

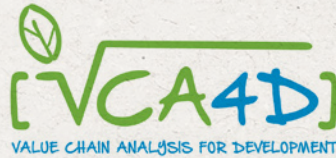
# MARKET PROFILE



## Market profile

Cocoa from Ecuador





<b>Subject of the study:</b>	Cocoa from Ecuador
<b>Date :</b>	December 2021

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## I. ABSTRACT

This market profile was produced as part of the collaboration between COLEAD and Value Chain Analysis for Development (VCA4D). VCA4D is a partnership between Agrinatura and the European Commission, to carry out agri-based value chain analyses in EU partner countries, for which the methodology can be found [here](#). The objective of VCA4D's work is to assess the extent to which value chains contribute to inclusive economic growth and are socially and environmentally sustainable. Because the cultivation of coffee and cocoa is one of the main sources of income for small farmers in Ecuador, this market profile assesses the Ecuadorian cocoa value chain at the local, regional and international levels by analysing the main production, import and export market trends and trade barriers for cocoa and its derived products.

## II. METHODOLOGY

This market profile takes into account all imported and exported food products containing cocoa. Table 1 provides information about all the different commodities analysed for this profile and their respective codes according to the Harmonized Commodity Description and Coding System (HS).

Table 1: HS codes used for this profile

HS Code	Commodity name
<b>Fresh or raw cocoa</b>	
18010000	Cocoa beans, whole or broken, raw or roasted
18020000	Cocoa shells, husks, skins and other cocoa waste
<b>Processed cocoa</b>	
18031000	Cocoa paste (excl. defatted)
18032000	Cocoa paste, wholly or partly defatted
18040000	Cocoa butter, fat and oil
18050000	Cocoa powder, not containing added sugar or other sweetening matter
180610	Cocoa powder, sweetened
<b>Chocolate</b>	
180620	Chocolate and other food preparations containing cocoa, in blocks, slabs or bars weighing > 2 kg or in liquid, paste, powder, granular or other bulk form, in containers or immediate packings of a content > 2 kg (excl. cocoa powder)
18063100	Chocolate and other preparations containing cocoa, in blocks, slabs or bars of <= 2 kg, filled
180632	Chocolate and other preparations containing cocoa, in blocks, slabs or bars of <= 2 kg (excl. filled)
18069011	Chocolate and chocolate products in the form of chocolates, whether or not filled, containing alcohol
18069019	Chocolate and chocolate products in the form of chocolates, whether or not filled, not containing alcohol
18069031	Chocolate and chocolate products, filled (excl. in blocks, slabs or bars and chocolates)
18069039	Chocolates and chocolate products, unfilled (excl. in blocks, slabs or bars, chocolates)

### III. SUPPLY

Coffee and cocoa production makes an important contribution to the national economy of Ecuador. The principal zones for cocoa production are located in the Northern region of Ecuador and throughout the Highlands. More specifically, Ecuadorian cocoa is recognised as *national cocoa* (*Theobroma cacao*) and referred to as “fine aroma cocoa” internationally, due to its post-harvest processing, during which there is a short fermentation period which results in a mild chocolate with good flavour and aroma. Several local and multinational chocolate-producing companies have full ownership of the value chain and control the early production stages, such as the fermenting, by industrialising it to increase product quality. Traditionally the early stages of the cocoa processing happen on the farm. First, the pods are harvested and split to extract the pulp and beans, which are wrapped in leaves and left

to ferment for about 7 days. The beans are then separated and sun-dried for around 10 days before being transported to the local mill for cleaning, grading and then onward shipment to the manufacturer.

At the manufacturer’s factory, the beans are roasted. Then the shells are crushed and removed in a wind-blown process known as winnowing, which isolates the seeds, called nibs. By this stage the flavours and aromas of chocolate are very recognisable. The nibs are ground into a thick brown liquid called cocoa liquor and further processed into the cocoa powder and butter used in chocolate confectionery, drinks and cooking. Exportation to the European Union (EU) mainly happens at the stage of dried beans or semi-finished products. Before the COVID-19 crisis, global demand for chocolate was expected to grow by an estimated average annual rate of 3.4% to 4.5% up to 2024.<sup>1</sup>

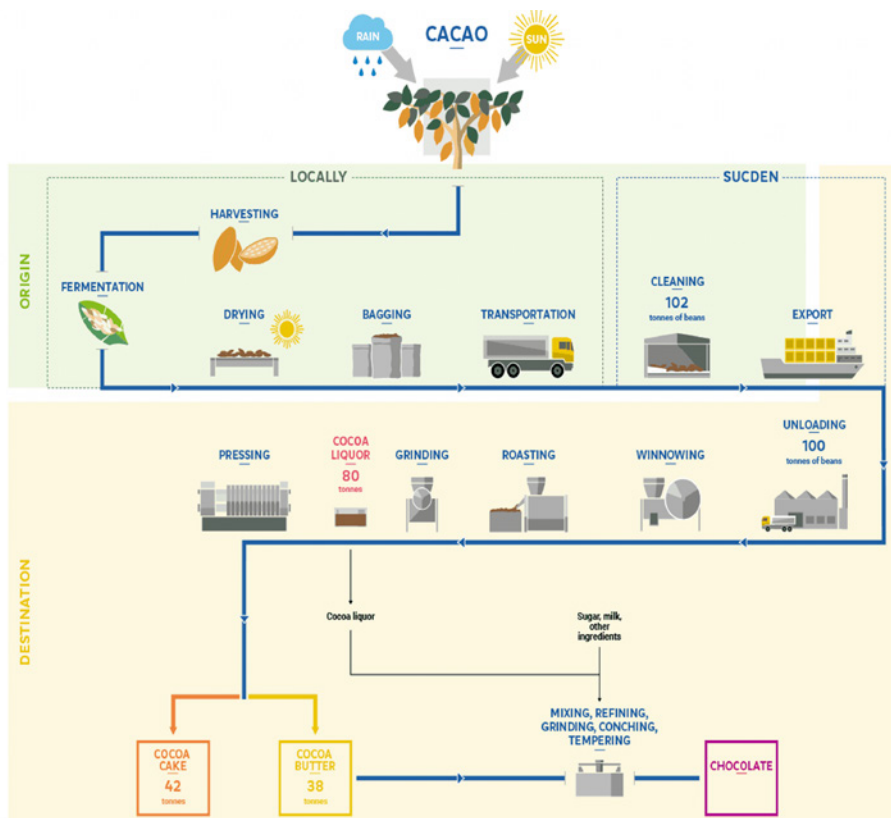


Figure 1: Cocoa process chart

Source: Sucden [https://www.sucden.com/media/1364/cocoa\\_process\\_flowchart.pdf](https://www.sucden.com/media/1364/cocoa_process_flowchart.pdf)

<sup>1</sup> Profound (2020) The European market potential for semi-finished cocoa products. Centre for the Promotion of Imports from developing countries.

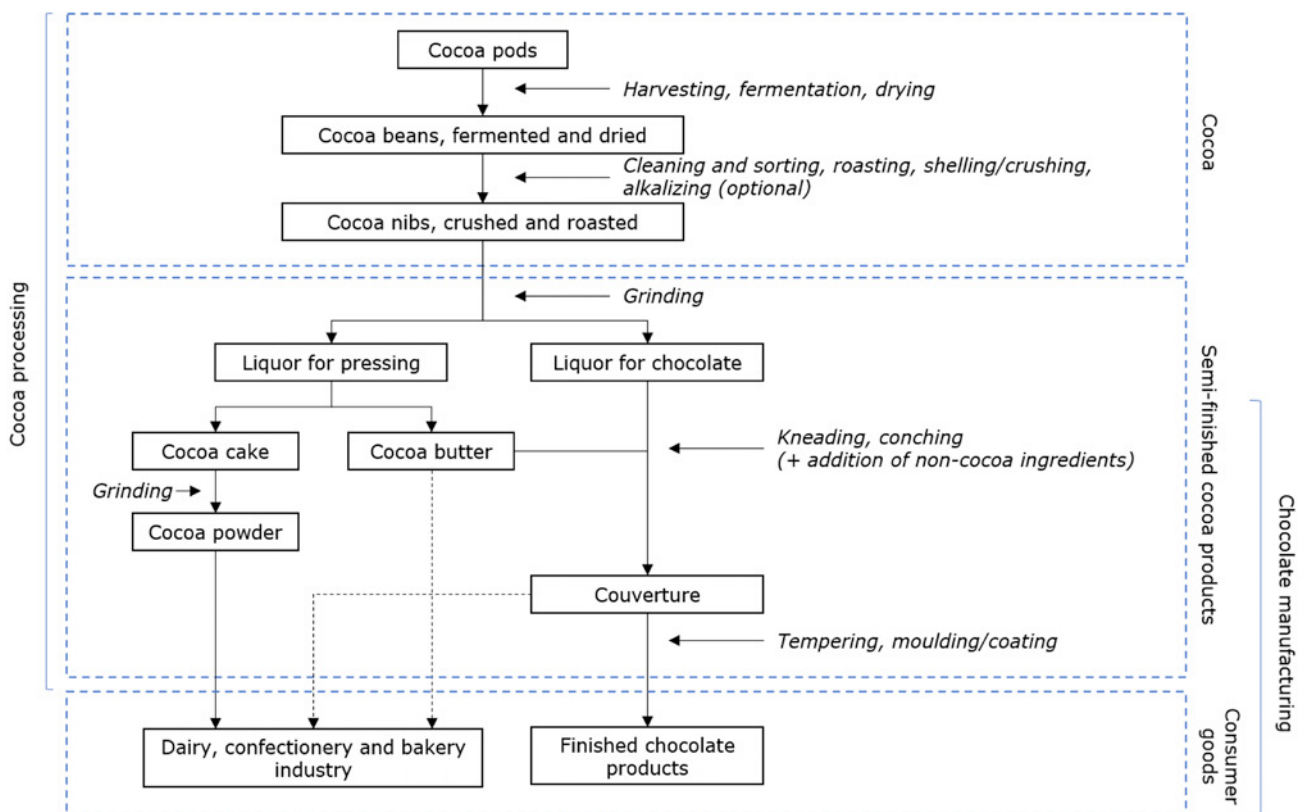


Figure 2: Stages of production of semi-finished cocoa products and chocolate  
 Source: CBI adapted from UNCTAD (2008).<sup>2</sup>

The Ecuadorian national cocoa is used in the manufacturing of high-quality chocolates and in mixtures. Currently, fine aroma cocoa is being threatened in Ecuador and other Latin American countries by the introduction and expansion of an improved clone version of cocoa, named CCN514, which is more productive and grown under monoculture conditions. Monoculture plantations may provide increased yield but require more agrochemical inputs and are more susceptible to droughts, soil erosion and degradation. The organoleptic characteristics of CCN514 beans are also less appreciated, which translates into lower prices than for the national cocoa. Crop production is the main livelihood source of smallholders and farmers in Ecuador. A major challenge is the marketing of their products and the influence of intermediaries, who significantly reduce<sup>3</sup> the income obtained

from their production. We will discuss further in this market profile how participation in certification programmes such as organic or fair trade can help producers become more competitive and responsive to new market requirements.

Higher prices through certification programmes often fail to sufficiently compensate for the yield gap between shaded and monoculture plantations, as they are not always accessible to smallholder farmers. The important role which agroforestry systems can play for biomass and biodiversity conservation in agricultural landscapes has, however, been demonstrated. Continuous efforts are, therefore, needed to allow smallholder farmers to be included in certification programmes and other supporting mechanisms, such as carbon funding, to preserve traditional shaded cocoa production systems.<sup>4</sup>

2 CBI (2020) Entering the European market for speciality cocoa. <https://www.cbi.eu/market-information/cocoa-cocoa-products/speciality-cocoa/market-entry>.

3 O. Viteri Salazar and J. Ramos-Martin (2017) Organizational structure and commercialization of coffee and cocoa in the northern amazon region of Ecuador, *Revista Nera*, Vol. 20, No. 3.

4 Romaike S. Middendorp, Veerle Vanacker and Eric F. Lambin (2018) Impacts of shaded agroforestry management on carbon sequestration, biodiversity and farmers' income in cocoa production landscapes. *Landscape Ecol.*

The organisation of small-scale farmers into groups is one way to facilitate access to certification or other financial incentives for sustainable practices. However, only around 50,000 of the 115,000 small-scale cocoa producers in Ecuador worked through some form of association, buying union or cooperative in 2018. This leaves an estimated 65,000 non-associated small owner-producers, with an average of 2 hectares of land and some of the lowest levels of productivity in Latin America, directly exposed to a value chain which forces prices down further at every stage. Being territorially isolated, these producers rely on a network of around 1,000 commercial intermediaries as their link to a chain comprising local buyers and agents, area traders and national wholesale traders.<sup>5</sup>

In fact, the national chain culminates in Guayaquil, where the largest bulk export companies (the transnational traders) control up to 70% of overall exports and effectively control the hands-off supply chain. In addition to the difference in price between different crop production types, one of the main relationships between price and quality remains the volatility of the futures market. The daily and weekly variations in prices urge producers to shorten post-harvest cycles and rush their crop to market, reducing quality and further pushing down the price.

For more information on cocoa production in Ecuador, see Appendix 1.



<sup>5</sup> Thomas F. Purcell (2018) 'Hot chocolate': financialized global value chains and cocoa production in Ecuador. *The Journal of Peasant Studies*, Vol. 45, No. 5–6, 904–926.

## 1. Main global cocoa producers

### Cocoa bean production

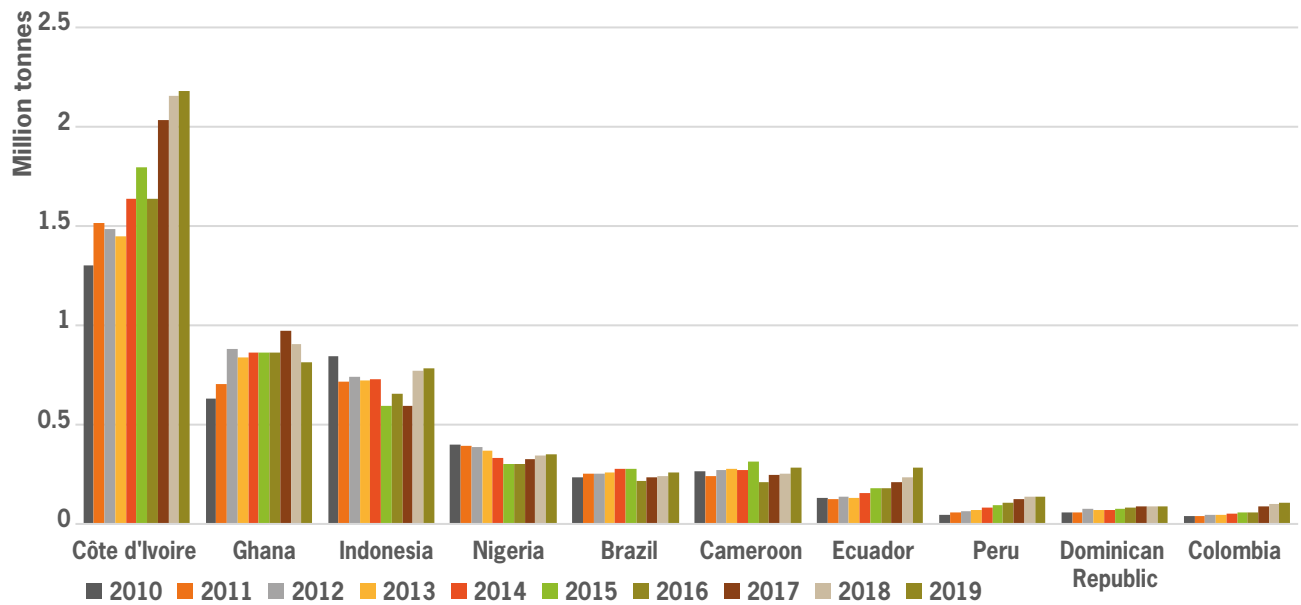


Figure 3: Top 10 global cocoa bean producers. Annual production volumes between 2010 and 2019. Source: COLEAD, based on FAOSTAT.

In 2019 the top 10 cocoa-producing countries (Figure 3) produced together about 94% of all cocoa beans in the world. Côte d'Ivoire is by far the largest producer, accounting for almost 40% of total global production in 2019. Ecuador has historically been among the top 10 producers; with 284,000 tonnes it became the fifth largest producer in 2019, producing 5% of the total global volume of cocoa beans. Of the top 10 producers, only Nigeria (-12%) and Indonesia (-7%) experienced a decrease in production between 2010 and 2019. Together with Colombia (+158%) and Peru (+192%), Ecuador has made the third largest relative increase (total growth rate) in its production (+115%) among the global top 10 producers over that period.

A comparison of the different world regions (Figure 4) reveals that sub-Saharan Africa produced about two thirds of all cocoa beans in 2019, while Asia and Latin America each produced about half of the remaining third. Although production has grown faster in Latin America than in Asia, these shares have remained relatively similar over the last 20 years.

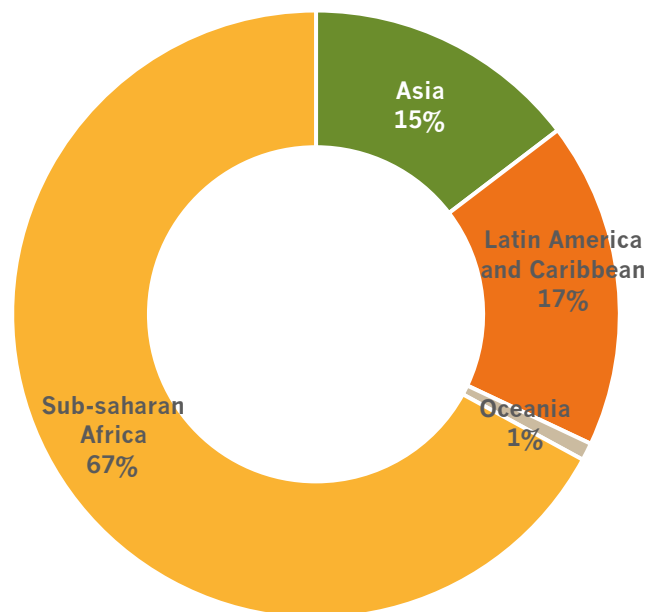


Figure 4: Share of cocoa production by world region in 2019 (total global production of 5.6 million tonnes). Source: COLEAD, based on FAOSTAT.

At the regional level, Brazil, Peru, Colombia and the Dominican Republic are Ecuador's largest competitors. After a significant reduction in Brazilian production in 2016, Ecuador became the largest producer of cocoa beans in the South America and Caribbean region (Figure 5).

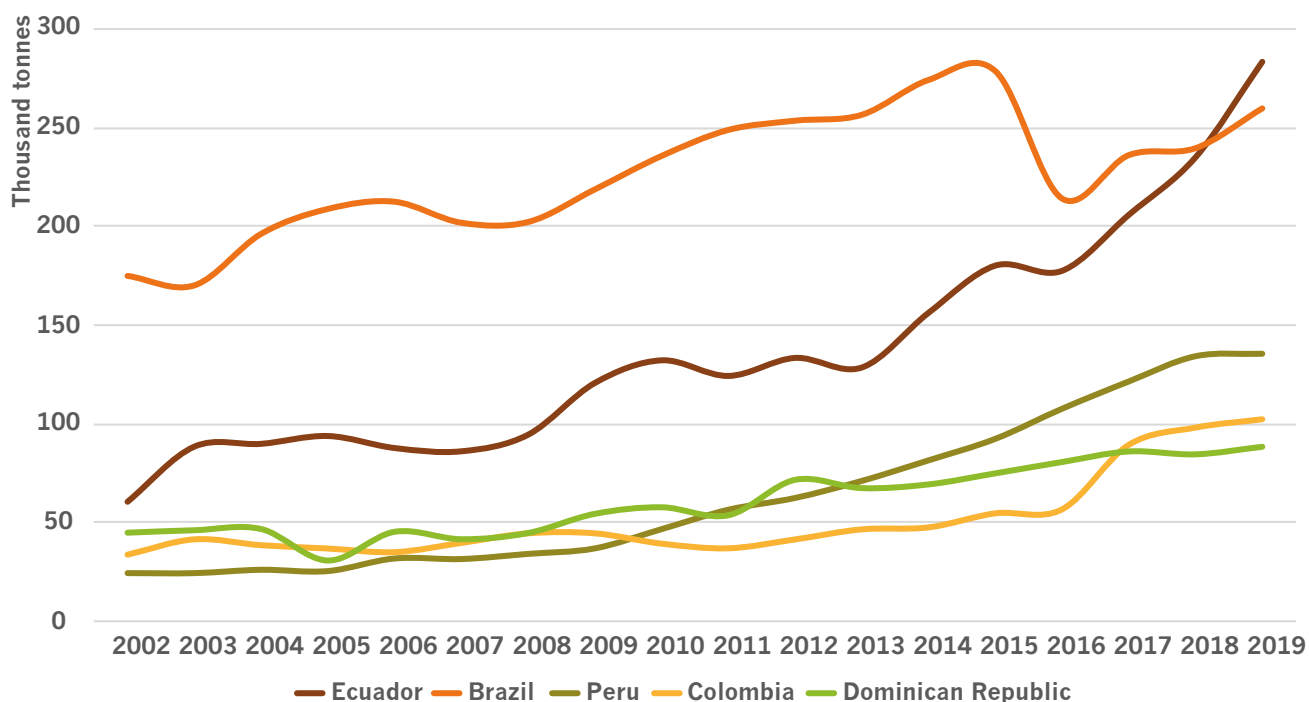


Figure 5: Cocoa bean production between 2002 and 2019 of the top five cocoa producers in the South America and Caribbean region. Source: COLEAD, based on FAOSTAT.





## Chocolate production

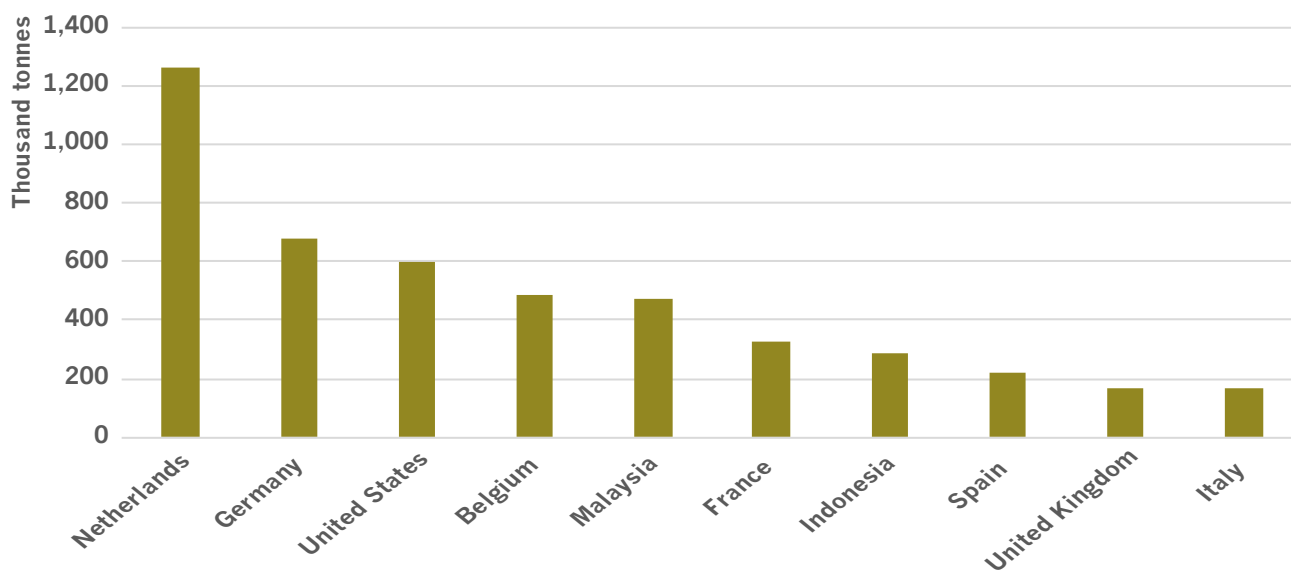


Figure 6: Top 10 importers of ingredients used for production of chocolates (cocoa beans, paste, butter and liquor, HS 180100, 180200, 180310, 180320 and 180400) in 2019. Source: COLEAD, based on CEPII BACI.

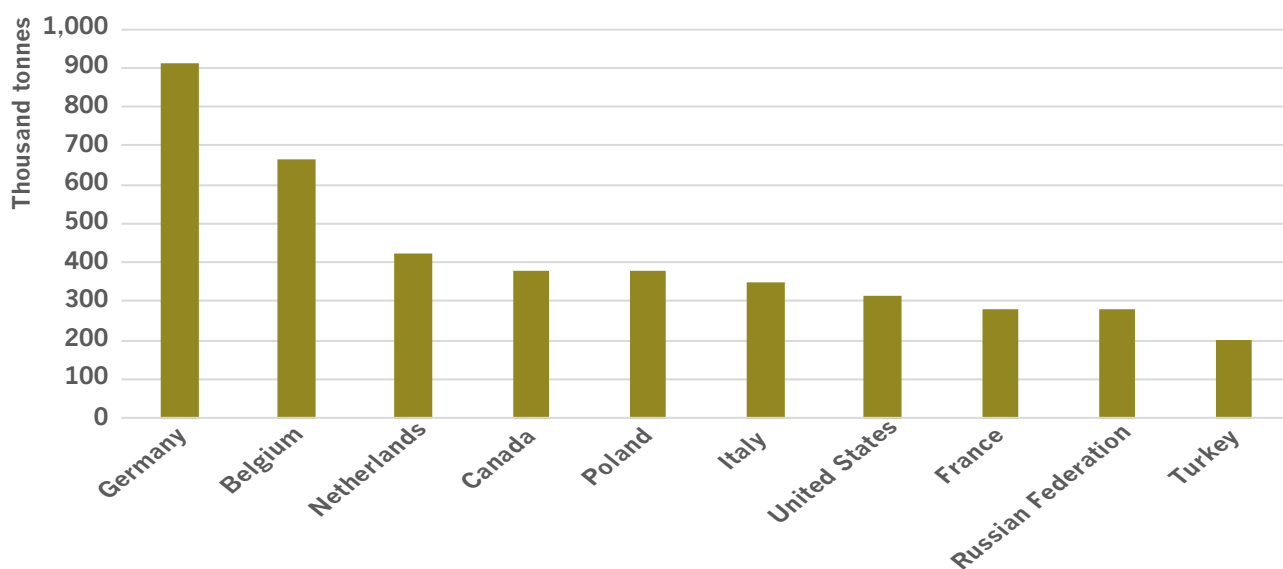


Figure 7: Top 10 exporters of chocolates and food preparations including cocoa (HS 180620, 180631, 180632 and 180690) in 2019. Source: COLEAD, based on CEPII BACI.

It is hard to find figures for the total annual production of chocolates and other preparations containing cocoa in each country, but the world's leading producers can be identified based on raw bean imports and chocolate exports. Figures 6 and 7 show that the Netherlands was the world's largest importer of cocoa-based ingredients in 2019; besides producing chocolate, it mainly operates as a hub country for cocoa beans in Europe. Germany, Belgium, Italy, France, Canada and the USA are the other top producers historically. They all rank very high in terms of imports of cocoa-based chocolate ingredients and

exports of chocolate. Recently, however, chocolate production has increased significantly in Eastern Europe (Poland and Russia) and Asia (Turkey), resulting in their presence among the top 10 global exporters of chocolate. Ecuador ranks only 78th out of 186 chocolate exporters listed in the CEPII BACI trade database for 2019, with chocolate exports of about 1,583 tonnes. Although Ecuador was the largest producer of cocoa beans in the Latin America and Caribbean region in 2019, it ranked only 10th in terms of exports of chocolates and other food preparations containing cocoa in the region (Figure 8).

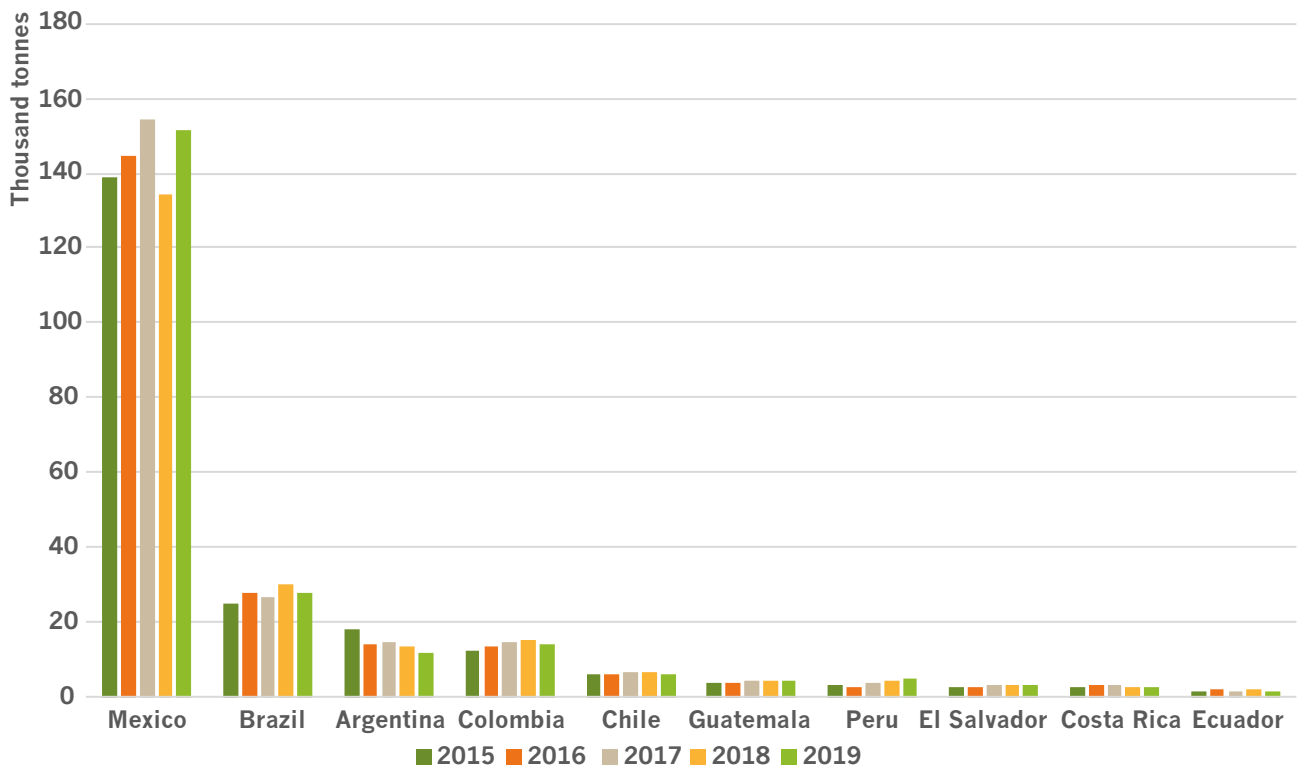


Figure 8: Top 10 exporters of chocolates and food preparations containing cocoa (HS 180620, 180631, 180632 and 180690) in the Latin America and Caribbean region between 2015 and 2019. Source: COLEAD, based on CEPII BACI.

Most of the world's final chocolate products are supplied by seven multinational companies: Mars, Ferrero, Mondelez, Meiji, Hershey, Nestlé and Lindt & Sprüngli.



## Semi-finished cocoa products

Semi-finished cocoa products include cocoa paste (defatted or not), cocoa butter and cocoa powder (sweetened or not). The top global exporters of semi-finished cocoa products are the Netherlands, Côte d'Ivoire, Malaysia, Germany, Indonesia, Ghana and France, which together exported about 75% of the volume of all semi-finished cocoa products worldwide in 2019. Ecuador was in 21<sup>st</sup> place globally, after Peru and before Italy. In 2019 it exported 24,500 tonnes of semi-finished cocoa products, representing only 0.7% of the global total. It ranks in third place (fourth in 2019) in the Latin America and Caribbean region, after Mexico and Brazil (see Figure 9).

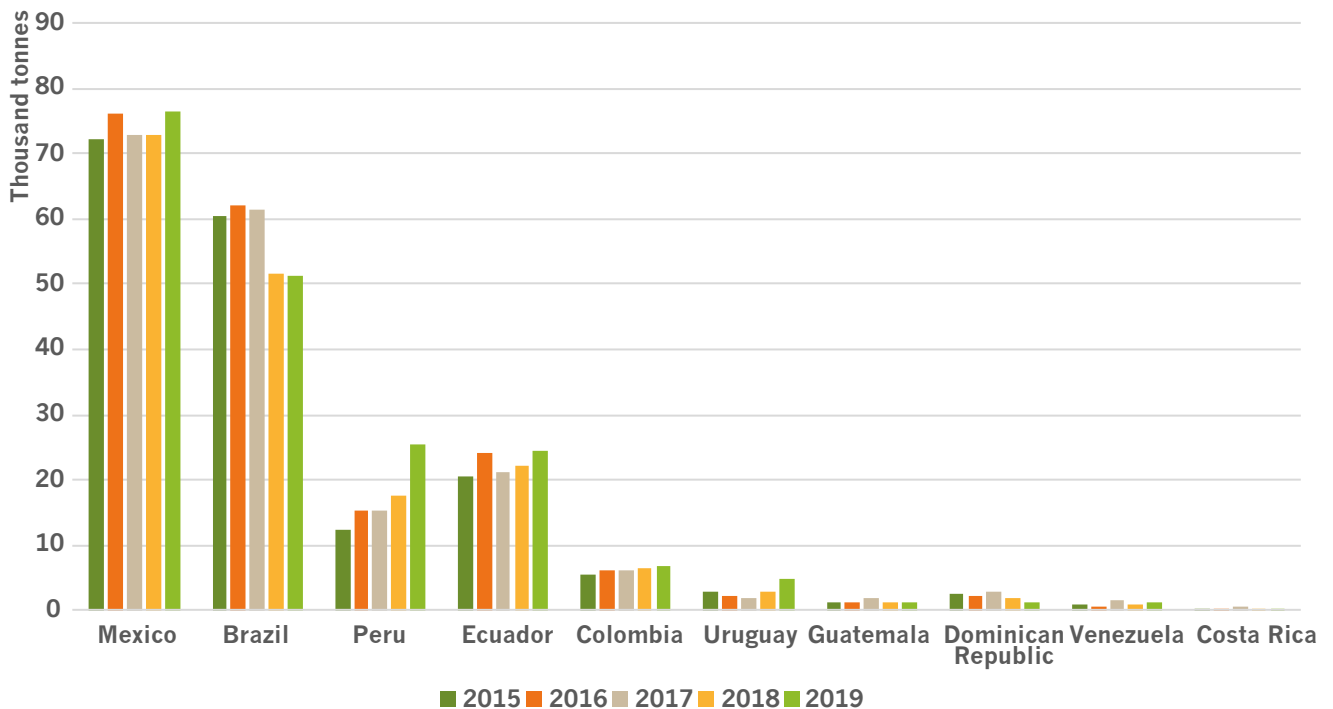


Figure 9: Top 10 exporters of semi-finished cocoa products (HS 180310, 180320, 180400, 180500 and 180610) in the Latin America and Caribbean region between 2015 and 2019. Source: COLEAD, based on CEPII BACI.

## 2. Main cocoa producers in Ecuador

A non-exhaustive list of Ecuadorian cocoa producers and exporters can be found in Appendix 2.

## 3. Main chocolate producers in Ecuador

A non-exhaustive list of Ecuadorian chocolate producers and exporters can be found in Appendix 3.

## IV. DEMAND

### 1. Global import trends and markets

#### Main global markets for cocoa beans

Traditionally the EU28 and North America have been the main importers of cocoa beans. Recently, Asian countries (such as Malaysia, Indonesia, Japan and Singapore) have been importing more and more cocoa beans from other regions (Figure 10). Asia became the second largest importer of cocoa beans in 2016, while the EU28 remain by far the largest. Over the 18 years between 2002 and 2019, European cocoa bean imports continued to grow at a compound annual growth rate (CAGR) of 3%. Asian imports from other regions decreased between 2002 and 2010 at a CAGR of -7%, then started to grow strongly at an impressive CAGR of 14%.

When considering Latin American and Caribbean cocoa bean exports in detail, the above-mentioned trends become more evident. Since 2010, exports to Asia (again mainly Indonesia, Malaysia and Japan) have grown rapidly (at a CAGR of 28% between 2010 and 2019), and in 2018, Asia became the main export destination for Latin American and Caribbean cocoa beans. Exports to the EU and North America grew at a CAGR of 7% and 3%, respectively, between 2002 and 2019, but since 2015 they have stagnated, and imports from Latin America and the Caribbean region have even decreased.

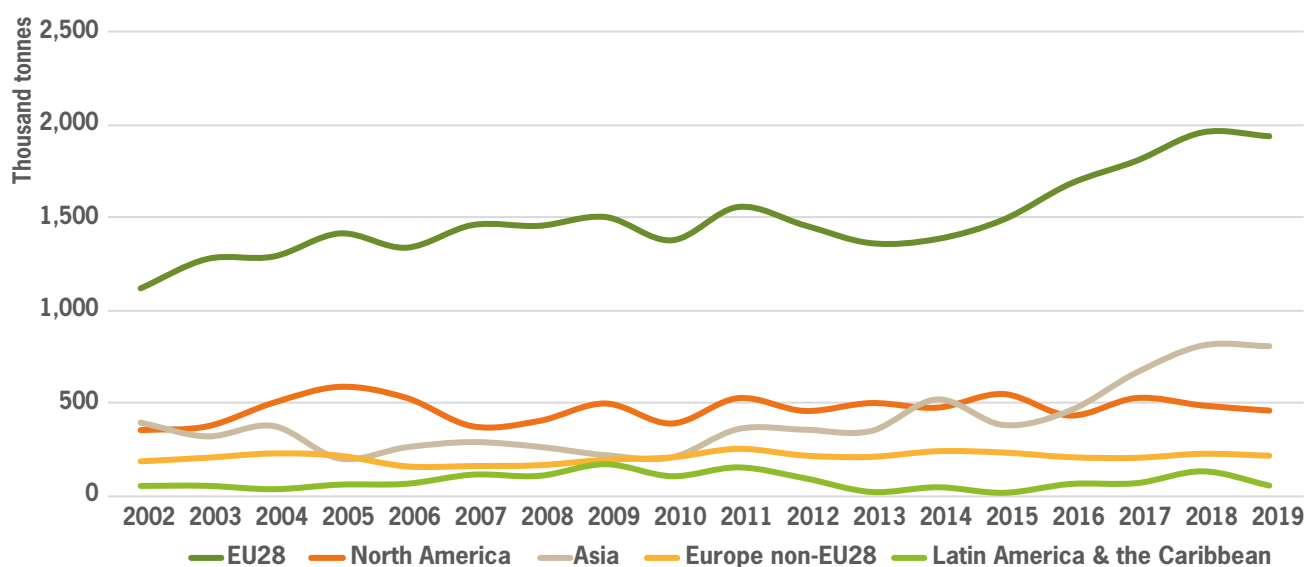


Figure 10: Import volumes (excluding internal trade) of raw or roasted, whole or broken cocoa beans (HS 180100) in the top five cocoa bean importing regions between 2002 and 2019. Source: COLEAD, based on CEPII BACI and Eurostat.



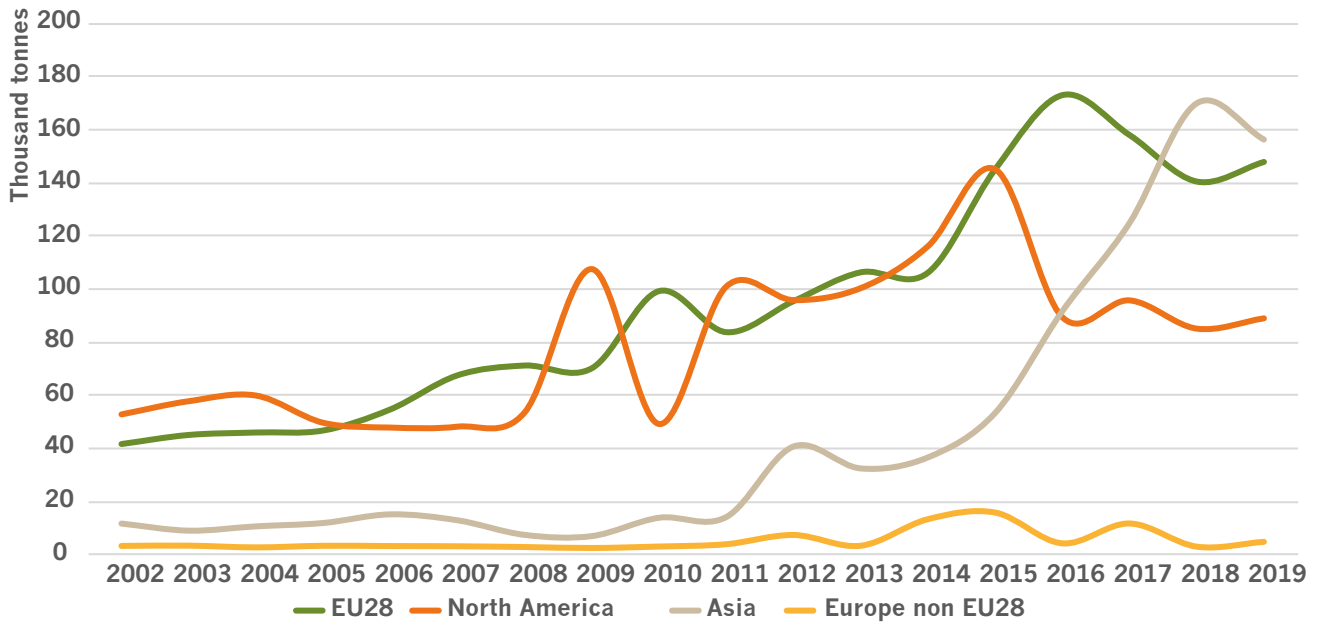


Figure 11: Imports (excluding internal trade) of raw or roasted, whole or broken cocoa beans (HS 180100) from Latin America and the Caribbean region by the top five cocoa bean importing regions between 2002 and 2019. Source: COLEAD, based on CEPII BACI and Eurostat.

These general trends also apply to Ecuadorian cocoa bean exports, with Asia becoming the main export destination in 2016 and demonstrating an impressive CAGR of 38% between 2011 and 2018. A small decrease took place in 2019, but other data sources

reveal that Ecuadorian cocoa bean exports to Asia again reached record volumes in 2020. North America was the main market for many years, but Ecuadorian exports to the USA and Canada have fallen significantly since 2015.

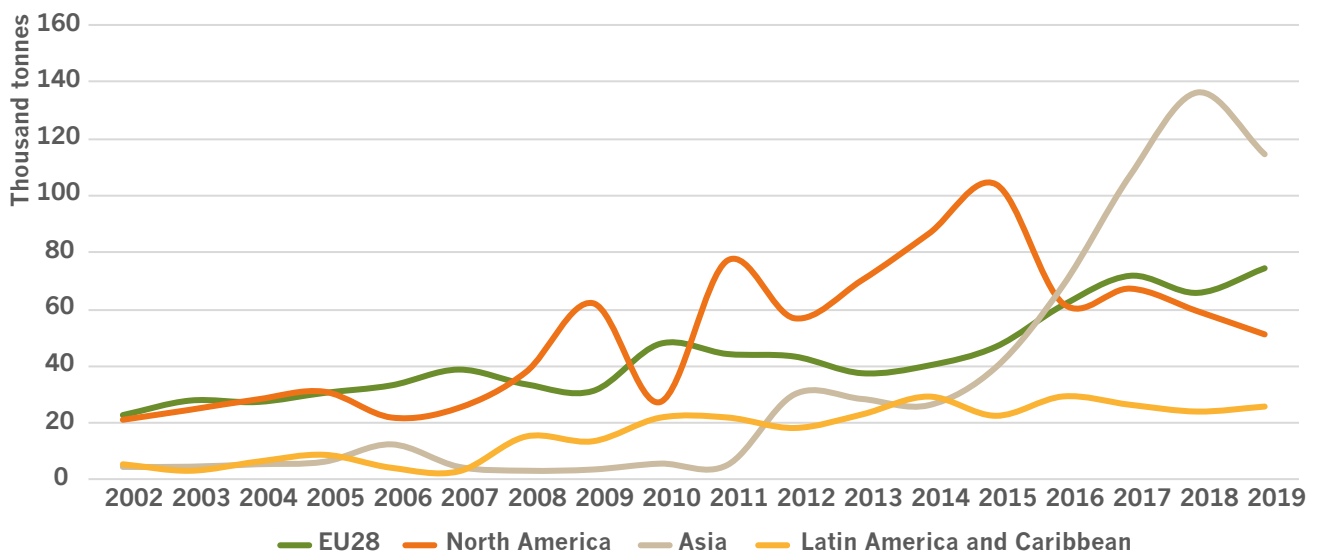


Figure 12: Imports of raw or roasted, whole or broken cocoa beans (HS 180100) from Ecuador by the top four importing regions between 2002 and 2019. Source: COLEAD, based on CEPII BACI and Eurostat.

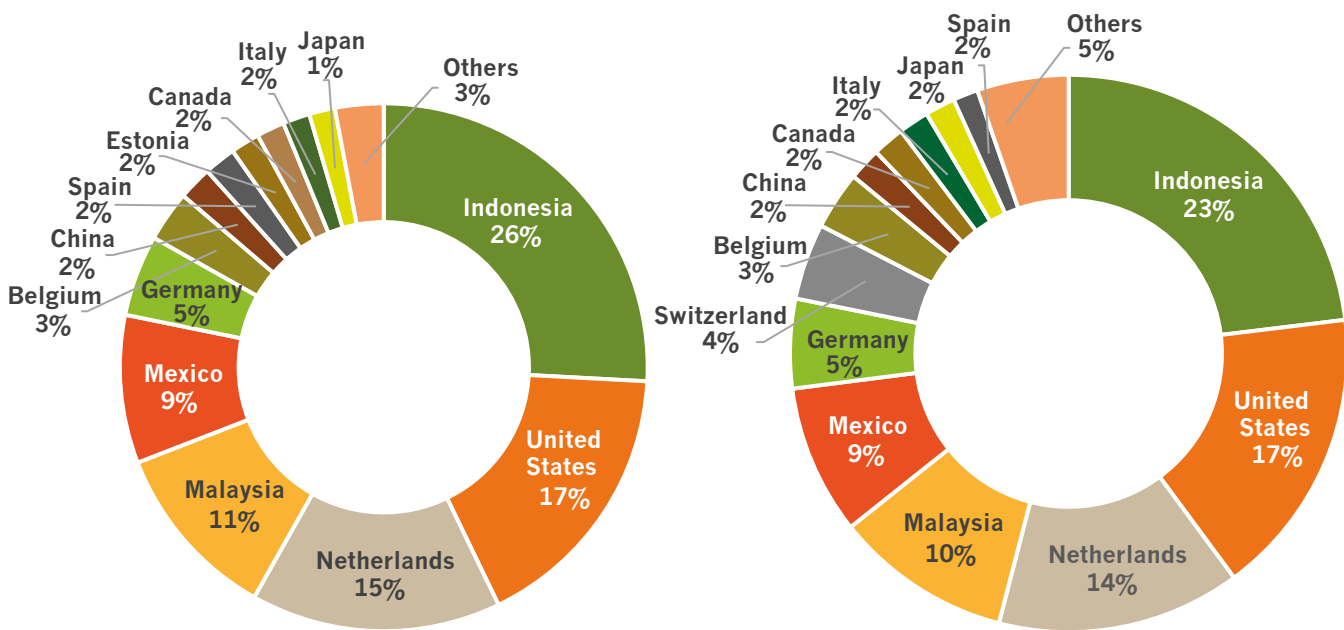


Figure 13: Volume share (left) and value share (right) of total Ecuadorian cocoa bean (HS 180100) export (273,000 tonnes, US\$694 million) by destination country in 2019. Source: COLEAD, based on CEPII BACI.

The destination markets for Ecuadorian cocoa bean exports were dominated by a few large importers in 2019. In Asia, Indonesia and Malaysia imported more than a third of the total volume and value. The USA and Canada bought about a fifth of the exports in terms of volume and value, while Europe, with the Netherlands being by far the largest importer, bought a quarter. There are only slight differences in the value shares compared to the volume shares. For example, Indonesia's value share is slightly lower than its volume share, suggesting that it imports more low-grade or uncertified cocoa beans, while the opposite is true for importers such as Switzerland and Japan.

### Main global markets for Ecuadorian semi-finished cocoa products

Semi-finished cocoa products exported by Ecuador (24,500 tonnes in 2019) include cocoa paste (defatted or not), cocoa butter

and cocoa powder (sweetened or not). Similar to Ecuadorian exports of chocolate and food preparations containing cocoa, the main destination region for semi-finished cocoa products is Latin America and the Caribbean (46% of the total export volume in 2019), with the top five destination markets being Colombia, Chile, Peru, Argentina and Cuba). The US, main destination country in 2019 with 6 thousand tonnes, representing 25% of exports, shows a CAGR rate of 5% since 2002. Exports to the EU28 represented 14% of total export volume in 2019 and have remained relatively stable for many years. Since 2010 there has been a declining trend, mainly due to a significant reduction in exports to France, Spain and the UK. Exports to Asia are growing steadily, at a CAGR of 17% per year between 2002 and 2019. Japan is the main importer of Ecuadorian semi-finished cocoa products (importing 68% of the volume exported to the Asian region in 2019), followed by Indonesia, China and Singapore.

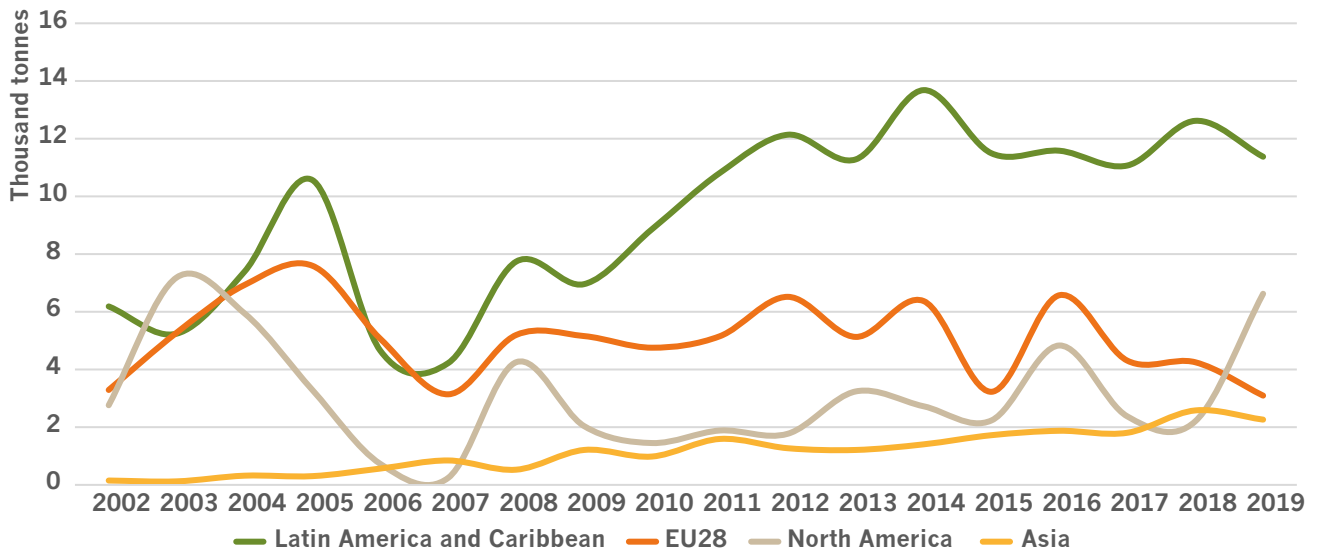


Figure 14: Volumes of exports of Ecuadorian semi-finished cocoa products (HS 180310, 180320, 180400, 180500 and 180610) to the top four destination regions between 2002 and 2018. Source: COLEAD, based on CEPII BACI and Eurostat.

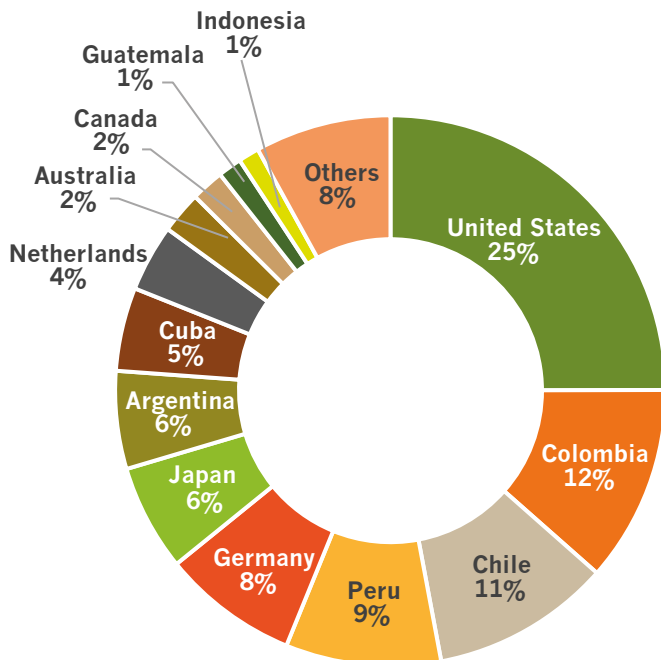


Figure 15: Volume share of total exports of Ecuadorian semi-finished cocoa products (HS 180310, 180320, 180400, 180500 and 180610) (24,500 tonnes) by destination country in 2019. Source: COLEAD, based on CEPII BACI.



## Main global markets for chocolate and food preparations containing cocoa exported by Ecuador

As could be seen from Figure 8, Ecuador is not a large exporter of processed cocoa-based food products (about 1,600 tonnes in 2019). Exports are mainly destined for other Latin American countries (61% of the total export volume in 2019), such as the neighbouring countries of Colombia, Brazil and Peru, but also to Mexico, Argentina and Chile. Exports

to the Latin America and Caribbean region decreased between 2002 and 2019 at a CAGR of -3%, while exports to North America (23% of the total volume in 2019) increased at a CAGR of 28% between 2013 and 2019. The EU28 represent the third largest destination region (9% of the total volume in 2019). Exports to the EU28 started around 2002 and have been growing steadily (at a CAGR of 8% between 2010 and 2019). The same holds for exports of Ecuadorian chocolate and food preparations containing cocoa to Asia.

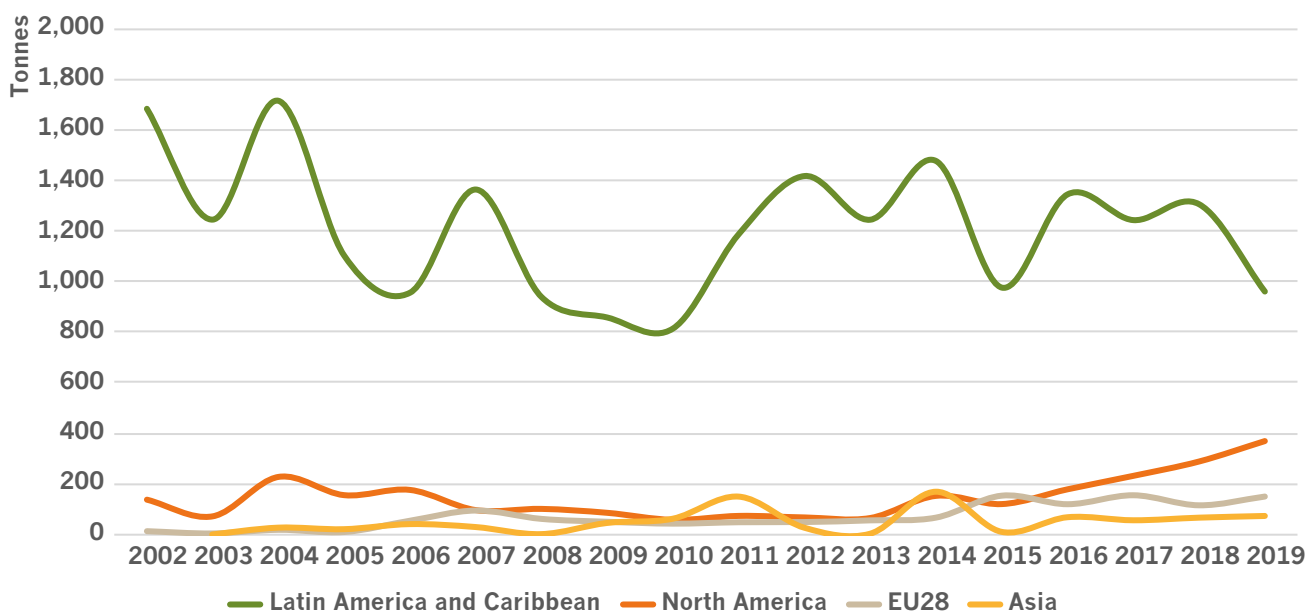


Figure 16: Volumes of exports of Ecuadorian chocolate and other food preparations containing cocoa (HS 180620, 180631, 180632 and 180690) to the top four destination regions between 2002 and 2019.

Source: COLEAD, based on CEPII BACI.





## 2. European import trends and markets

### Cocoa beans

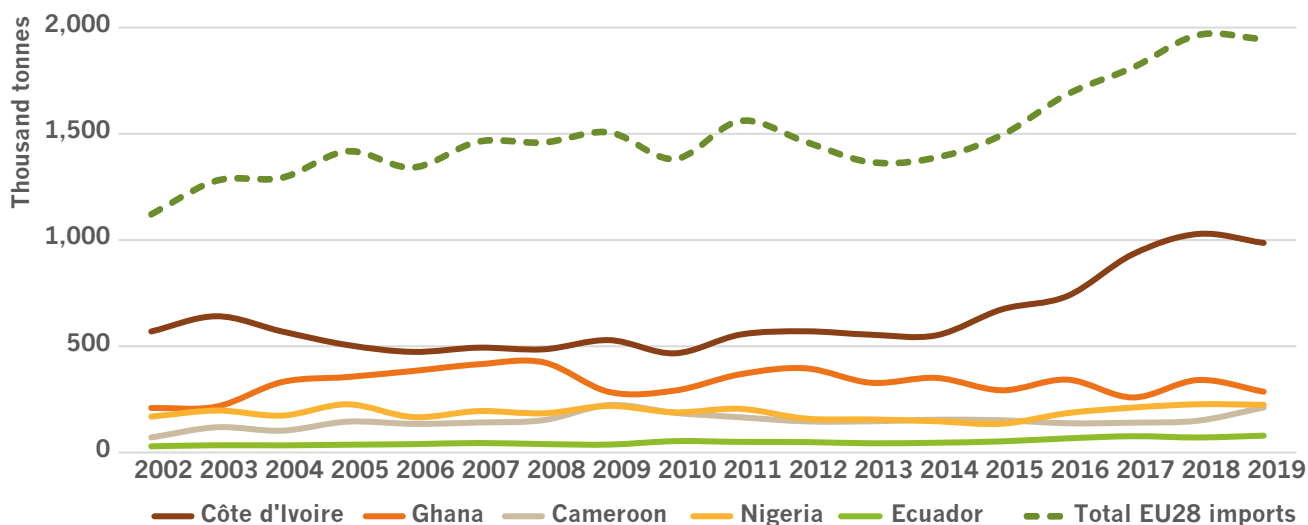


Figure 17: Import volumes of raw or roasted, whole or broken cocoa beans (HS 180100), showing the top five countries of origin and total EU28 imports between 2002 and 2019. Source: COLEAD, based on Eurostat.

Ecuador is the fifth largest exporter of cocoa beans to the EU28 (Figure 17). The four largest exporters are all West African countries, which supply 86% of all cocoa beans imported by Europe and are the main suppliers to Europe of bulk cocoa of the Forastero variety (74% of all imported cocoa beans). Ecuador's total cocoa bean export volumes to the EU have grown at a CAGR of 7% over the past 18 years. The main importers of cocoa beans from outside the region among the EU28 countries

are the Netherlands (importing more than half of the total EU28 volume), Belgium, Germany, France and the UK. The Netherlands acts as a major trade hub within Europe, importing over 1 million tonnes of cocoa beans in 2018 and 2019. It also exports 53% of the re-exports in Europe, mostly to Germany, although Germany is importing more and more from producing countries. Together the top four importers account for about 90% of the total volume of cocoa beans imported by the EU28.

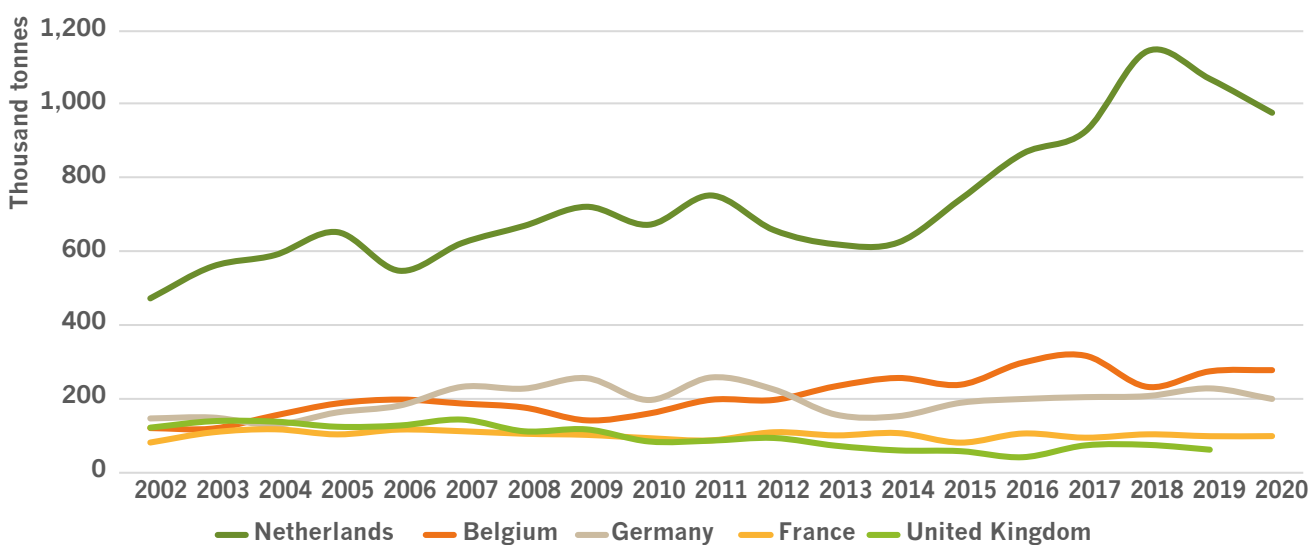


Figure 18: Import volumes of raw or roasted, whole or broken cocoa beans (HS 180100) of the top five EU27/EU28 importers between 2002 and 2020. Source: COLEAD, based on Eurostat.

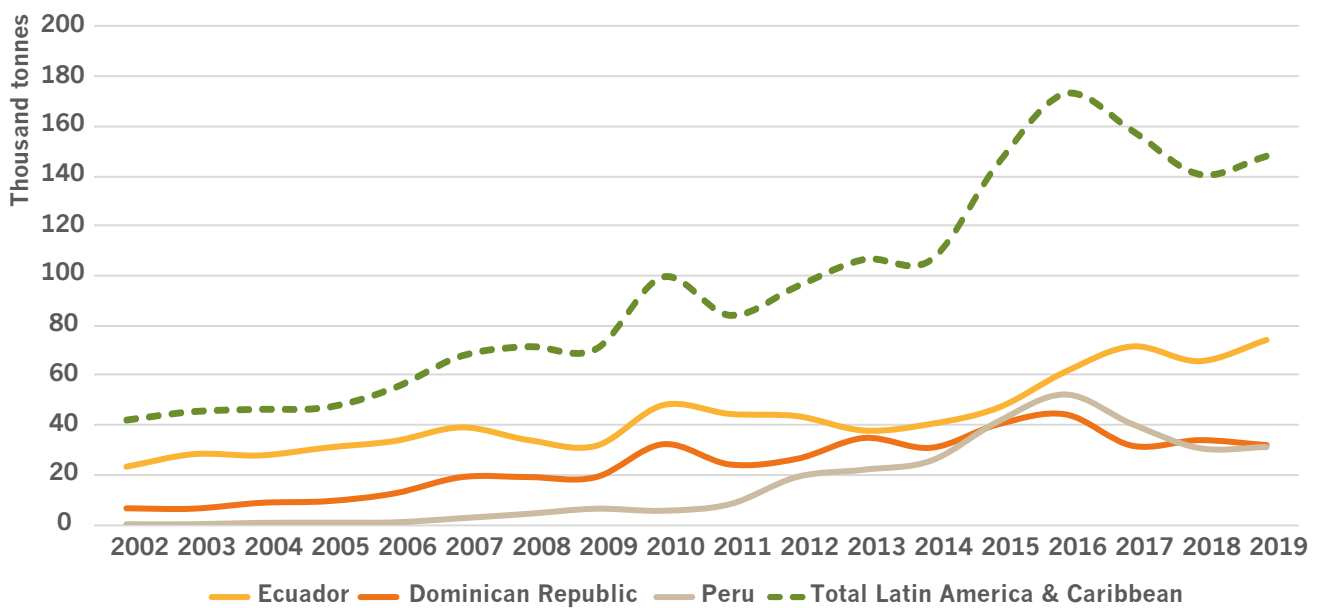


Figure 19: Total EU28 import volumes of raw or roasted, whole or broken cocoa beans (HS 180100) from the Latin America and Caribbean region between 2002 and 2019, showing the top three countries of origin. Source: COLEAD, based on Eurostat.

Europe’s main suppliers of speciality cocoa beans (representing 6.8% of its total cocoa bean imports in 2019) are in Latin America: Ecuador (79,000 tonnes in 2020), the Dominican Republic (35,000 tonnes) and Peru (29,000 tonnes). Ecuador’s exports to Europe increased almost continuously between 2002 and 2020, while this is not the case for the other two main Latin American suppliers, which have experienced a reduction and stagnation in their cocoa beans exports to the EU28 since 2016.

The European market for cocoa and chocolate comprises 90% bulk cocoa and 10% speciality cocoa. European countries have the highest per capita consumption of chocolate in the world. Consumers want more cocoa content

and higher-quality chocolate, which provides opportunities for other producing countries to enter the European market.<sup>6</sup> Europe is also the largest chocolate producer, as many of the large chocolate manufacturers have chocolate confectionery production plants there.

European demand for cocoa beans is high – the largest in the world – because of its role in the chocolate value chain and driven by the increasing demand for more cocoa content in chocolates. However, the grinding of beans in Europe is expected to decrease in the coming years, with grinding in producing countries expected to rise.

<sup>6</sup> CBI (2020) What is the demand for cocoa on the European market?

## Semi-finished cocoa products

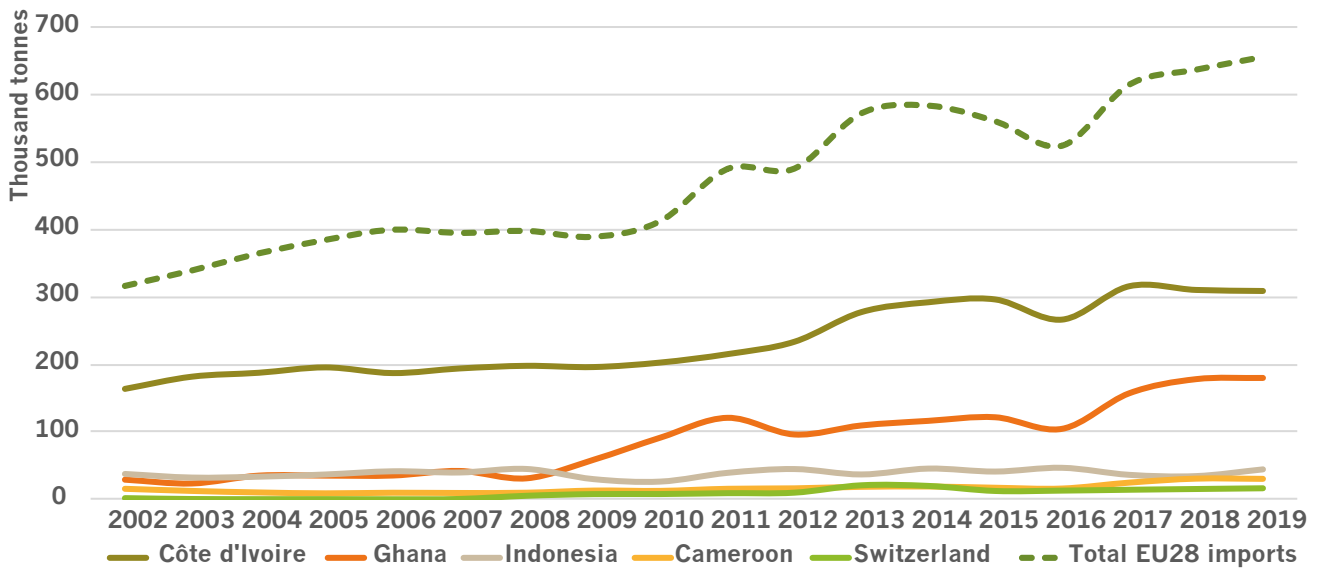


Figure 20: Total EU28 import volumes of semi-finished cocoa products (HS 180310, 180320, 180400, 180500 and 180610) between 2002 and 2019, showing the top five countries of origin. Source: COLEAD, based on Eurostat.

Total imports of semi-finished cocoa products by the EU28 from outside the region increased at a CAGR of 4% between 2002 and 2019. Côte d'Ivoire and Ghana are the main suppliers of semi-processed cocoa products, having together supplied 74% of the total volume imported by the EU28 in 2019. Ecuador ranked 13<sup>th</sup> in terms of the volume of semi-finished cocoa products imported by the EU28, supplying about 0.47% of the total import volume in 2019. When comparing Ecuador

with other suppliers from the Latin America and Caribbean region, it can be seen that exports from Ecuador to the EU28 have been stagnant and have even decreased, while competitors such as Peru and Mexico have increased their shares of the EU28's imports from Latin America.

More details on the exports of food products containing cocoa from Ecuador to the EU28 can be found in Appendix 4.

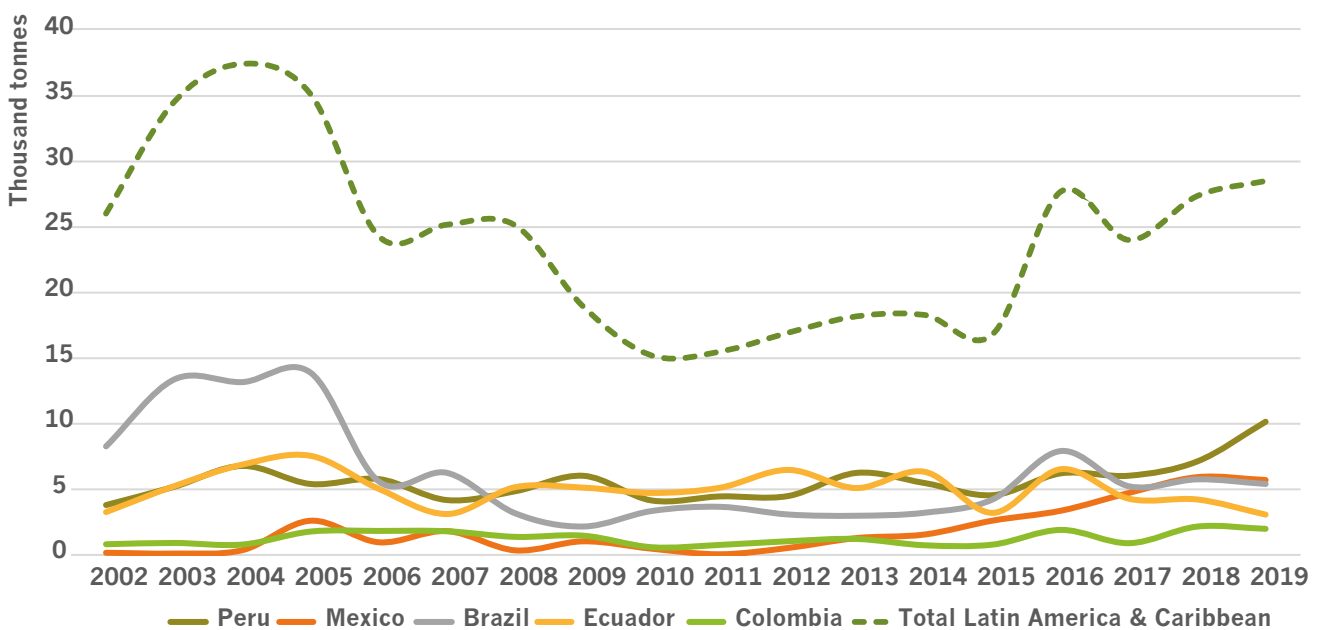


Figure 21: Total EU28 import volumes of semi-finished cocoa products (HS 180310, 180320, 180400, 180500 and 180610) from the Latin America and Caribbean region between 2002 and 2019, showing the top five countries of origin. Source: COLEAD, based on Eurostat.

## Consumption trends

The main trends in imports of chocolate and cocoa beans to the EU are the following:

- **Sustainability** in the cocoa value chain: consumers want to buy certified products to avoid deforestation and child labour, and protect biodiversity and the environment. The demand for and sales of certified cocoa and chocolate products in Europe have increased in recent years.<sup>7</sup> There are private initiatives from multinationals and manufacturers themselves, as well as international initiatives to encourage this trend. *See more information on the dedicated section about certifications and labels.*
- Focus on the **origin of cocoa** and **traceability**: consumers have a growing interest in single origin, direct trade and shortening the cocoa chain, and storytelling of where the bean comes from.
- Interest in **specialty chocolates** is growing, and there is more and more global demand for “fine flavour” cocoa, and speciality and premium chocolate products, such as bean-to-bar makers (who control each step of the process from the imported raw bean through the roasting and manufacturing process to the chocolate product). There is also a search for diversity in flavour, differentiating high-quality and single-origin cocoa products from those of competitors. Mainstream chocolate companies in traditional European chocolate-consuming countries are investing in premium lines, while other retailers are developing high-end private-label products, which makes chocolate available at all types of prices for all types of consumers.
- **Health** and **wellness** influence consumption: due to increased demand for healthy eating (highlighted even more by COVID-19), there is a focus on organic products, no added sugar, high cocoa content, dark chocolate and even vegan or higher-protein alternatives. As good-quality cocoa

means less sugar is needed, it is linked to the consumer demand for quality cocoa.

## 3. Certification and labels

Certification is increasing in the cocoa market because of stricter sustainability protocols of manufacturers and retailers in Europe. The World Cocoa Foundation estimates that 22% of cocoa is certified, even if it is not all sold as such. It is important for producers and exporters to meet the requirements of their target market, and it is becoming increasingly necessary to be certified. For example, it is becoming difficult for non-certified exporters to enter the European market – for some cocoa products more than others.

### Rainforest Alliance/UTZ<sup>8</sup>

This is the main certification for cocoa. In 2019, 1.8 million tonnes of cocoa beans were certified. This label works towards sustainability and biodiversity preservation. It means that some indicators fight deforestation in cocoa production, as the Rainforest Alliance was first created for this purpose.

It is the main certification required for bulk cocoa as an entry requirement to Europe because of stricter sustainability protocols of manufacturers and retailers. Bulk cocoa exporters without this certification will have difficulty accessing the European market. The largest market for cocoa with this certification is Europe (80% of the certified actors are in Europe, mostly chocolate manufacturers).

The main suppliers of Rainforest Alliance and Fairtrade certified bulk cocoa beans are Côte d'Ivoire and Ghana. They are the leading countries in Fairtrade certified cocoa, accounting for 81% of the world's supply.

Both producers and supply chain actors can be certified. There are 28 producers from Ecuador with the Rainforest/UTZ label, the list of which can be found here:

<sup>8</sup> The UTZ certification is now part of the Rainforest Alliance, which was launched in 2020. The UTZ certification programme and its label are being phased out in favour of the Rainforest Alliance certification. The producers and actors certified by UTZ are transitioning to the Rainforest Alliance programme.

<sup>7</sup> CBI (2020) The European market potential for semi-finished cocoa products.

[https://utz.org/?attachment\\_id=12594](https://utz.org/?attachment_id=12594).

## Organic and Fairtrade

There is increasing demand for organic in the specialty market, as these certifications are associated with quality. This type of certification is growing in the high-quality market in particular, and the organic chocolate market is expected to grow even more. *See more information on organic cocoa in the dedicated section.*

Changes to the EU's organic regulations will impact cocoa producers. They will most likely be impacted by the changes to group certifications, affecting smallholder producers operating in farmer groups and cooperatives. Furthermore, the changes concerning sampling will result in an increase in costs for producers. From the [Organic World Congress 2021](#), an estimate of the additional costs for a small-scale producer organisation with 1,500 cocoa producers is about US\$1,000–\$2,000 – around a 38% increase from the previous cost of organic certification.

The Fairtrade standards were updated in 2019, allowing a higher premium price on the market to encourage producers to achieve certification.

## Deforestation

The main label addressing deforestation is the Rainforest Alliance/UTZ. In the Fairtrade label some criteria also concern biodiversity protection and prohibit producers from cutting down protected forests to plant crops. The CDP disclosure programme helps reduce the impact of businesses and protect the planet (<https://www.cdp.net/en/forests>). Ecuador is a pioneer in the region in terms of fighting deforestation and developing sustainable agriculture.<sup>9</sup>

## Child labour

There is no existing label for child labour free cocoa, although such labels exist in the clothing industry. However, child labour and slavery are recurrent issues in cocoa

production (and agriculture as a whole), and several big corporations in the chocolate industry have faced lawsuits for child labour.

Although there is no specific label for child labour free cocoa, Fairtrade does tackle this issue in its certification criteria (see <https://www.fairtrade.net/issue/child-labour>). The Rainforest Alliance/UTZ also has rules on child labour, but some reports have found child abuse in certified farms, as independent firms can audit producers.<sup>10</sup>

## Other initiatives

Besides certification, there are a number of other initiatives, such as Cocoa Horizons, a programme focusing on cocoa farmer prosperity and helping build self-sustaining farming communities that protect nature and children (<https://www.cocoa Horizons.org/program>). There are also national initiatives in each country, bringing together actors in the cocoa market (importers, manufacturers, chocolate makers, etc.) to ensure a sustainable value chain. For example, kakaoforum in Germany (<https://www.kakaoforum.de/en/>) and the Beyond Chocolate partnership (<https://www.idhsustainabletrade.com/initiative/beyondchocolate/>) are aiming to end deforestation, stimulate education for future generations and provide a living income for cocoa growers.

## Bean-to-bar

For some years now, “bean-to-bar” chocolate – made by the manufacturers, the chocolatiers, from the bean itself and through the whole process to the chocolate – has been seeing demand grow. It is considered a high-quality product, with the taste depending on the origin of the beans or the roasting process. However, it does seem to mean more imports of beans to Europe, with chocolatiers making their own chocolate starting from the bean, rather than bean-to-bar chocolate being

<sup>9</sup> Climate and Forests (2021) Ecuador puts deforestation-free and sustainable production first. <https://www.climateandforests-undp.org/ecuador-puts-deforestation-free-and-sustainable-production-first>.

<sup>10</sup> Peter Whoriskey (2019) Chocolate companies sell ‘certified cocoa.’ But some of those farms use child labor, harm forests. Washington Post, 23 October. <https://www.washingtonpost.com/business/2019/10/23/chocolate-companies-say-their-cocoa-is-certified-some-farms-use-child-labor-thousands-are-protected-forests/>

produced in countries of origin and the final product exported to Europe.

All cocoa beans exported from Ecuador need to have the following certification documents:

- A **phytosanitary document** provided by the Ecuadorian Agricultural Inputs Registration Directorate (**Agrocalidad**) confirms the batch number exported, the quantity and the variety of cocoa beans. Agrocalidad will inspect for compliance with maximum residue levels (MRL) to avoid product interception. This certification is only required for exports of raw cocoa, but not for processed products.
- **Certificate of origin EUR 1 NA** is a document that certifies that the product has been produced in the country of origin, in this case Ecuador. It is required to take advantage of the economic partnership agreement between the EU and Ecuador and benefit from a tax-free regime. Cocoa beans only pay 6% value added tax (VAT) in Belgium.

- If cocoa beans are **organic**, it is also necessary to complete all **required documentation in the EU TRACES system**. This requires the importer to validate the organic certificate of the producer (exporter); without this validation, it is not possible to sell or promote the products as organic in Europe, even if they are certified in the country of origin. To complete this process, both the exporter and the importer must be certified organic by accredited organisations. The certificate is filled out first by the producer, who will complete the document with a detailed list of the products and subproducts such as cocoa beans, chocolate, cocoa butter, etc., the packaging in grams or kilograms and the total weight of the export. Once the document is in the system, the importer will have to provide information about the shipment details, such as an invoice, packing list, airway bill for airfreight, bill of landing for sea freight, certificate of origin and any other documentation. Once the cargo arrives in the EU, it needs to be



validated by the organic authority of the port of entry. Finally, the document has to be signed and validated by the first consignee of the shipment.

#### 4. Organic cocoa

It is important to note that it is hard to observe trends in organic cocoa, as data on organic imports are only available for 2018, 2019 and 2020.

The vast majority (97%) of EU imports of products containing organic cocoa are **cocoa beans** (HS 1801: “Cocoa beans, whole or broken, raw or roasted”). In 2020, the EU imported 75,930 tonnes of organic cocoa beans. (Figure 22)

The Dominican Republic is the largest exporter, with 24,940 tonnes in 2020 (37% of the total). Sierra Leone went from fourth largest exporter in 2018 to second in 2020, with 24% of the volume (18,100 tonnes), followed by Peru (9,570 tonnes or 13% in 2020) and Congo (8,580 tonnes or 11%).

The biggest importer is the Netherlands (52,390 tonnes in 2020), accounting for 69% of EU imports of organic cocoa beans. Italy had a larger share in 2018 (19%) than in 2020 (11%), while the shares of France and the Netherlands increased.

The remaining imports of products containing organic cocoa are **processed organic cocoa** and **chocolate**. In the processed cocoa, it is mainly cocoa butter (1,294 tonnes in 2020), cocoa paste (562 tonnes in 2020) and unsweetened cocoa powder (109 tonnes in 2020). (Figure 23) There is very little sweetened cocoa powder, with around 4 tonnes imported in 2020. Imports of cocoa paste increased by 189% between 2018 and 2020. At the same time, the share of cocoa butter in total imports decreased from 77% to 66%, even though its volume increased slightly.

The main exporters of **organic cocoa butter** are Peru, representing half of EU imports, then the United States (with 31% (396 tonnes) but no recorded exports in 2018 and 2019) and the Dominican Republic (around 120 tonnes and 9% of the total in 2020). The Netherlands

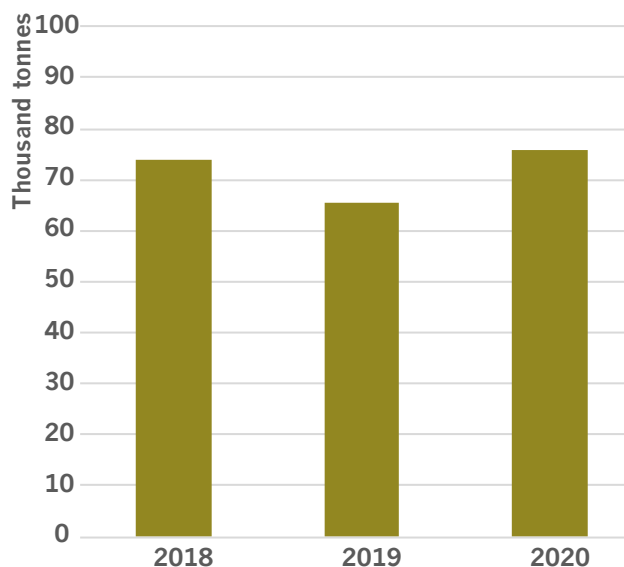


Figure 22: Volume of EU imports of organic cocoa beans (HS 1801) between 2018 and 2020. Source: COLEAD, based on European Commission.

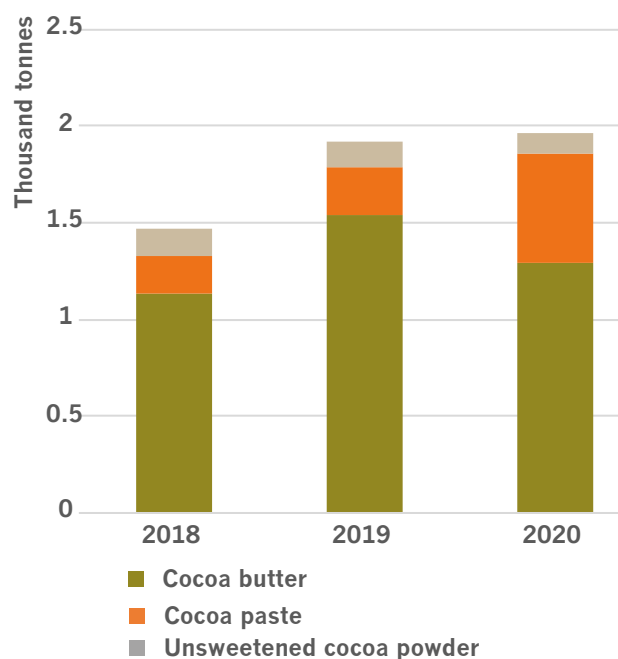


Figure 23: Volume of EU imports of organic processed cocoa (cocoa butter, cocoa paste and unsweetened cocoa powder) between 2018 and 2020. Source: COLEAD, based on European Commission.

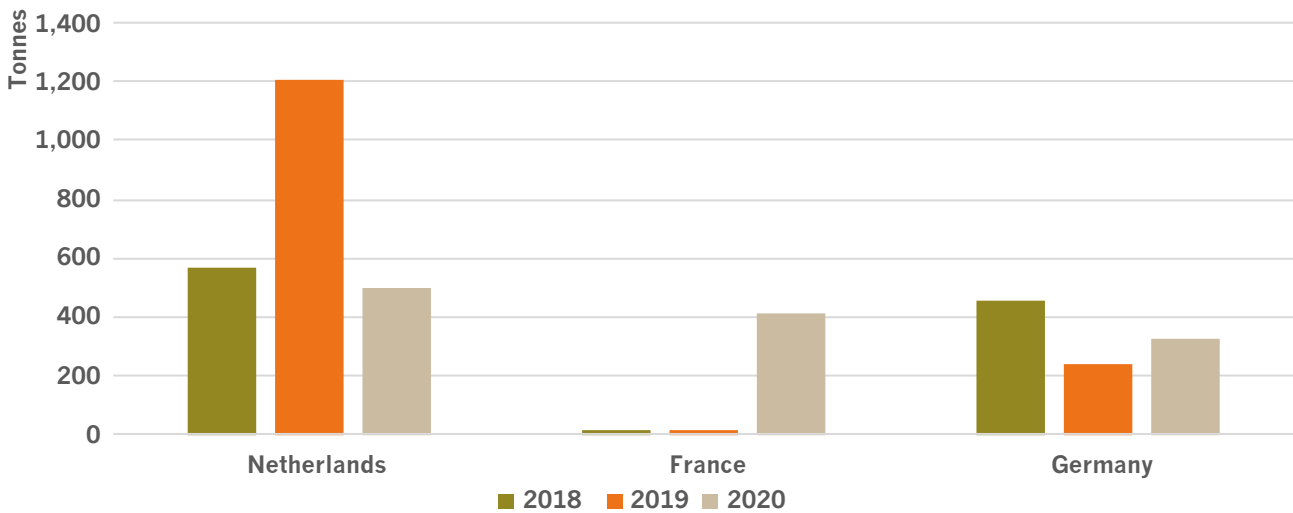


Figure 24: Volume of imports of cocoa butter of the top three EU importers (accounting for 97% of cocoa butter imports) between 2018 and 2020. Source: COLEAD, based on European Commission.

(39%), France (32%) and Germany (26%) accounted for almost all imports in 2020, whereas Germany and the Netherlands shared 93% of imports in 2018. (Figure 24)

It seems like the market for organic cocoa paste is still being built. Viet Nam appeared on the list of exporters in 2019 and represented half of imports in 2020. Similarly for importers, Belgium imported more than 270 tonnes (50% of imports) in 2020, compared to less than 1 tonne in 2018.

The organic unsweetened cocoa powder imported into the EU comes mostly from Peru (71 tonnes or 67% of the total in 2020) and Ecuador (17 tonnes or 16%). The main importers are Germany (45 tonnes or 43% in 2020) and the Netherlands (28 tonnes or 27%).

Imports of organic **chocolate** to Europe from the rest of the world are in smaller quantities than most of the previously mentioned organic products. It is still an important market, as the value is higher than for raw organic cocoa beans. As shown in Figure 25, the most imported chocolate product is the HS 18063210 (“Chocolate and other preparations containing cocoa, in blocks, slabs or bars of <= 2 kg, with added cereal, fruit or nuts (excl. filled)”), with 28 tonnes in 2020, coming mainly from Canada (44%) and the USA (21%), which probably means that they import beans and re-export finished organic chocolate products. The third largest country of origin in 2020 was Ecuador, with 4 tonnes. The other main imported organic chocolate

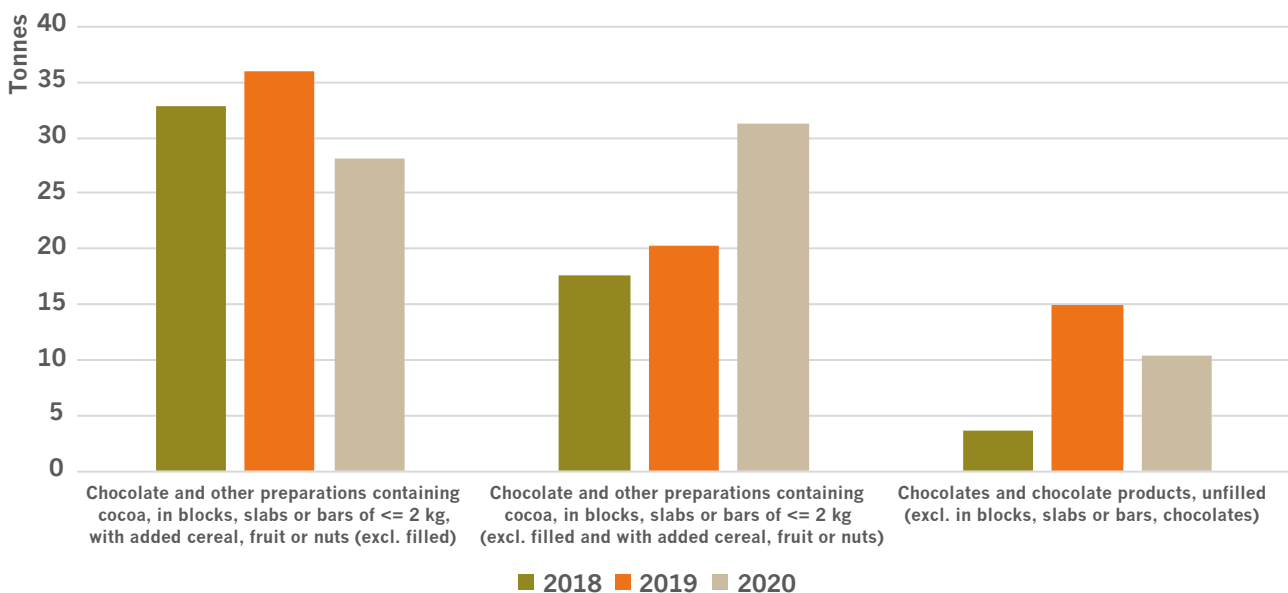


Figure 25: Volume of imports of chocolate to Europe from the rest of the world between 2018 and 2020 (tonnes). Source: COLEAD, based on European Commission.



product is the HS 18063290 (“Chocolate and other preparations containing cocoa, in blocks, slabs or bars of <= 2 kg (excl. filled and with added cereal, fruit or nuts)”), which is similar to the HS 18063210 mentioned above but is only chocolate without any filling. It is relevant to differentiate between them, as their origins are very different. Here, the organic chocolate comes mainly from Ecuador (15 tonnes or 49% of the total in 2020) and Ghana (10 tonnes or 34%). The leading destination countries are the same for both products: the Netherlands, Germany and France.

Ecuador mainly exports cocoa beans to Europe. Totalling 3,000 tonnes, they accounted for 97% of exports of cocoa products from Ecuador in 2020, representing a growth rate of 55% between 2018 and 2020. (Figure 26) The other export products are cocoa paste, cocoa butter, cocoa powder and chocolate, volumes of all of which decreased (slightly) between 2018 and 2020. (Figure 27)

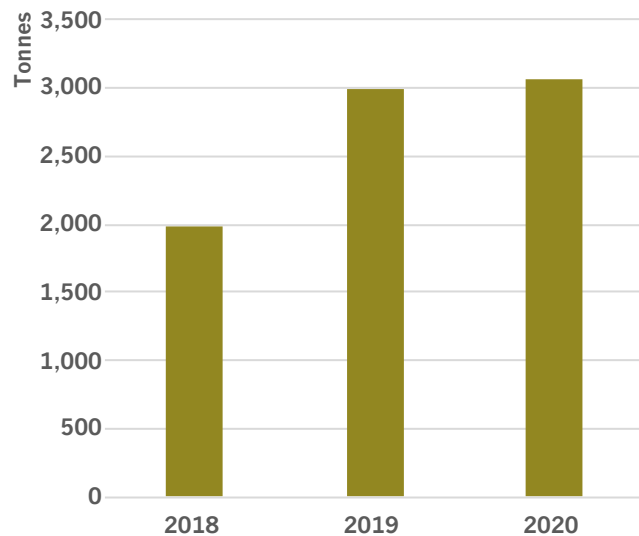


Figure 26: Volume of exports of cocoa beans from Ecuador to the EU between 2018 and 2020 (tonnes). Source: COLEAD, based on European Commission.

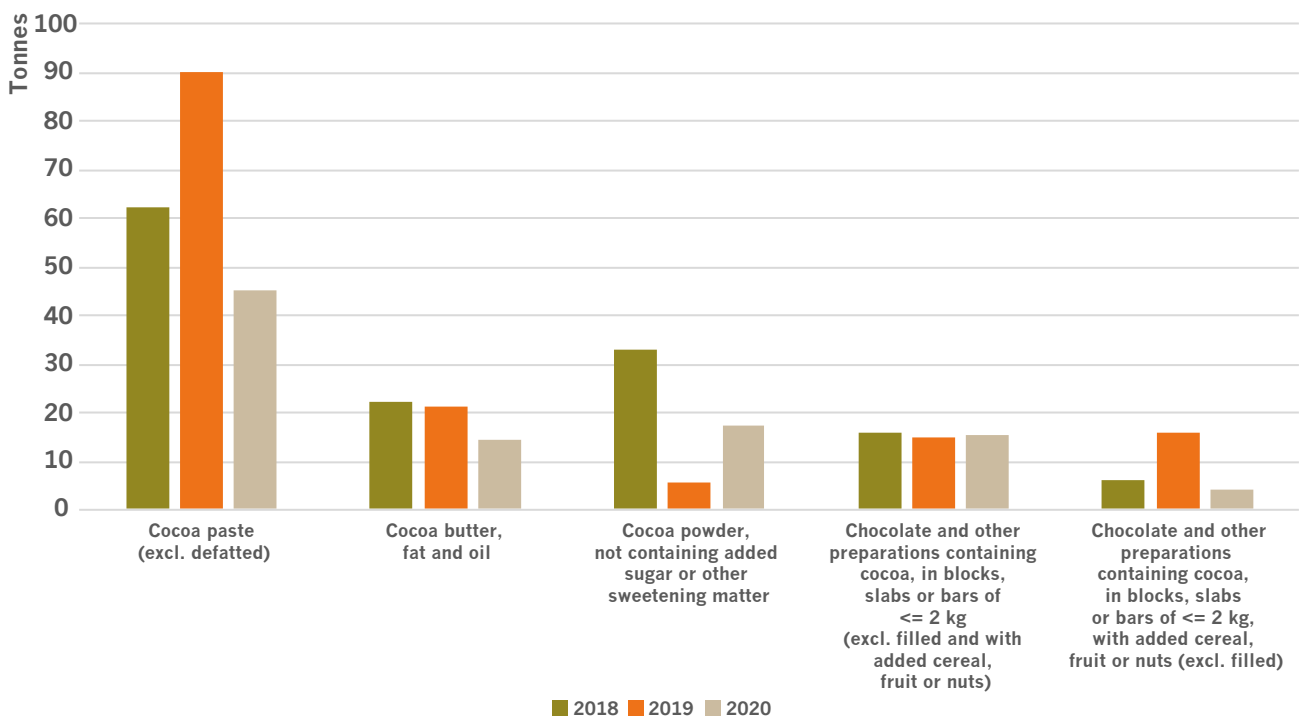


Figure 27: Volume of exports of cocoa-related commodities (excluding cocoa beans) from Ecuador to the EU between 2018 and 2020 (tonnes). Source: COLEAD, based on European Commission.



## V. MARKETS

### 1. Market prices

The price of cocoa varies according to its variety, quality and certification. In Ecuador there are different varieties of cocoa. “Criollo” (Esmeraldas, Santo Domingo) – highly regarded globally – and “Cacao Nacional” (Los Rios, Guayas, Manabi) are the most appreciated varieties internationally. Both are cultivars developed by farmers by selecting the best seeds over thousands of years of evolution. These varieties are very vulnerable to diseases and almost disappeared in the second quarter of the 20th century.

CCN51 (which stands for “Coleccion Castro Naranjal”) is a cultivar of three varieties (nacional, trinitario and oriente) developed in 1965 by Homero Castro. Its cultivation has expanded widely because it is more resistant to diseases, but it has obtained a bad reputation in Europe due to an inaccurate claim that it is genetically modified. It currently represents at least 72% of cocoa exports from Ecuador. Treated with an appropriately adapted fermentation process, it can also produce a fine-quality chocolate. Other endemic varieties such as cocoa Sacha from the north Amazon basin are also receiving more attention.

Ecuadorian cocoa beans, despite being excellent varieties, have constantly struggled to achieve good export prices, with low prices mainly caused by poor post-harvest processes (selling of unfermented cocoa beans, poor fermentation, overfermentation, moisture and mixed varieties). The quality of Ecuadorian cocoa has improved considerably, and it is gaining in importance in the international market. About 60% of the world’s fine flavour cocoa is produced in Ecuador.

Cocoa as a commodity is ruled by the price of futures on the New York Stock Exchange (NYSE). The price paid to the farmer is usually linked to this, and usually the price paid at the farm gate is US\$300–400 less than the price of the futures on the NYSE. Professional organisations and producer cooperatives are making considerable effort to try to obtain a better price, and some cooperatives have established a baseline price for cocoa beans that only goes up if the future price goes above this minimum level. This minimum price tends to be around US\$2,600 per tonne at the farm gate.

Future prices (as of September 2021) are around US\$2,600 per tonne, which means the farm gate price is around US\$2,200 per

tonne for CCN51. Most exports of conventional cocoa will go to meet the needs of the major players in the chocolate industry in Europe. Premium cocoa is also sold at a higher price – for example, if the cocoa is certified organic – with an additional value if it is certified Fairtrade. Prices per tonne can be between US\$300 and US\$500 above the NYSE farm gate price and between US\$3,000 and US\$5,500 per tonne (free on board, FOB), depending on the available certification, the variety and the quality of the cocoa. Premium cocoa beans are mainly destined for bean-to-bar producers and premium chocolate producers.

The volume of cocoa beans that Ecuador exported to the EU increased by 26% between 2010 and 2020, reaching 77,405 tonnes of cocoa worth US\$201 million in 2020, representing 24% of the country's cocoa production. However, the prices of exports to Europe fell by 14% between 2010 and 2020. This decrease was not a straight line, of course: prices peaked at just over US\$3,000 a tonne in 2011, 2014 and 2015, while the lowest price was US\$2,200 in 2017. These prices do not take inflation into account. For comparison, the basic salary in Ecuador was US\$240 in 2010 and is US\$400 in 2021, without considering the increase in prices of all other inputs.

### Market prices for cocoa butter

The prices of cocoa products registered small increases over the last decade, but without taking inflation into account. In 2020 the price of cocoa butter – the second largest export product by volume – averaged around

US\$5.25/kg. However, premium cocoa butter sells for around US\$10–14/kg (FOB). The quantity of cocoa butter exported to the EU fell from 2,702 tonnes in 2010 to 2,153 tonnes in 2020, despite reaching a peak of 4,039 tonnes in 2017. Cocoa butter exports to the EU were worth US\$11.3 million in 2020, and accounted for 48% of the volume of Ecuadorian cocoa butter exports.

### Market prices for cocoa paste

Cocoa paste follows in terms of the quantity of Ecuadorian exports to the EU. They fell dramatically from 3,282 tonnes in 2014 to only 170 tonnes in 2018, since when they have recovered slowly, reaching 737 tonnes worth US\$3.05 million in 2020. However, the average price increased from US\$3.17/kg in 2010 to US\$4.15/kg (FOB) in 2020. Currently only 4% of Ecuadorian cocoa paste is exported to the EU, compared to 39% in 2011. Premium cocoa paste is sold for between US\$6/kg and US\$8.50/kg (FOB).

### Market prices for chocolate

Finished chocolate is next in importance in terms of exports to the EU. However, the value of exports of finished chocolate has fallen considerably since 2015, when it reached US\$1.9 million. In 2020, exports were worth US\$904,000, with an average price of US\$12.38/kg, down from US\$18.57/kg (FOB) in 2014.

The price of finished chocolate varies considerably, depending on the producer and its certification. Most premium brands have adopted small packaging of 50 g, which is much smaller than the European market,



which prefers larger packaging of over 100 g. Export prices (FOB) vary significantly from US\$1.00/50 g to US\$2.50/50 g. Prices and new producers in the European market make it difficult to compete and find a market. EU buyers prefer locally produced chocolate, even if they know that the beans are necessarily imported. Curiously many EU producers' prices are usually more competitive for origin cocoa beans. Retail prices of chocolate bars range from €3.50 to €8, which is the same as for a prestigious bean-to-bar in Belgium. Many EU companies are even selling 120 g chocolate bars using organic certified cocoa at €1.50–2.50.

The main chocolate makers are exporting premium chocolate drops for between US\$10/kg and US\$15/kg, usually with quality certificates, including organic.

Recently, a very niche market which commercialises heirloom cocoa has been growing. It guarantees a tracing history of the trees, and the quantities produced are

minimal. Most of it goes to premium Ecuadorian brands such as Connexion or Toak, and a 50 g chocolate bar can sell for between US\$7 and US\$60, which represents US\$1,200/kg.

### Market prices for cocoa powder

Exports of cocoa powder to the EU increased modestly by volume until 2015, since when they have only decreased, for two main reasons. First, there is a big industry producing cocoa powder in the Netherlands. Second, the permissible level of cadmium in cocoa powder is set very low. Since cocoa powder can contain up to twice the quantity of cadmium as a cocoa bean, most producers are unwilling to send cocoa powder to the EU to avoid potential interceptions. The price of cocoa powder has also fallen, from a peak of US\$8.20/kg (FOB) in 2012 to around US\$4.35/kg in 2020. The price for premium organic cocoa is around US\$6–8/kg (FOB).

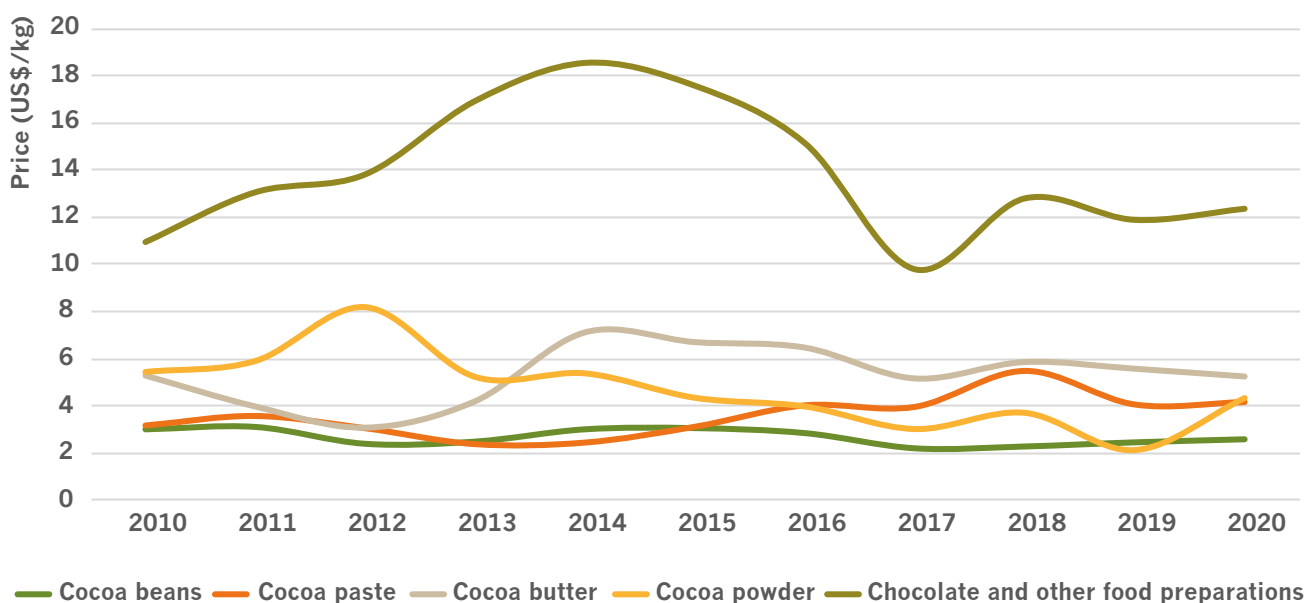


Figure 28: Export prices to the EU28 (FOB) of different Ecuadorian cocoa-related commodities between 2010 and 2020. Source: COLEAD, based on UN-Comtrade.

## 2. Market access

### Legal requirements

With regard to food safety, it is important to respect regulatory measures and certain legal requirements to reassure importers. There are no regulations specific to cocoa and cocoa products concerning food safety as such. Therefore, the General Food Law and the general rules on food hygiene should be referred to for regulations. As far as contaminants are concerned, cocoa is not very susceptible to microbiological infections. However, it is important to control the level of other contaminants, such as pesticides (and to respect the MRLs), and to control the level of heavy metals, such as cadmium (see (EU) No. 488/2014).

The food safety concerns for the cocoa industry are not only cadmium and heavy metals but also allergens, dioxins and polychlorinated biphenyls (PCBs), bacteria, foreign matter, infestations, mineral oil hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), mycotoxins including ochratoxin A (OTA), and pesticide residue.

In Europe, there is an integrated approach to food safety through farm-to-table measures and adequate monitoring. The framework for this was established in European Commission Regulation 178/2002 and its amendments. The Regulation includes the establishment of

the European Food Safety Authority (EFSA), which provides scientific advice and scientific and technical support in all areas impacting food safety.

### Cadmium

Cadmium is a toxic heavy metal, present in the soil of some cocoa plantations. It can accumulate in human tissue over time and can cause kidney and bone damage as well as being a carcinogen. Only 4–5% of the cadmium can be absorbed by the human body; the problem is that it accumulates in the kidneys in particular over 10–30 years. Cadmium can be found naturally in soil because of volcanic activity, forest fires and weathering of rocks. Therefore, its presence in cocoa beans is influenced by many factors, including geographic location, soil acidity and the cocoa variety used. Thus the cadmium problem relates to beans from certain regions of certain producing countries, particularly in the Latin America and Caribbean area.

The EU recently set maximum limits for cadmium in cocoa products, which came into force on 1 January 2019. For chocolate, three maximum levels have been established depending on the content of the chocolate variety. The strictest maximum levels apply to the chocolate varieties mostly eaten by children. The darker the chocolate, the higher the maximum levels are. A fourth maximum level is set for cocoa powder destined for direct consumption.

Specific cocoa and chocolate products as listed below -	
Milk chocolate with <30% total dry cocoa solids	0.10mg/kg as from 1 Jan 2019
Chocolate with <50% total dry cocoa solids; milk chocolate with ≥ 30% total dry cocoa solids	0.30mg/kg as from 1 Jan 2019
Chocolate with ≥ 50% total dry cocoa solids	0.80mg/kg as from 1 Jan 2019
Cocoa powder sold to the final consumer or as an ingredient in sweetened cocoa powder sold to the final consumer (drinking chocolate)	0.60mg/kg as from 1 Jan 2019

\*For the specific cocoa and chocolate products the definitions set out in points A. 2, 3 and 4 of Annex I to Directive 2000/36/EC of the European Parliament and of the Council of 23 June 2000 relating to cocoa and chocolate products intended for human

Figure 29: EU MRLs for cadmium in cocoa products. Sources: European Commission (Regulation from the Commission (UE) 2021/1323 of 10 August 2021) and "Cocoa Beans: Chocolate & Cocoa Industry Quality Requirements"<sup>11</sup> report from international cocoa professional associations.

11 CAOBISCO, ECA and FCC (2016) Cocoa Beans: Chocolate & Cocoa Industry Quality Requirements.



The EU is financing capacity-building activities, seminars, sustained training missions and study tours for producing countries. The EU is also supporting ongoing research activities to find mitigating solutions for cadmium.



The EU also supports the development of international standards and guidelines including the participation of producing countries in standard setting organisations.



The EU is already implementing a specific development programme under DeSIRA (Development-Smart Innovation through Research in Agriculture) Initiative, a 6 million Euros intervention on low cadmium and climate-relevant innovation to promote sustainable cocoa production in Colombia, Ecuador and Peru.

Figure 30: EU actions on cadmium in cocoa products. Source: European Commission.

It is important to note that it is the final product (chocolate or cocoa powder) that is tested for cadmium, not the imported cocoa beans themselves. Therefore, if cocoa beans are rejected by importers, it is in anticipation of tests on the final products and not because of the level in the beans themselves.

However, it should also be noted that many projects financed by the EU supported the change and the transition of coca plantations into cocoa plantations, especially in Peru and Colombia (see Figure 30).

Some countries requested an increase in cadmium levels accepted by the EU, but the request was unsuccessful, and the EU maintained its position on the matter. For more information on the cadmium issue, see Appendix 5.

According to Isabel Albornoz, Minister of Ecuador's representation to the EU, this measure has had an indirect effect on Ecuador's cocoa market. Although it regulates the maximum permissible level of cadmium in chocolate, it has affected the prices and reputation of Ecuadorian cocoa, resulting in buyers and chocolate producers asking for the relevant levels of cadmium in cocoa beans to prevent any problems with this regulation in Europe. Ecuador produces 66% of the world's fine aroma cocoa and is the seventh largest producer based on the total amount of cocoa produced.

According to the President of the Association of Ecuadorian Cocoa Producers (ANECACAO), Francisco Miranda, this is a political measure taken by the EU that erases all the value added of the cocoa industry in Ecuador, forcing farmers to export only the cocoa beans and not the finished products with value added. He considers it is a commercial imposition that is not directly related to health. Moreover, he said that despite the studies and research undertaken, it is not possible to remove cadmium from soil; it is only possible to limit the amount of cadmium a plant absorbs, by increasing soil acidity, but this will only last for a short time, and the effect will be annulled by rain. He believes that the only solution will be to remove the regulation, because there is no conclusive analysis that even higher levels of cadmium in chocolate can affect people's health.

However, it should also be noted that according to the 2018 "Report from the Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions on Implementation of Free Trade Agreements", the problem of cadmium in relation to Ecuador, Peru and Colombia is mentioned in the report on Latin American countries. From its side, the EU complains about trade issues with some beef products, liquors and quotas in Ecuador. There are always barriers to trade that both sides need to negotiate to try to obtain a solution, which they may achieve or not.

In 2019, Codex established its own limits on cadmium levels in chocolate, following a request from Ecuador, mainly to try to pressure the EU to increase its own levels; however, Codex implemented a slightly higher level for chocolate with over 70% cocoa solids of 0.9µg/kg, compared to 0.8µg/kg established by the EU for chocolate with over 50% cocoa solids. Codex is still debating a slightly higher level for chocolate with cocoa solids of 30% or less (0.3µg/kg, compared to the 0.1µg/kg established by the EU). However, Ecuador does not seem to agree with the limits established by Codex either.

From the private producer's point of view, this measure obliged them to look for alternatives to lower the absorption of cadmium itself. The UWI Cocoa Research Center is studying the possibility that cocoa trees can be prevented from absorbing cadmium from soil by employing crops that absorb it. It is also conducting large-scale analysis with varieties of cocoa, to see if there are varieties more or less likely to absorb cadmium from soil. However, these studies can take several years to implement and may put some varieties of heirloom cocoa at risk.

In the meantime, blending of high-cadmium cocoa with lower-cadmium cocoa also seemed a possible alternative for some producers, although the search for the perfect bean is not a good solution for premium chocolate makers, because the traceability and the terroir of a prime single-origin cocoa bean is lost, to the detriment of local Ecuadorian and Peruvian chocolate makers in particular. Some European importers blend different sources of cocoa to manage the level of cadmium. However, it may happen that some of them reject the cocoa beans, even though the final, processed cocoa would contain less cadmium than the raw material because of the blending but also because the chocolate-making process lowers the level of cadmium in the cocoa.

From the EU research side, the new, multidisciplinary and transdisciplinary research project financed by the European Commission's "Development Smart Innovation through Research in Agriculture" (DeSIRA)

initiative was launched in 2021. It is being implemented by the Alliance of Bioversity International and CIAT and partners. The Clima-LoCa project focuses on mitigating the impacts of the new food safety regulations on cadmium in cocoa, and highlights the implications for productivity, climate resilience, and the inclusion of small-scale cocoa farmers in Colombia, Ecuador and Peru. Such innovation may be technological (e.g. soil amendments or varieties), organisational (e.g. post-harvest strategies such as blending) or institutional (new rules governing processes in the value chain and new policies).

Importers also have requirements, especially in terms of food safety. From this point of view, the implementation of quality control via a hazard analysis and critical control points (HACCP) system is essential, as is the possession of GLOBAL.G.A.P. certification. Beyond food safety, the other certification schemes highlighted in the previous section are also ways of convincing importers to meet new consumer demands and maintain their image.



## Other requirements

Finally, it is important to keep informed about packaging trends, even when exporting raw materials for processing. For example, for cocoa of standard quality, importers generally prefer containers with large quantities of cocoa beans, whereas smaller packaging is preferable for higher-quality products (jute bags, or even vacuum packaging for products of rare quality). As regards labelling, the minimum information to be provided on the packaging is the name of the product, the quality, the batch code, the country of origin, the net weight in kilograms and, in the case of certification, the name or code of the inspection body and the certification number.

### 3. Plant protection products used on cocoa and interceptions of cocoa products in the EU28

A wide range of plant protection products (PPPs) are used in non-organic cocoa plantations. The most recent list of registered PPPs used on cocoa in Ecuador can be found on the Agrocalidad website: <https://www.agrocalidad.gob.ec/366-2/>. This same page also contains a list of PPPs prohibited by the

Ecuadorian government. This list is regularly updated based on, for example, regulations set by international treaties such as by Convention of Rotterdam.

Due to the compliance of Ecuadorian cocoa farmers with these international regulations, no interceptions have been registered in Europe due to excessive MRLs in Ecuadorian cocoa over the last 5 years. The fact that cocoa beans are covered by the cocoa pods and do not come into direct contact with PPPs also helps avoid problems with excessive MRLs. Even when considering all reasons for interceptions of cocoa beans or food products containing cocoa from Ecuador, no records of interceptions were found in the European Commission's food and feed safety alerts (RASFF) database.

Over recent years, three interceptions have been registered due to heavy metals in cocoa-based products: one due to excessive cadmium levels in chocolate from Colombia in 2021, one due to excessive lead levels in chocolate from Peru in 2021, and one due to excessive cadmium levels in cocoa from Venezuela in 2020. In addition, there were two incidents in 2020 of excessive levels of PAHs in cocoa powder. The origin of only one incident was revealed (Brazil).





## VI. APPENDIX

### Appendix 1: Different processes for different qualities of cocoa

According to a large producer of organic cocoa in Ecuador, he prepares his cocoa using a post-harvest procedure that consists of taking the beans out of the pods and letting them ferment in wooden boxes for 4–7 days. The fermentation time will depend on the variety of the bean. For example a Nacional bean will ferment well in 4 days, while a CCN51 will require 6–7 days. The fermentation will also depend on the external weather conditions. The fermentation process is quite closely supervised because the temperature can rise considerably, so it is necessary to constantly move the beans. After fermentation the next process is to dry the beans, which can be achieved by drying the beans in the sun, generally on a concrete surface, or by using gas-powered hot air driers. Using this process means that the beans are usually in good condition and can be sold at a premium price. Or, in his case, he processes his cocoa to obtain premium chocolate products fully traceable from the bean to the final product.



Organic plantations have more biodiversity. Vegetation is managed manually. Balao, Ecuador. Photo: M. Escudero, 2019.



A first selection of the beans is sometimes performed in the field. Balao, Ecuador. Photo: M. Escudero, 2019.



The fermentation process takes 4–7 days, depending on the variety. Balao, Ecuador. Photo: M. Escudero, 2019.



Drying cocoa using hot air. Balao, Ecuador. Photo: M. Escudero, 2019.

Unfortunately, most cocoa producers sell their produce at the farm gate or at product collection centres without even fermenting it or following a good post-harvest process. The cocoa is only then taken off the pod, put in bags and after 1–2 days dried and sold to the exporters. This cocoa is mainly for the major industry players that require more quantity than quality. These cocoa centres usually receive cocoa from all the producers nearby, making it impossible to track the exact lot number. At best, the location could be traceable, making the process vulnerable to external contamination without the ability to trace and track potential harmful residues.



Numerous cocoa centres are located in every town in cocoa-producing areas. Balao, Ecuador. Photo: M. Escudero, 2019.



Cocoa is often dried in the street, making it vulnerable to external contamination. Balao, Ecuador. Photo: M. Escudero, 2019.

Of course, even if this is the reality for most cocoa, there are many producers making a considerable effort to implement better practices and are more successful at making their cocoa beans totally traceable.

## Appendix 2: Ecuadorian cocoa producers and exporters (non-exhaustive list)

Company	Website
A&D Sanchez Adsancocoa S.A.	<a href="http://www.goldcocoa.com.ec">www.goldcocoa.com.ec</a>
Adelpro S.A. Adelprosa	
Agrocomercial Panchana & Zambrano S.A.	<a href="http://www.panchanacialtda.com/">www.panchanacialtda.com/</a>
Agroindustrial Salazar Molina Agrosamex S.A.	
Agroindustrias Arriba Del Ecuador Agroarriba S.A.	<a href="http://www.ecomtrading.com">www.ecomtrading.com</a>
Agrolaya S.A.	
Agro Manobanda Hermanos S.A. Agromaban	<a href="http://www.manobandagroup.com">www.manobandagroup.com</a>
Agrosanchez Cocoa Export S.A.	<a href="http://www.agrosanchez.com">www.agrosanchez.com</a>
Araycigars S.A.	<a href="http://www.arayandsons.com">www.arayandsons.com</a>
Aromas Y Sabores Del Ecuador Aromacacao Cia. Ltda.	<a href="http://www.aromacacao.com.ec">www.aromacacao.com.ec</a>
Aromatic Cocoa Export S.A Aromaexco	<a href="http://www.aromaexco.com/">www.aromaexco.com/</a>
Asociacion Artesanal Sabor Arriba	<a href="http://www.connectamericas.com/pt/company/asociaci%C3%B3n-artesanal-sabor-arriba">www.connectamericas.com/pt/company/asociaci%C3%B3n-artesanal-sabor-arriba</a>
Asociacion De Productores De Cacao De La Zona Norte De Esmeraldas	<a href="http://www.aprocane.org.ec">www.aprocane.org.ec</a>
Asociacion De Productores Organicos De Vinces Apovinces	
Beyoutiful And Healthy	<a href="http://www.bhec.com.ec">www.bhec.com.ec</a>
Cacao Inalnapo Cia. Ltda.	
Comercializadora De Productos De Ecuador Ecucomerpro Cia. Ltda	<a href="http://www.caofec.com.ec">www.caofec.com.ec</a>
Corporacion Fortaleza Del Valle	<a href="http://www.fortalezadelvalle.org/">www.fortalezadelvalle.org/</a>
Ecuamagic S.A.	<a href="http://www.haciendapalosanto.com">www.haciendapalosanto.com</a>
Exportadora Alkatiff Agro Lopez Cia Ltda	<a href="http://www.maracacao.com">www.maracacao.com</a>
Exportadora Banapri Expobanapri S.A.	<a href="http://www.expobanapri.com.ec/">www.expobanapri.com.ec/</a>
Federacion De Organizaciones Negras Y Mestizas Del Sur Occidente De Esmeraldas	<a href="http://www.fonmsoeam.blogspot.com/2007/10/header.html?m=1">www.fonmsoeam.blogspot.com/2007/10/header.html?m=1</a>
Federacion De Pequeños Exportadores Agropecuarios Organicos Del Sur De La Amazonia Ecuatoriana Apeosae	<a href="http://www.apeosae.com">www.apeosae.com</a>
Federacion Regional De Asociaciones De Pequeños Cafetaleros Ecologicos Del Sur	<a href="http://www.fapecafes.org.ec">www.fapecafes.org.ec</a>
Fundacion Chankuap Recursos Para El Futuro	<a href="http://www.chankuap.org">www.chankuap.org</a>
Fundacion Mcch Maquita Cushunchic Comercializando Como Hermanos	<a href="http://www.maquita.com.ec/">www.maquita.com.ec/</a>
Grandsouth S.A.	<a href="http://www.grandsur.com">www.grandsur.com</a>

### Appendix 3: Ecuadorian chocolate producers and exporters (non-exhaustive list)

Name	Website
Andeanflavors Cia. Ltda.	<a href="http://www.tavorochocolate.com">www.tavorochocolate.com</a>
Aog Foods	<a href="http://www.aogfoods.ca">www.aogfoods.ca</a>
Arawi	<a href="http://www.arawi.be">www.arawi.be</a>
Aromasabor Cia. Ltda	<a href="http://www.conexionchocolate.com">www.conexionchocolate.com</a>
Arriba Chocolate Company S.A. Chocompany	
Asoane La Capital Del Chocolate	<a href="http://www.lacapitaldelchocolate.com">www.lacapitaldelchocolate.com</a>
Asociacion De Mujeres Waorani De La Amazonia Ecuatoriana	<a href="http://www.amwae.org">www.amwae.org</a>
Asociacion De Productores De Cacao Fino De Aroma De Carlos Julio Arosemena Tola	<a href="http://www.tsatsayaku.com/">www.tsatsayaku.com/</a>
Asociación Kallari	<a href="http://www.kallari.com.ec">www.kallari.com.ec</a>
Avalmarti S.A.	<a href="http://www.minka.ec">www.minka.ec</a>
Blk Corporation S.A.	<a href="http://www.caonichocolate.com">www.caonichocolate.com</a>
Cacaos Finos Ecuatorianos S.A. Cafiesa	<a href="http://www.cafiesa.com">www.cafiesa.com</a>
Cardenas Andrade Susana	<a href="http://www.cardenaschocolate.com">www.cardenaschocolate.com</a>
Cevallos Rozas Manuel Robert	<a href="http://www.ronnel.ru/">www.ronnel.ru/</a>
Chocofacadi	<a href="http://www.perlaorganicchocolate.com">www.perlaorganicchocolate.com</a>
Chocolate Ecuatoriano C.A.	<a href="http://www.chocolateca.com.ec">www.chocolateca.com.ec</a>
Chocolates Bios Cia Ltda	<a href="http://www.chocolatesbios.com">www.chocolatesbios.com</a>
Chocolates Finos Nacionales Cofina S.A.	<a href="http://www.cofinacocoa.com">www.cofinacocoa.com</a>
Chocoleyenda Cia. Ltda	<a href="http://www.chocoleyenda.com">www.chocoleyenda.com</a>
Chocono S.A.	<a href="http://www.chocono.com.ec">www.chocono.com.ec</a>
Comercializadora Ecuagourmet S.A.	<a href="http://www.chocolatemayta.com">www.chocolatemayta.com</a>
Confiteca C.A.	<a href="http://www.confiteca.com">www.confiteca.com</a>
Eco-Kakao S.A.	<a href="http://www.eco-kakao.com.ec/">www.eco-kakao.com.ec/</a>
Ecuacaoswiss S A	<a href="http://ecuacao.com/">ecuacao.com/</a>
Ecuacocoa C.A.	<a href="http://www.ecuacocoa.com">www.ecuacocoa.com</a>
Ecuador Cocoa & Coffee Ecuacoffee S.A.	<a href="http://www.ecuacoffee.com/">www.ecuacoffee.com/</a>
Ecuador Kakao Processing Proecuakao S.A.	<a href="http://www.ecuakao.com/">www.ecuakao.com/</a>
Ecuatoriana De Chocolates	<a href="http://www.ecuatorianadechocolates.ec">www.ecuatorianadechocolates.ec</a>
Ecuatoriana De Chocolates Ecuachocolates S.A.	<a href="http://www.antidotechoco.com">www.antidotechoco.com</a>
Erolcorp S.A.	<a href="http://www.erolcorp.com">www.erolcorp.com</a>
Exporganic S.A.	<a href="http://www.exporganicecuador.com">www.exporganicecuador.com</a>
Ferrero Del Ecuador S.A.	<a href="http://www.ferreroladm.com">www.ferreroladm.com</a>
Flordhari S.A.	<a href="http://www.hacienda-victoria.com/">www.hacienda-victoria.com/</a>
Hoja Verde	
Mashpi Chocolates	<a href="http://www.chocomashpi.com">www.chocomashpi.com</a>
Productos Sksfarms Cia. Ltda.	<a href="http://www.pacari.com">www.pacari.com</a>
Right Foods	<a href="http://www.wayllakuri.com">www.wayllakuri.com</a>
Salinerito	<a href="http://www.salinerito.com">www.salinerito.com</a>
Sociedad Inedulces	<a href="http://www.inedulces.com">www.inedulces.com</a>
Takal	<a href="http://www.takalchocolate.com">www.takalchocolate.com</a>
Taok	
Valencorp	<a href="http://www.valenco.com.ec">www.valenco.com.ec</a>

## Appendix 4: Further details on Ecuadorian cocoa-based exports to the EU28

Exported commodities to EU28 in 2019	Volume (Ton)	Value (EUR)	Volume share	Value Share
Cocoa beans	74,404	170,149,999	95.66%	91.48%
Cocoa butter, fat and oil	2,535	12,835,261	3.26%	6.90%
Cocoa paste (excl. defatted)	496	1,778,549	0.64%	0.96%
Cocoa waste	243	326,782	0.31%	0.18%
Chocolate/food with cocoa (not filled,blocks, slabs, bars,<= 2kg)	45	595,938	0.06%	0.32%
Chocolate/food with cocoa (blocks,slabs,bars,>2kg)	28	147,707	0.04%	0.08%
Cocoa powder	22	77,375	0.03%	0.04%
Chocolate/chocolate products (not filled,not blocks,slabs,bars,chocolates)	3	40,675	<0.01%	0.02%
Chocolate/food with cocoa (filled,blocks,slabs,bars,<= 2kg)	1	25,089	<0.01%	0.01%
Cocoa powder, sweetened	1	11,645	<0.01%	0.01%
Chocolates not containing alcohol	0	3,292	<0.01%	<0.01%
Cocoa paste (defatted)	0	996	<0.01%	<0.01%
Chocolate/chocolate products (filled,not blocks,slabs,bars,chocolates)	0	121	<0.01%	<0.01%

\* Values represent cost Insurance Freight (CIF)

Main Exported commodities to EU28 in 2019 and top 3 main importers	Total Export Volume to EU28 (ton)	Importers volume share
<b>Cocoa beans</b>	<b>74,404.2</b>	
Netherlands	39,738.5	53%
Germany	14,729.8	20%
Belgium	8,905.2	12%
<b>Cocoa butter, fat and oil</b>	<b>2,535.3</b>	
Germany	1,771.7	70%
Netherlands	748.1	30%
Czechia	11.6	0%
<b>Cocoa paste (excl. defatted)</b>	<b>495.9</b>	
Germany	288.8	58%
Netherlands	111.5	22%
Estonia	42.6	9%
<b>Cocoa waste</b>	<b>243.1</b>	
Spain	241.6	99%
Belgium	1.1	0%
Germany	0.3	0%
<b>Chocolate/food with cocoa (not filled,blocks, slabs, bars,&lt;= 2kg)</b>	<b>45.2</b>	
France	22.4	50%
Sweden	6.4	14%
Germany	6.0	13%
<b>Chocolate/food with cocoa (blocks,slabs,bars,&gt;2kg)</b>	<b>28.2</b>	
Belgium	18.0	64%
Spain	4.4	16%
France	4.1	15%
<b>Cocoa powder</b>	<b>21.7</b>	
Czechia	15.8	73%
Latvia	1.7	8%
Netherlands	1.6	7%
<b>Chocolate/chocolate products (not filled,not blocks,slabs,bars,chocolates)</b>	<b>2.6</b>	
Germany	2.1	81%
Sweden	0.3	13%
France	0.1	4%
<b>Chocolate/food with cocoa (filled,blocks,slabs,bars,&lt;= 2kg)</b>	<b>1.3</b>	
Germany	1.1	87%
Netherlands	0.1	8%
Sweden	0.1	4%

Source: COLEAD, based on Eurostat.

## **Appendix 5: Reflexion and discussion on cadmium regulation**

The European Union has always taken the lead in regulating food safety. The measures introduced, in principle, are not intended to obstruct international trade but are designed to protect European citizens from hazardous products that may affect their health. However, the measures might be considered too strict, and taken without conclusive analysis. They might not be based on a hazard-based approach, but rather on risk assessments and scientific opinions from the European Food Safety Authority (EFSA).

Thus, some people consider that the decision to include chocolate in the list of products with high cadmium risk was not based on any direct effect that chocolate with a certain level of cadmium may have on human health. Instead, they say that it was based on EFSA's tolerable weekly intake (TWI) of  $2.5\mu\text{g}/\text{kg}$  body weight, rather than the provisional monthly recommendation established by the Food and Agriculture Organization of the United Nations of  $25\mu\text{g}/\text{kg}$  body weight, which is a TWI of around  $3.57\mu\text{g}/\text{kg}$  body weight.

The conclusion of the Scientific Opinion of the Panel on Contaminants in the Food Chain on a request from the European Commission on cadmium in food stated: "Subgroups such as vegetarians, children, smokers and people living in highly contaminated areas may exceed the TWI by about 2-fold. Although adverse effects on kidney function are unlikely to occur for an individual exposed at this level." This conclusion means that even consumption of twice as much cadmium will not present any risk to human health. Nevertheless, chocolate was included on the list.

The limits were established by Regulation No. 488, causing distortions in the market for fine cocoa, especially coming from South American countries such as Ecuador and Peru, where the volcanic soil is more likely to lead to higher levels of cadmium in cocoa. Therefore, prices of fine cocoa with elevated levels of cadmium have fallen, and it has lost market share not only in Europe but worldwide.





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