stand to benefit from switching current acreage devoted to Robusta production to Arabica production. In many cases, climactic factors will limit the ability of farmers to switch, but the government can partner with firms to explore opportunities to do so in the parts of the country where it is possible. Indonesian policy-makers and industry associations can also encourage the widespread planting of Arabica, similar to initiatives undertaken by Vietnam over the past 15 years that have resulted in considerable gains. Early government initiatives³⁸ in Indonesia to stimulate Arabica production have been a key factor in the growing importance of Arabica in Indonesia's coffee sector in recent years.

Another potential path to expanding Arabica production in the country would be to encourage farmers who have previously moved away from coffee production to reconsider it. Coffee farming has increasingly been perceived to be an unreliable livelihood strategy for many households, such that acreage devoted to coffee farming has fallen from 1.4 million hectares in 2000 to an estimated 1.2 million hectares in 2015. As a result, 5.1 per cent of Indonesia's farmland is currently devoted to coffee farming, compared to 8.8 per cent in 2000. This has largely resulted in a greater emphasis on palm oil and cocoa production. (See Chart 17.)

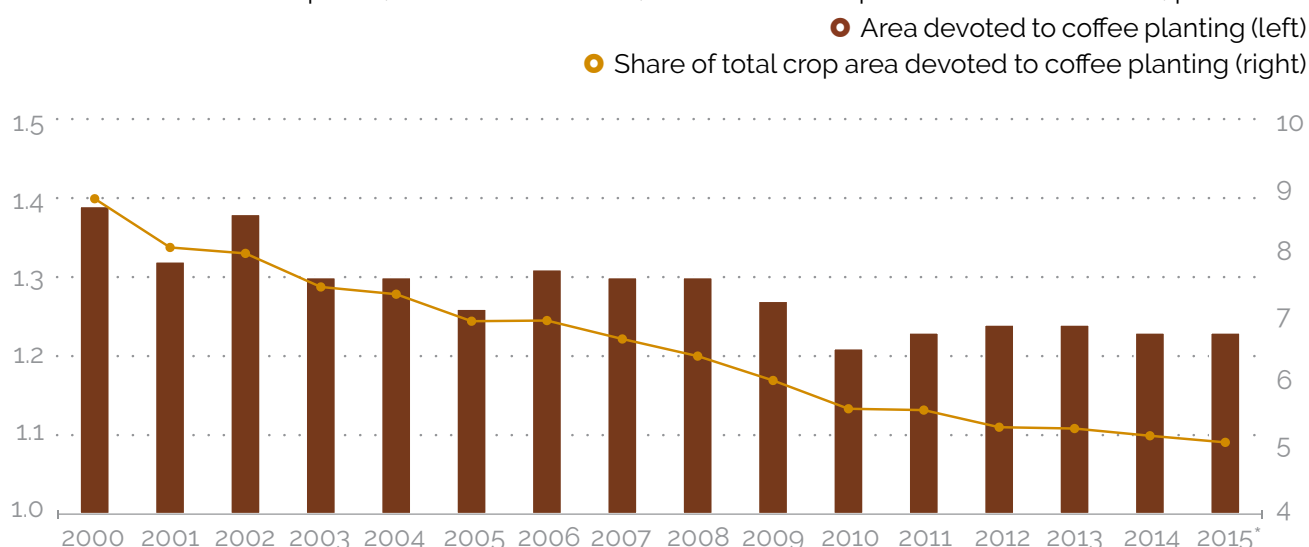
³⁸ Supremo Coffee, "Indonesia Coffee Type."





CHART 17: COFFEE BECOMING LESS POPULAR AMONG FARMERS

(Area devoted to coffee plants, millions of hectares; share of total crop area devoted to coffee, per cent)



*Preliminary figures

Sources: The Conference Board of Canada; Statistics Indonesia.

Beyond encouraging greater Arabica production, there are opportunities to explore the viability of Arabica production in untested regions of the country, since the many different microclimates in Indonesia provide several potential areas to produce more Arabica. Emerging interest in a variety of flavour profiles will remain an incentive to develop new flavours, especially with consumers willing to pay a premium for such coffees.

Foster Global Recognition of Specialty Coffee Brands

Although definitions vary, two features generally characterize specialty coffee.³⁹ First, it has strict standards, limiting the number of allowable defects in the green coffee beans that are used in the process.⁴⁰ These standards require commitment by participants throughout the supply chain to ensure quality is sustained. Secondly, specialty coffee comes from beans that have unique flavor profiles and are produced in distinct geographic microclimates.⁴¹ It is this second determining factor where Indonesia has a distinct advantage: The mountainous regions across its islands create countless well-suited microclimates, allowing the country to generate many distinct flavour profiles. As a result, because of Indonesia's inherent characteristics, there is considerable opportunity to expand the value generated by its coffee sector by investing in specialty coffee production. Currently, Indonesia exports an estimated 150,000 tons of specialty Arabica coffee every year, making it the second-largest specialty Arabica exporter in the world⁴²—this despite being only the 12th-largest producer of Arabica coffee.⁴³

To enlarge its footprint in the global specialty coffee market, Indonesia needs to promote awareness of its specialty coffee brands abroad. In part, this would involve greater branding and marketing of its offerings. For example, Indonesian trade-development agencies have already made some headway through their Remarkable Indonesian Coffee initiative in the United States, which not only informed U.S. businesses of Indonesian offerings, but also helped Indonesians stay up-to-date with changing preferences and tastes in the global coffee market. Strengthening these types of marketing efforts could continue to pay dividends

³⁹ While most specialty coffees are Arabica, not all Arabica coffees meet the criteria for specialty coffee.

⁴⁰ Specialty Coffee Association of America, "Green Coffee Standards."

⁴¹ Reinhart, "What is Specialty Coffee?"

⁴² Specialty Coffee Association of America, "Facts and Figures."

⁴³ United States Department of Agriculture, *Coffee: World Markets and Trade*.





in the U.S., where an estimated 55 per cent of its US\$48 billion retail coffee market is comprised of specialty coffee.⁴⁴ However, promoting Indonesia's breadth of specialty coffee offerings through marketing campaigns in other higher-income countries like France, Germany, Italy, and Japan, all of which consume large amounts of specialty coffee,⁴⁵ could also increase global market share for Indonesian producers over time as consumer awareness increases.

Facilitating greater interaction between Indonesian specialty coffee sellers and global buyers is critical to boosting a marketing and awareness campaign globally. For example, supporting the attendance of Indonesian specialty coffee sellers at global coffee auctions would allow them to develop more connections with international buyers. Additionally, this could allow them to be formally recognized for their achievements, which promotes the entire country's global reputation. Indeed, it was an Indonesian farmer who received the top taste score for his coffee beans at the 2016 Specialty Coffee Association of America's Global Specialty Coffee Expo, resulting in the highest auction price of US\$55 per kilogram.⁴⁶

Facilitate Certification

Facilitating greater production of a variety of internationally-certified coffees would also help Indonesian producers maximize the total value of their crops. Coffee certifications, the most well-known of which include Organic, Fair Trade, Rainforest Alliance, C.A.F.E. Practices, and UTZ, recognize coffee producers that meet various environmental (e.g., sustainable agricultural practices, lack of prohibited substances) and social (e.g., fair treatment of workers, equity in international trade, traceability and transparency in supply chain) standards. Producers that can certify their coffee generally benefit from price premiums and greater access to global markets. In Uganda, for instance, sustainability certifications were demonstrated to have positive impacts on participating households, although smallholder farmers in Uganda needed to cooperate to offset the fees associated with certification.⁴⁷

To promote greater prominence for certified coffee, farmers need more information about which potential certifications offer the most benefit and which they may be eligible for. For example, Bird Friendly, a 100 per cent organic shade-grown coffee certification common in countries including Peru, Mexico, and Nicaragua, remains limited in Indonesia despite the prevalence of shade-grown coffee within the country.⁴⁸ Beyond addressing the suitability of various certifications, the government should outline the potential benefits of certification to members along the coffee value chain to incentivize its application.

Lastly, the Indonesian government will need to address a variety of hurdles to certification. For example, the Indonesian government could offer voluntary government organic certification programs at a lower cost than current high-cost private sector ones. The government should also seek organic certification equivalence arrangements with major markets such as the EU, the United States, and Japan. It could also involve giving farmers the means to dispose of plastic waste. Many farm owners reported that existing regulations in Indonesia make it hard for them to dispose of plastic waste products and that this was an impediment to pursuing a variety of environmentally-certified coffees.

With our primary research findings indicating that it is becoming increasingly common for buyers of Indonesian coffee to be interested in smaller orders of higher-quality coffee, certification provides a route to keep Indonesian coffee competitive in a world where many consumers are willing to pay a premium for coffee

⁴⁴ Specialty Coffee Association of America, "Facts and Figures."

⁴⁵ Ibid.

⁴⁶ Global Coffee Platform, "SCOPI at the Specialty Coffee Event."

⁴⁷ Berger and Latynsky, "Assessing the Income Effects of Group Certification."

⁴⁸ Wahyudi and Jati, "Challenges of Sustainable Coffee Certification in Indonesia."



with desired qualities. Currently, fewer than 10 per cent of Indonesia's coffee exports are certified or verified "sustainable."⁴⁹ As such, there is significant potential to promote greater certification within the country.

Overcoming Supply-Chain Inefficiencies

Overview

A key barrier to the competitiveness of Indonesia's coffee sector is its inefficient supply-chain structure. According to interview respondents, it is not unusual for up to 10 individuals or organizations to be involved throughout the supply chain for coffee, compared to two or three in other coffee-producing countries. This is problematic because each additional step that occurs between the picking of coffee beans and its final consumption has the potential to reduce the end quality of the coffee. In some cases, the quality of the coffee bean deteriorates to such an extent (e.g., due to contamination from fire, dust, or pesticides) that it is rejected for export markets and must be sold at home. To fully capitalize on future market opportunities, Indonesia must address the factors that create slack in its supply chain.

Recommendations to Alleviate Supply-Chain Inefficiencies

Invest in Road, Port, and Warehousing Infrastructure

Indonesia's competitiveness is substantially hurt by the inadequate quality of its infrastructure. According to the OECD Economic Surveys, Indonesia ranks 75th out of 138 countries tracked in terms of both its port and road infrastructure. Moreover, it ranks 80th on the overall quality of its infrastructure. Given that Indonesia's coffee sector is highly reliant on both road and water transportation, its global competitiveness is negatively impacted by the country's relatively underdeveloped port and road infrastructure that firms use to move inputs into the country and ship coffee out to their buyers.

A commitment to better road and port infrastructure is essential to alleviating the supply-chain bottlenecks that increase the amount of time it takes for coffee to move from the farm gate to the end market. Our industry consultation process included several transportation firms who often cited poor road quality, made worse by road congestion, as a key barrier to the efficient and quick movement of goods within the country. Port infrastructure is often far from the farm gate, making it difficult for many producers to access. Increasing the number of transshipment and dry ports in the country will help improve the flow of goods and allow a greater number of firms the opportunity to seamlessly export their production. As well, the low frequency of sea transport impedes the efficient movement of coffee to its destination. Investing in additional road infrastructure, including new toll highways, would help to lessen the effects of road congestion and ease transportation expenses. Moreover, port upgrades, including more frequent ferry travel between key coffee-producing regions and Indonesia's deep-water ports, are of utmost importance.

One straightforward way to limit the impact of the infrastructure gap on the coffee sector immediately is to improve storage and warehousing capabilities by reducing the overall amount of time that coffee comes into contact with external contaminants. As well, warehouses that are equipped with climate control could help to lengthen the effective life of coffee beans. Not only would this help decrease the amount of coffee that is rejected for export, but it could also give sellers more flexibility in deciding when to sell their coffee. This would prevent producers from selling their coffee at unfavourable times and rates.

Encourage Better Quality-Control Practices

Beyond the challenges presented by the combination of a fragmented coffee sector and infrastructure deficits within the country, quality-control issues plague Indonesia. Most notably, several of the collector or aggregating firms in the industry that we interviewed noted that most farmers have very little in the way of

⁴⁹ TechnoServe, *Indonesia: A Business Case*.





quality-control procedures at the farm. One key consequence of this is that foreign buyers we interviewed reported that Indonesian coffee is replete with foreign materials not found in coffee sourced from other origins. This imposed a real cost on roasters. One buyer of Indonesian coffee said it has to be sorted multiple times to weed out poor-quality beans, while another said that grinders had to be replaced more frequently because of the extra strain the extraneous materials place on their equipment. Unsurprisingly, their opinion of Indonesian coffee in this context is also diminished.

For an island country whose geography already puts it at a disadvantage in transporting goods efficiently, it is important that Indonesian firms work to ensure the best possible product quality to overcome higher transportation costs. This could involve educational programs on best practices in avoiding contamination throughout the supply chain (e.g., growing, drying, processing, and storage). It would also likely prove beneficial to provide updated and accessible information for exporters concerning regulations in key coffee-importing countries. In the European Union, for example, the presence of mould or impermissible levels of pesticides are common reasons for coffee imports to be rejected. In this case, informing Indonesian coffee exporters of Europe's Maximum Residue Levels (MRLs), which outline the highest allowable levels for pesticides in goods intended for human consumption, would be helpful, particularly when combined with training initiatives on how to achieve these levels.

Other measures to promote quality control along the supply chain include traceability procedures: In other words, the recording of certain information along the life cycle of the coffee bean, such as its origin, type, and grade. A key benefit of this would be that coffee beans would retain their identity, discouraging the mixing of different grades of coffee, which ultimately results in the downgrading of the entire batch. Lastly, the Indonesian government may be interested in initiating quality-control points in key coffee-producing regions to target unique lapses in quality that are specific to these regions.

General Recommendations

Beyond the three key barriers to competitiveness outlined above, our research highlights additional hurdles that impede the ability of Indonesian firms to expand their export potential. For example, our primary research found that Indonesians have trouble acquiring imported machinery and equipment. Re-evaluating the effect of high import duties on machinery and equipment into the country could benefit members along the supply chain who are looking to supplement or complement existing labour with technology. This is particularly true as some coffee-specific machinery is not produced domestically and firms are forced to look abroad (to Brazil, for example) to get access to the best coffee-farming and processing machinery. Reducing tariffs on these imports would make investment less costly and could benefit those farmers and processors who can afford the appropriate technology.

It would also be beneficial to ensure that regulations and taxes within the country do not inhibit transportation of goods, or shift production within the country. Several interviewees noted that municipalities sometimes charged informal taxes to transport parchment coffee across municipal borders. Furthermore, varying tax-incentive schemes from province to province are confusing to producers. Incentive schemes should be directed at attracting foreign capital to Indonesia, rather than having provinces compete against each other for the same capital. Coordinating tax programs across regions should also work to ensure that rural and remote coffee producers are not unfairly penalized.

Lastly, there were barriers specific to exporting coffee. These included language barriers as well as difficulty finding people with trade experience. To address such issues, the Indonesian government should continue to fund trade-facilitation agencies that can help exporters, and particularly SMEs, get in touch with foreign buyers.





Conclusion

The goal of this research was to identify the main barriers that impede Indonesia from capturing a greater amount of value along the global supply chain for coffee. It began with an in-depth look at the current state of the Indonesian and global market for coffee, and continued with a detailed analysis of the different activities along the value chain. This information, when combined with feedback received during our industry consultation process, laid the groundwork for assessing the bottlenecks coffee producers and exporters face that reduce their competitiveness in global markets. Additional research and reference to experiences of other large coffee-producing regions provided the backbone for evidence-based recommendations on how to help improve the export competitiveness of Indonesian coffee exporters.

One key finding of our research is the uniqueness of coffee in the overall GVC framework. Because coffee is generally processed where it is consumed, many of the higher value-added activities that occur along the value chain for coffee (including marketing, branding, and packaging) will not necessarily overlap with where coffee beans are harvested. As such, our analysis puts greater emphasis on Indonesia expanding the overall value generated by its coffee sector, as opposed to the traditional emphasis of GVC analysis, which focuses on moving up the value chain. This is not to say that Indonesia cannot move into higher value-added activities domestically, especially as the purchasing power of Indonesians expands in line with rising incomes. However, when it comes to exports of coffee (the focus of this research), it is generally more difficult for Indonesians to penetrate higher-value activities.

Our research also highlighted three major obstacles that Indonesian firms face in capturing a greater share of the global coffee market and provided a series of recommendations on how these might be addressed. First, Indonesia's coffee sector continues to be characterized by weak and stagnant farm-level productivity, which severely constrains its export potential. Key avenues to address weak productivity include promoting the diffusion of good agricultural practices throughout the sector, improving formal access to financial networks in underserved regions of the country, and supporting greater collaboration between farmers. Second, Indonesia's coffee production continues to be geared towards lower-value Robusta coffee, but the country does have the opportunity to expand the overall value of its coffee exports by incentivizing greater Arabica production, facilitating more widespread certification of coffee, and promoting global recognition of its specialty coffee brands. Last, Indonesia's inefficient supply-chain structure, largely a reflection of its geography, remains a key barrier to the competitiveness of Indonesian coffee exporters. Continued commitment to better road and port development, in addition to investments in warehousing facilities and quality-control procedures, would help to alleviate the effects of the country's infrastructural deficiencies.

In the absence of capacity expansions across the globe, growth in global coffee demand is set to outpace growth in global coffee supply in the future. Against this backdrop, Indonesia has significant opportunities to expand its footprint in the global coffee market, especially if it can address the unique challenges that hamper the expansion of its coffee sector. Nowhere is this more apparent than in interviews with stakeholders along its coffee supply chain, who all seem to agree on one thing: lack of available supply, not insufficient demand, is what holds the sector back. Thus, overcoming the barriers faced by firms in the sector has the potential to provide considerable benefit in terms of employment, foreign currency, and tax revenues to the Indonesian economy.





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TPSA | CANADA-INDONESIA TRADE AND
PRIVATE SECTOR ASSISTANCE PROJECT

Canada Centre, World Trade Centre 5, 15th Floor
Jl. Jend. Sudirman Kav 29-31 Jakarta 12190, Indonesia
P: +62-21-5296-0376, or 5296-0389
F: +62-21-5296-0385
E: greg@tpsaproject.com

TPSAPROJECT.COM