



# Global Cocoa Market Study

Project coordinated by the International Executive Service Corps (IESC) with advice of the Fine Cacao and Chocolate Institute (FCCI) and funded by the U.S. Department of Agriculture (USDA)

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Conducted by

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CACAO  
ORGANICO

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# Introduction

There are 5.5 million cocoa farmers globally (Rios et al., 2017). More than 80 percent of them are smallholder-farmers, whose income fluctuates along with international prices and exchange rates. Often, farmers and farmer-based organizations lack market insights, preventing them from taking full advantage of market opportunities. Public information on value-adding activities, for instance, is often outdated or too narrowly focused on specific global markets or segments. The information often fails to present research-backed data as well, and it is concentrated in the hands of a few industry actors.

Farmer-based organizations (FBOs), exporters and importers see the need to improve their relationships with farmers to safeguard their continued business, and cope with increasing sustainability criteria demanded by a price-sensitive market. Local exporters and small- and medium-sized entrepreneurs (SME) in chocolate manufacturing are under threat from multinationals that can take advantage of their size and efficiency by integrating the supply chain vertically and horizontally.

While past studies have demonstrated to benefit the cocoa sector, this research project aims to provide further insights by focusing on the value chain and its actors, describing price structures and dynamics within different marketing channels, revealing the main market trends, and the factors affecting pricing and value to farmers and farmer-based organizations, as well as presenting data related to sustainability such as 'living income', climate-change, and resilience including a section on soil health, deforestation, certification, child labor, inclusion of youth and women, and governance.

This research project seeks to provide up-to-date data to better equip stakeholders in the cocoa sector as they navigate through the market and its dynamics.

**Disclaimer:** The author's views expressed in this publication do not necessarily reflect the view of the U.S. Department of Agriculture (USDA), the U.S. Government (USG) or the International Executive Service Corps (IESC).



## Project Objective

To better understand current and potential market opportunities in the global, regional and local market that can provide more benefits/value for farmer-based organizations, small- and medium-sized enterprises (processing and export-oriented producer organizations) and value chain stakeholders they work with.

## Specific objectives

- To assess the evolution of the cocoa industry over the last 20–25 years in terms of the reality of producers and exporters, purchasing and sustainability practices and consumer trends that have pushed the changes over time.
- To identify relevant market trends and requirements at global and regional levels for the cocoa industry (cocoa beans and each derivative product).
- To determine market opportunities at global and regional levels in the cocoa industry.
- To describe the structure of the global cocoa supply chain and its power dynamics.
- To explain price formation and trends for each product and market segment.
- To determine the market drivers and restraints that propel or halt market expansion for each product.
- To assess the key challenges that must be overcome and the opportunities that could be explored.
- To assess competition in the global cocoa industry for each product and market segment.
- To determine strategies that would make the cocoa industry more socially, commercially, and environmentally sustainable.
- To determine the global marketing channels that offer the best opportunities for growth for each product and market segment.



## Project Team and Multidisciplinary Approach

Gaia Cacao, a specialized cocoa agency based in the Netherlands led by Mariana De La Rosa and Marika van Santvoort, was commissioned to perform the research project and did so in partnership with sector experts Gustavo Ferro, Jerome Krufft (Amigos International) and Katty Sanchez Amiquero.

The project is coordinated by the International Executive Service Corps (IESC) and supported by the U.S. Department of Agriculture (USDA) as part of the Exporting Quality Program, with technical support from the Fine Cacao and Chocolate Institute (FCCI) through its advisors Dr. Carla Martin, Executive Director, and Jaume Martorell Mir, Senior Advisor to the FCCI.

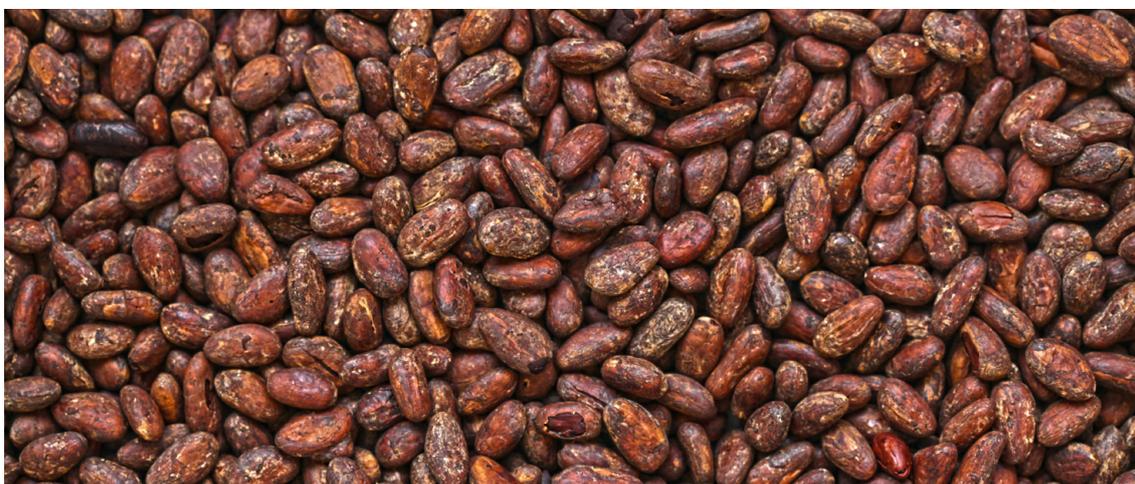
Additional team members who provided support during the data collection process and analysis to reach the outcomes of this project are Jose Antonio Lara, Luisa Ticona, Maricielo Tokunaga and Amable Espina.

Key experts in the cocoa sector, Bart Verzaal, Cocoa Consultant at Summit Commercial Cocoa Consultancy, Graham Laird, independent Cocoa Quality and FCC-contract Consultant, Jörn Berger, independent Cocoa Farming and Market Consultant, Rubén Borge, expert in healthy soil and plant life at RockInSoils, and Freddy Cabello, General Manager at Unión de Organizaciones Campesinas Cacaoteras (UNOCACE), have each guided and helped the research team to contextualize the findings of this study.

The project had valuable academic input and support from Dr. Hilde Tobi, Associate Professor in research methodology from Biometris, Plant Sciences Group at Wageningen University & Research; Dr. Amanda Berlan Associate Professor in Business & Sustainability at De Montfort University and Dr. Anna Laven, Senior Researcher for the Royal Tropical Institute (KIT). Their expertise in research methodologies, value chains and knowledge management were key to reaching the objectives.

## Project Timeline

The project was carried out between April and September 2021, from the inception to finalization phases.



## Research Methodology

The research methodology consisted of a mixed-method approach where both qualitative and quantitative data collection and analysis were in place to answer the research questions.

The methodology included extensive literature review and in-depth semi structured interviews.

Details on each data collection method shown in Table 1:

**Table 1. Data collection method, process and outcome**

| Data collection method     | Process  | Outcome  |
|----------------------------|--|--|
| Literature review          | <p>The identification strategy for the bibliography included all accessible and relevant documents from cocoa-related organizations and companies published between 2000 and 2021.</p> <p>Main sources for data collections:</p> <ul style="list-style-type: none"> <li>● Bibliographic databases e.g., Scopus, Web of Science, ABI/INFORM, EconLit, AGRIS, Google Scholar, Harvard HOLLIS, WorldCat and/or AgEcon.</li> <li>● Company's websites including their annual and sustainability reports</li> <li>● Worldwide organizations related to the cocoa industry and overall agricultural sector such as FCCI, ICCO, FAO, FCC, WB, IDH, USDA, the National Cocoa Platforms, INCOCOA groups, among others.</li> <li>● Market studies related to the cocoa industry, e.g., SEO, KIT, CBI, etc.</li> <li>● Other institutional documents: laws, regulations, public decrees, and standards, among others.</li> <li>● Chocolate associations in countries such as: PRODULCE (industry) and Asociacion Bean to Bar and in France LE SAVIEZ-VOUS, among others.</li> </ul> | <p>Data from 430 papers, articles and publications were analyzed and contextualized.</p> <p>Comprehensive spreadsheets were designed to ensure all relevant information from each document was captured.</p>   |
| Semi structured Interviews | <p>Judgmental/purposive and snowball sampling techniques were used to select the interviewees.</p> <p>Judgmental/purposive sampling design was chosen to allow selection of the actors who could provide the best information to achieve the objectives of the study.</p> <p>The snowball sampling design was chosen so the final participant selection could benefit from the interviewees' existing networks.</p> <p>Anonymous quotes from the interviews will be given for illustrative and explanatory purposes.</p> <p>Data obtained from the interviews were analyzed using deductive thematic content analysis in comprehensive spreadsheets.</p>   | <p>62 in-depth semi-structured interviews covering all actors in the value chain globally.</p> <p>39 in-depth semi-structured interviews covering all actors in the value chain in the Dominican Republic.</p> |

# Glossary

|          |   |
|----------|---|
| ACP      | African, Caribbean and Pacific  |
| ADM      | Archer Daniels Midland  |
| ANECACAO | Asociación Nacional de Exportadores de Cacao e Industrializados del Ecuador   |
| BASIC    | Bureau d'Analyse Sociétale pour une Information Citoyenne   |
| BCEAO    | Banque Centrale des Etats d'Afrique de l'Ouest  |
| Bn       | Billion   |
| Caistab  | Cocoa Stabilization Fund (Caisse de stabilisation et de soutien des prix des produits agricoles in French) created in 1960 and dismantled in 1999 |
| CBI      | Centrum ter Bevordering van Import uit ontwikkelingslanden (Center for the Promotion of Import from developing countries)                         |
| CCC      | Conseil Café Cacao  |
| CCN51    | Collección Castro Naranjal – 51   |
| CIF      | Cost Insurance and Freight (Incoterm)   |
| CFA      | West African "Communauté Financière Africaine" Franc – currency of Côte d'Ivoire until 2020   |
| CFD      | Contract For Difference   |
| CMAA     | Cocoa Merchants' Association of America   |
| CMC      | Cocoa Marketing Company   |
| CRA      | Cocoa Research Association  |
| CSR      | Corporate Social Responsibility   |
| CTOC     | United Nations Convention against Transnational Organized Crime   |
| DRC      | Democratic Republic of Congo  |
| DIHR     | Danish Institute for Human Rights   |
| ECOWAS   | Economic Community of West African States   |
| EC       | European Commission   |
| EPA      | Economic Partnership Agreements   |
| EU       | European Union  |
| EUR      | Euro  |
| FAO      | Food and Agricultural Organization  |
| FCC      | Federation of Cocoa Commerce  |
| FCCI     | Fine Cacao and Chocolate Institute  |
| FCIA     | Fine Chocolate Industry Association   |
| FCFA     | West African Franc, currency of eight independent states in West Africa   |
| FIRCA    | Fonds Interprofessionnel pour la Recherche et le Conseil Agricoles  |
| FLO      | Ex-name of Fairtrade International (Fairtrade Labelling Organization)   |
| FTA      | Free Trade Agreement  |
| IMF      | International Monetary Funds  |
| INIAP    | Instituto Nacional de Investigaciones Agropecuarias   |
| FOB      | Free on board (Incoterm)  |
| GDP      | Gross Domestic Production   |

|             |  |
|-------------|--|
| GHS         | Ghanaian Cedi (currency)   |
| GPS         | General System of Preferences  |
| GRI         | Global Reporting Initiative  |
| GVC         | Groupements à Vocation Coopérative   |
| IADB        | Inter-American Development Bank  |
| IBRD        | International Bank for Reconstruction and Development                                  |
| ICCO        | International Cocoa Organization   |
| IDH         | Internationale Duurzame Handel (Sustainable Trade Initiative)                          |
| IESC        | International Executive Service Corps  |
| IISD        | International Institute for Sustainable Development                                    |
| ILO         | International Labor Organization   |
| IPCC        | International Panel on Climate Change  |
| INIAP       | Instituto Nacional de Investigaciones Agropecuarias                                    |
| INSEE       | National Institute of Statistics and Economics Studies in France                       |
| LDC         | Least Developed Countries  |
| LIRP        | Living Income Reference Price  |
| MAGAP       | Ministerio de Agricultura, Ganadería, Acuacultura y Pesca                              |
| NGO         | Non-Governmental Organization  |
| PAH         | Polycyclic Aromatic Hydrocarbon  |
| PMB         | Produce Monitoring Board (Sierra Leone)  |
| RFA         | Rainforest Alliance  |
| REDD+       | United Nations Program on Reducing Emissions from Deforestation and Forest Degradation |
| RSCE        | Roundtable for a Sustainable Cocoa Economy   |
| STD         | Standard Deviation   |
| UDHR        | Universal Declaration of Human Rights  |
| UEMOA       | West African Economic and Monetary Union   |
| UN Comtrade | Statistics database of international trade of the United Nations                       |
| UNCTAD      | United Nations Conference for Trade and Development                                    |
| UNFCCC      | United Nations Framework Convention on Climate Change                                  |
| UNFPA       | United Nations Population Funds  |
| UNICEF      | United Nations Children's Fund   |
| UNFCCC      | United Nations Framework Convention on Climate Change                                  |
| USAID       | U.S. Agency for International Development  |
| USDA        | U.S. Department of Agriculture   |
| USD         | U.S. Dollars   |
| VCA4D       | Value Chain Analysis for Development   |
| XAF (XOF)   | Central African Franc, currency of six independent states in Central Africa            |
| WB          | World Bank   |
| WRI         | World Resources Institute  |
| WCF         | World Cocoa Foundation   |

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# Global Market Study

## GLOBAL MARKET TRENDS AND REQUIREMENTS

### Global Industry Background and Historic Overview

The genetic birthplace of cocoa is the Orinoco and Amazon region in South America. There is a debate about the origin and domestication of cocoa, but most probably its center is near the Colombian-Ecuadorian border (Motamayor et al., 2002). These beans have been dated as far back as 5,500 years ago and prized by many different civilizations as they were used both for food and as currency (Young, 2008; Presilla, 2009).

After their introduction into Mesoamerica, two notable mentions from Mayan mythology are found. The first was 'Kukulcan' who delivered these gifts down from paradise after they had eaten chocolate during a heavenly feast. The other is 'Quetzalcoatl', a trickster god who taught the Aztecs to ferment and roast cocoa beans before grinding them with water. He also instructed his apprentices on how to best mix their chili-based drink known as *cacahuatl* or 'cacao water' (Coe & Coe, 2013; Young, 2008). Archaeologists deciphered in classic Mayan glyphs the word 'kakaw' providing the root to the Spanish word 'cacao' (Presilla, 2009).

In 1502, Columbus' fourth voyage stumbled upon a Mayan trading canoe near Guanaja, an island north of what is now Honduras. Among the many items captured were 'almonds' that Ferdinand (Columbus' second son) noticed to be of great value: When they were brought on board ship, he observed that when any of the almonds fell, they all stooped to pick it up "as if an eye had fallen" (Colón, 1867; Morisson, 1963). The Spaniards arrived in the 16<sup>th</sup> century at the pinnacle of the Mesoamerican 'kakaw' culture. The invaders first became familiar with cocoa and the chocolate drink in the Maya lowlands, where it was called *chacau haa*, or 'hot water' or *chocol haa* (Yucatán). Mexican philologist Ignacio Dávila Garibí has credibly proposed that the Mayan *chocol* (hot) and Aztec *atl* (water)—combining to *chocolatl*—was the best way for the Spanish to describe to the Aztec people the beverage they had learned to drink in the Maya lowlands – hot and sweetened with sugar (and not the cold, bitter *cacahuatl* of the Aztecs) (Dávila Garibí, 1939). One of many pre-Columbian recipes for cocoa beverages was "chocolate" and in many early accounts it was a Guatemalan recipe (Martin, Sampeck, 2018). In this regard, "chocolate" was by no means the word or recipe of choice until the sixteenth century at the earliest (*idem*).

The advent of the chocolate industry did not come without social and economic hardship for the Native American population. The European colonial regimes started commercially cultivating cocoa in what are today Belize, Guatemala, Honduras and in the lowlands of Mexico. The Spaniards implemented a system called *encomienda*, whereby colonialists were given land to exploit, including the Native Americans living there. They were able to keep a fixed portion of the income and the rest was paid to the Spanish crown. This new commodity was first shipped to Europe in 1530 (Young, 2008), although others report the first official shipment to be in 1585, from Veracruz to Seville (Coe & Coe, 2013). It took some time for the drink to become popular in other European countries – the British even burned several Spanish shiploads in the late 16<sup>th</sup> century, thinking the beans were sheep droppings (Coe & Coe, 2013). But, eventually the Mesoamerican tradition was followed all over Europe: cocoa

beans were ground into a paste and spices were added to create the first non-alcoholic stimulant drink in Europe (Young, 2008).

Industrial developments and mechanization in the 1800s in Europe—particularly the invention of the press and alkalization process in The Netherlands by father and son van Houten—spurred the production of chocolate worldwide and parallel to it, the growth of production of cocoa beans in South and Central American countries. Chocolate was no longer a product of the elite but became affordable, as cocoa powder dropped in price (cocoa butter was expensive) and could be mixed in lower quantities with alternative fats, but also starches – the adulteration of chocolate was a real problem in the 19<sup>th</sup> century (Coe & Coe, 2013). Specific blends, standardized recipes and large-scale production resulted, with a concentration in the Zaan region near Amsterdam, creating more uniformity in taste, and a wider assortment of chocolate that was at the same time more affordable (C. Martin & Sampeck, 2010). Important inventions by the Swiss chocolatiers Nestlé (milk powder in 1867) and Lindt (conching in 1879) added to the development of a finer and broader assortment of chocolate. In the 19<sup>th</sup> century, import duties on cocoa beans from the New World dropped, which also increased the consumption of chocolate.

Europeans introduced the cocoa seeds to other regions, such as the Caribbean in 1660 and Asia in 1778. In 1824, Portuguese transplanted forastero cuttings reached São Tomé from Brazil. From São Tomé the crop made its journey to the island of Fernando Po (1850), from there into the Gold Coast (Ghana), Nigeria and Cameroon (planted by the Germans) and by 1905 it reached Côte d'Ivoire (Coe & Coe, 2013), becoming in many of these West African countries the major agricultural source of income.

### **“You Say Cocoa, I Say Cacao”**

While ‘cocoa’ is used most widely in the English language and professional literature, actors in the industry increasingly understand that this could be related to a perpetuation of an unfortunate mistake by Samuel Johnson when creating the first widely-read English language dictionary in 1755 (mixing up the cacao tree and coco palm) (Struik, 2020). In the sector it is good practice to write “cacao” when referring to beans and reserving “cocoa” only for the processed products. In this study, however, the word “cocoa” has been chosen to conform to literature about the product and its supply chain. The term “cocoa” will be used both for the beans and derivative products.

### **Main Events Affecting the Global Cocoa Industry in the Last 60 Years**

Figure 1 and the following timeline represent a brief historical overview of major events impacting the cocoa sector over the last 60 years. Political struggles, multinational corporate decisions and strategies, environmental issues, sustainability and market behavior have had an impact on production and prices, therefore an important footprint within the cocoa value chain. Since 1960, the world cocoa price has increased fivefold in terms of U.S. dollars but remained broadly stable when adjusted for inflation. As the figure below shows, nominal cocoa prices (in U.S. dollar per kg) increased by an average of 5.8 percent per year during the period 1960–2015 – a fivefold increase of the price over the whole period. In real terms (i.e., adjusted for inflation), cocoa prices increased by 130 percent since 1993 but remained mostly constant when taken over the whole period 1960–2015. In 2015, the real cocoa price was nearly

at the same level as in 1960. A slight diminution can be observed in the average trend of real cocoa prices when looking from 1960 (Figure 1). In the beginning of the 1990s, a 250 percent increase is observed.

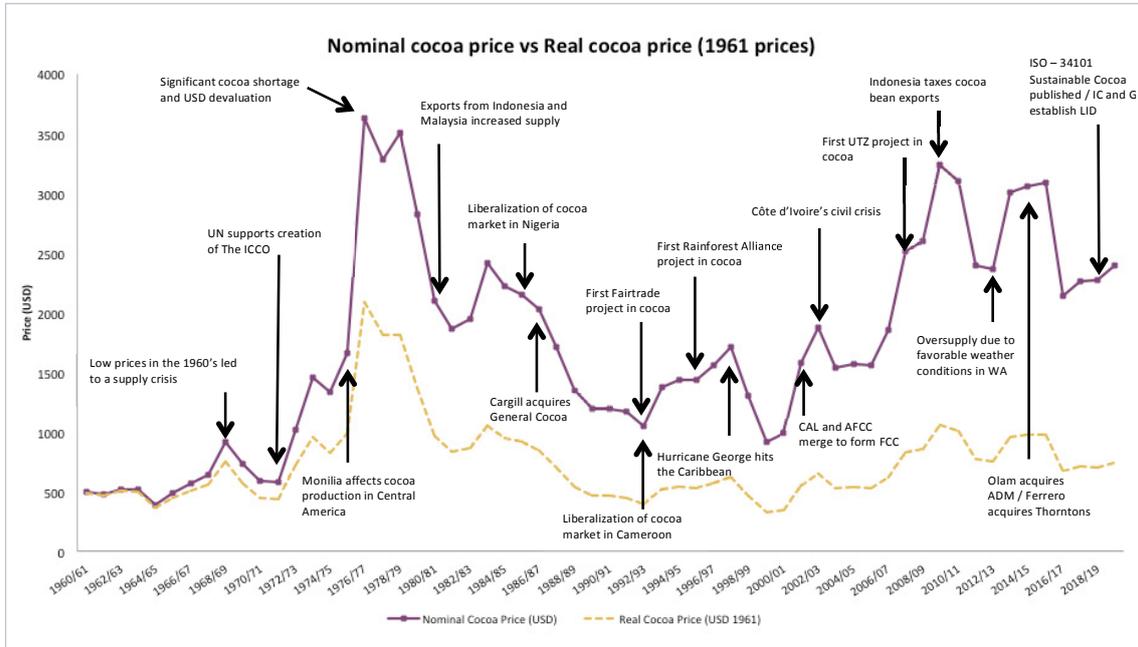


Figure 1. Timeline of major events affecting the global cocoa prices since 1960. Source: Own elaboration based on WB

|                  |  |
|------------------|--|
| <b>1969</b>      | Low prices in the 1960s discouraged cocoa production, which led to a supply crisis in the late 1960s. Prices hit historical highs at that time.  |
| <b>1973</b>      | The United Nations backed the creation of The International Cocoa Organization (ICCO), which has the mission of improving the functioning of the world cocoa economy through appropriate activities and coordinated actions among Member countries, in close cooperation with the private sector (ICCO, 2021e).  |
| <b>1978</b>      | The pest disease Monilia affected cocoa production in Central America (Ploetz, 2016). The disease accounts for about 5 percent of total annual crop loss (ICCO, 2021c).  |
| <b>1978</b>      | Significant cocoa shortage and USD devaluation, leading to all time high cocoa prices. From 1960–61 to 1964–65, the stock to grindings ratio was around 46 percent. However, between 1965–66 and 1976–77, global demand for cocoa (grindings) began to increase creating a structural deficit. This supply deficit sent the stock to grindings ratio plunging to an all-time low of 19 percent in 1976–77, and the price reached USD 5,700 per metric ton. At the same time, the Nixon Shock, a phrase used to describe the aftereffect of a set of economic policies touted by former U.S. President Richard Nixon in 1971, led to a decade of instability around the foreign exchange market, with traders abroad fearful of potential dollar devaluation. |
| <b>1982</b>      | Exports from Indonesia and Malaysia increased supply: Indonesia and Malaysia became key players in the cocoa supply chain in the second half of the 20th century. Malaysia went from zero in the late 1950s to about 250,000 metric tons of cocoa produced in 1990; and Indonesia from almost insignificant levels in 1990–91 to an output of nearly 150,000 metric tons of cocoa produced (Bloomfield & Lass, 1992).  |
| <b>1986–2002</b> | Liberalization of cocoa market in West African Countries: the role of the state in the African nations after liberalization were mixed; Cameroon and Nigeria saw an almost complete withdrawal of the state from the sector; Ghana implemented a partial liberalization in which the old structure remained intact but with lower overhead costs and competition on internal marketing and Côte d'Ivoire saw a deeply flawed liberalization of the market, in which the new regulatory structures were more chaotic and expensive than original (Gilbert, 2016).   |

|                  |   |
|------------------|---|
| <b>1994–2007</b> | Introduction of the first initiatives for third-party certifications: ‘Third-party’ certification, such as Fairtrade, Rainforest Alliance (RFA) and UTZ are schemes where independent auditors inspect producer groups against preset sustainability standards. In 1994 the first cocoa-related project from Fairtrade started; 1997 was the year where Rainforest Alliance participated in its first cocoa project; and UTZ took its first steps in cocoa in 2007.   |
| <b>2002</b>      | The Cocoa Association of London (CAL) and The Association Française du Commerce des Cacaos (AFCC) merge to form The Federation of Cocoa Commerce (FCC): The main purpose of FCC is to provide a comprehensive contractual and operational framework within which the interests of all sectors of the cocoa trade and industry are fairly represented.   |
| <b>2002</b>      | Civil crisis in Côte d’Ivoire: For roughly a decade, Côte d’Ivoire was bitterly divided due to a civil war. As it was already a major cocoa producer, the political instability during this time significantly impacted the global supply of cocoa.   |
| <b>2010</b>      | The Indonesian government implemented a cocoa bean export tax, aiming to encourage the growth of the domestic cocoa processing industry, as well as the use of domestic cocoa beans as raw materials. Indonesian cocoa exports witnessed a decline due to the greater internal demand for cocoa beans. Also, larger traders and chocolate manufacturers entered Indonesia to expand their operations (Hasibuan & Sayekti, 2018).  |
| <b>2012</b>      | Global losses due to diseases accounted for 1.3 million metric tons worldwide. (Ploetz, 2016). (Top five diseases in cocoa: black pod, frosty pod, witches’ broom, cocoa swollen shoot, and vascular streak dieback).   |
| <b>2015–2016</b> | Oversupply due to favorable weather conditions in West Africa resulted in a severe and sudden oversupply of beans, which led to a quick drop in prices; from just under USD 3,000 to around USD 1,900 per metric tons by the end of June 2017.  |
| <b>2019</b>      | ISO 34101 on Sustainable and Traceable Cocoa was published: Developed by stakeholders from all sectors of the cocoa industry, including representatives from producing and consuming countries, the ISO 34101 standard aims to encourage the professionalization of cocoa farming, thus contributing to farmer livelihoods and better working conditions. It covers the organizational, economic, social, and environmental aspects of cocoa farming as well as featuring strict requirements for traceability, offering greater clarity around the supply chain (Naden, 2019).   |
| <b>2019</b>      | The Living Income Differential (LID) was introduced in 2019 by the governments of Ghana and Côte d’Ivoire, to apply a premium of USD 400 per metric ton on the export price for the 2020–21 crop. The aim of this additional revenue was to increase the income of farming families. This political decision generated concerns across the global cocoa value chain (Webb & Stanbury, 2021).  |
| <b>2020</b>      | COVID-19 outbreak: The COVID-19 pandemic has caused devastating and unprecedented consequences around the globe. Lockdowns, border closures and restaurants, airports and hotel closures have disrupted many value chains, including cocoa and its derivatives. It had a severe impact on prices of transport and availability of (food)products.   |
| <b>1987–2021</b> | Major acquisitions, mergers and takeovers have led to a high concentration of market share in the cocoa value chain with a limited number of large companies. Market power of traders and chocolate manufacturers and the increasing concentration due to mergers and vertical and horizontal integration (Ingram et al., 2018). Traders and grinders Barry Callebaut, Cargill, Olam, Ecom, Sucden, Touton, CEMOI, Cocoanect, and Blommer (Fuji Oil) account for 60 to 80 percent of global cocoa processing. The six largest chocolate manufacturers (Mondelēz International, Nestlé, Mars, Hershey’s, Ferrero, Lindt & Sprüngli) transform 40 percent of chocolate products worldwide (Ingram et al., 2018). From 1988 to 2004, Barry Callebaut was involved in 11 major acquisitions and alliances in North and South America, Western Europe, Africa and Asia (UNCTAD, 2008). Olam’s largest acquisition to date was in 2015, when it acquired Archer-Daniels-Midland – Global Cocoa Business for USD 1.2 billion, this raised the concentration ratios, but it did not change market shares and was not considered worrisome by competition authorities (Oomes et al., 2016a). |



## Key Cocoa Industry Terminologies

### Product Segments in the Cocoa Industry

Different terminologies for products and segments are used interchangeably in the cocoa industry. And, as the market evolves, new ones will emerge.

For this study, the following segment definitions will be used:

- **Commodity, bulk, or mainstream segment:** This market segment refers to products of high volumes and of standard quality. Bulk cocoa is highly price-oriented and follows international market prices. Bulk cocoa is usually used for manufacturing cocoa butter and high-volume mainstream or bulk chocolate products (CBI, 2020d).
- **Bulk certified segment:** This market segment refers to cocoa or derivatives that have met the standards of a certification scheme, related to environmental, social and/or economic aspects, and has been certified by a certification body (CBI, 2020c). It follows international market price and premium is not always guaranteed but usually negotiated (Ferro et al., 2020).
- **Premium segment:** This market segment is used to denote a superior quality and/or value – It refers to cocoa that contains special attributes that set it apart from the bulk market. These attributes are recognized and rewarded by the market through a system of price premiums above bulk market prices. These special attributes are related to characteristics of the product itself, such as low defect quantification, high quality and flavor profiles, its *terroir* and unique origin, the story behind its production and producing communities as well as transparent trade and non-tangible aspects such as certification (Ferro et al., 2020).

Within the premium segment, three sub-categories can be identified.

- **Premium Certified:** This segment refers to cocoa that has met the standards of a certification scheme but is better in quality than bulk certified beans. Also sometimes referred to as “improved”, the defects would be much lower than those admitted according to FCC-standards but might not need to have prize-winning flavor characteristics nor excellent marketing highlighting the story behind the cocoa beans. Prices for this cocoa would follow the world market price, plus a premium for the certification and for the extra work to get the quality to its ‘premium’ status.
- **Specialty segment:** Specialty cocoa production is based on a notion of quality that is linked to lack of defects and the presence of fine flavor and aroma(s) (C. Martin, 2017). In addition, the story behind the cocoa’s uniqueness and availability are important. Typically, for this specialty segment certification is less important, as brand owners will communicate social and ecological stories in an elaborate way on the bar and social media. FOB pricing is usually not based on world market prices and ranges between USD 3.50 to USD 6.00 per kg.
- **Ultra-Premium segment:** refers to cocoa beans with extremely high quality and absolute

absence of defects and impurities. The market value for this product segment is disconnected from world market prices, and mainly depends on availability, uniqueness, and market positioning of the product. Prices can surpass USD 6.00 per kg and reach as much as USD 12.00 per kg in some cases.

Within the (ultra) specialty segment, the status of Fine Flavor cocoa can be considered. The market for fine or flavor cocoa is small (only 5 to 6% of total world production), highly specialized, globalized, and selective with its own supply and demand characteristics. ICCO has a classification system that recognizes countries producing and exporting fine-flavor cocoa according to pre-established criteria such as: the genetic origin of planting material, morphological characteristics of the plant, flavor and chemical characteristics of the cocoa beans produced, color of the cocoa beans and nibs, degree of fermentation, drying, off-flavors and quantification of defects (mold, insect infestation and overall impurities). Only governments can apply with a dossier, not individual exporters or cooperatives.

## **Product Types in the Cocoa Industry**

The definition established of each cocoa product is based on standard definition set in the EU or U.S. legislation or by worldwide organizations related to the cocoa industry.

### **Cocoa Beans**

The seed of the cocoa tree (*Theobroma cacao* Linnaeus); commercially, and for the purpose of international standards (ISO), the term refers to the whole seed, which has been fermented and dried (Afoakwa, 2016).

### **Cocoa Nibs**

Product obtained by removing the shell from cleaned, dried, and cracked cocoa beans (roasted or unroasted). The cocoa shell content should not be more than 1.75 percent by weight according to the U.S. legislation.

The nibs can be used to make chocolate or sold separately in healthy food products.

### **Cocoa Paste/Liquor**

When cocoa beans are finely ground, they produce a thick liquid called cocoa liquor (also known as unsweetened chocolate, or cocoa mass). The grinding process generates heat, and the dry granular consistency of the cocoa turns into a liquid as the large amount of fat contained in the cocoa bean melts. Cocoa liquor is mainly used in the production of chocolate and semi-finished chocolate ingredients (Euromonitor Consulting, 2020).

According to the U.S legislation, cocoa paste should not contain less than 50 percent nor more than 60 percent by weight of cocoa butter.

### **Cocoa Butter**

Fat obtained from cocoa beans by means of a press (European Commission, 2000).

## Cocoa Powder

Product obtained by converting into powder cocoa beans which have been cleaned, winnowed and roasted, and which contains not less than 20 percent cocoa butter, calculated according to the weight of the dry matter, and not more than 9 percent water (European Commission, 2000).

- Fat-reduced cocoa, fat-reduced cocoa powder: cocoa powder containing less than 20 percent cocoa butter, calculated according to the weight of the dry matter.
- Powdered chocolate, chocolate in powder: consisting of a mixture of cocoa powder and sugars, containing not less than 32 percent cocoa powder.
- Drinking chocolate, sweetened cocoa, sweetened cocoa powder: consisting of a mixture of cocoa powder and sugars, containing not less than 25 percent cocoa powder.

Cocoa powders vary in flavor from fruity natural to bitter, and in color from vibrant red to dark brown and black (Olam Cocoa, 2021).

## Cocoa Derivatives

Defined as any product made from cocoa beans; can be cocoa nibs, paste, butter, powder, and chocolate.

## Chocolate

The product obtained from cocoa products and sugars which contain not less than 35 percent total dry cocoa solids, including not less than 18 percent cocoa butter and not less than 14 percent of dry non-fat cocoa solids (European Commission, 2000).

Milk chocolate: obtained from cocoa products, sugars and milk or milk products containing:

- not less than 25 percent total dry cocoa solids
- not less than 14 percent dry milk solids obtained by partly or wholly dehydrating whole milk, semi- or full-skimmed milk, cream, or from partly or wholly dehydrated cream, butter or milk fat
- not less than 2.5 percent dry non-fat cocoa solids
- not less than 3.5 percent milk fat
- not less than 25 percent total fat (cocoa butter and milk fat)

White chocolate: product obtained from cocoa butter, milk or milk products and sugars which contains not less than 20 percent cocoa butter and not less than 14 percent dry milk solids obtained by partly or wholly dehydrating whole milk, semi- or full-skimmed milk, cream, or from partly or wholly dehydrated cream, butter or milk fat, of which not less than 3,5 percent is milk fat.

## Couverture

Cocoa liquor and butter are combined with other ingredients such as sugar, vanilla or powdered milk into a chocolate dough, which is then finely refined and put through a conching machine to produce couverture. Couverture is the material from which finished chocolate products are made (confectionery, biscuits, ice cream, cakes etc.). (Bertschy et al., 2013).

## Confectionery Products

Food industry category which includes chocolate and chocolate products, biscuits and other baked goods, cakes and pastries, sweets and candies (European Union, 2020).

## Specialty Chocolate

Chocolate produced by small chocolate makers who usually purchase the beans directly or via an importer. Artisan chocolate must be made under the care and supervision of a knowledgeable chocolate maker who could be defined as an artisan (Fine Chocolate Industry Association, 2010).

The FCIA has a definition for artisanal/craft chocolate as the product obtained from cocoa beans, cocoa butter, milk or milk products and sugars which contains not less than 20 percent cocoa butter and not less than 14 percent dry milk solids obtained by partly or wholly dehydrating whole milk, semi- or full-skimmed milk, cream, or from partly or wholly dehydrated cream, butter or milk fat, of which not less than 3,5 percent is milk fat (Fine Chocolate Industry Association, 2010).

## Cocoa Juice

Cocoa fruit pulp (*Theobroma Cacao L.*), including the juice made from the cocoa fruit pulp. (European Commission, 2019). The supply statistics are based on trade data derived from the International Trade Centre (ITC, 2021) Trademap, using the following HS codes to export data for each cocoa derivative and finished product:

**Table 2. HS Code for cocoa and cocoa derivatives**

| HS CODE*      | DESCRIPTION  |
|---------------|--|
| 180100        | Cocoa beans, whole or broken, raw or roasted                                     |
| 180200        | Cocoa shells, husks, skins and other cocoa waste                                 |
| 180300        | Cocoa paste, whether or not defatted   |
| 180400        | Cocoa butter, fat and oil  |
| 180500        | Cocoa powder, not containing added sugar or other sweetening matter              |
| 180620**      | Chocolate and other food preparations containing cocoa, weighing more than 2 kg  |
| 18069070      | Preparations containing cocoa, for making beverages                              |
| 1806907090*** | Other preparations in blocks, slabs or bars weighing more than 2 kg or in liquid |

\*Cocoa nibs do not have a specific HS code. The product falls under 1801: Cocoa beans, whole or broken, raw or roasted.

\*\*HS code 180620 will be used to classify couverture (industrial chocolate).

\*\*\* HS Code 1806907090 is used to classify cocoa juice.

## Global Market Trends

### Global Supply: Production of Cocoa Beans

As shown in Figure 2, global cocoa production increased over the years from over 1,186 thousand metric tons in 1961 to 5,596 thousand metric tons in 2019, which is more than a quadruple growth, with an average growth rate of 2.66 percent per year. Besides a dip in production in the years 1983, 1991, 2007, 2009, 2013 and 2016, the production of cocoa beans increased by 33 percent in the last ten years from 4,211 thousand metric tons in 2009 to 5,596 thousand metric tons in 2019 (FAOSTAT, 2021a).<sup>1</sup>

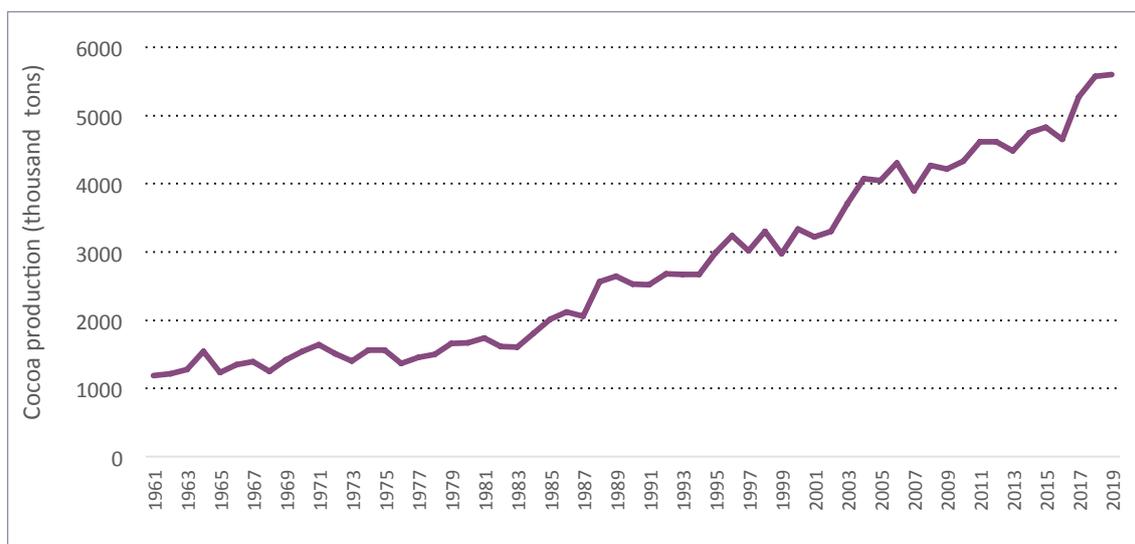


Figure 2. World cocoa production trends from 1961 to 2019 (in thousand metric tons). Source: Own elaboration based on data from FAOSTAT, 2021.

### Regional Production of Cocoa Beans

Historically, Africa has been the main producing region of cocoa beans, and this is expected to continue for the foreseeable future. The second region in importance is the Americas, followed by Asia and Oceania.

As shown in Figure 3, African cocoa production grew at an average annual rate of 2.6 percent for the period 1961–2019, increasing from 835 thousand metric tons in 1961 to 3,753 thousand metric tons in 2019. The Americas region reported an average annual growth rate of 1.9 percent for the period 1961–2019. However, Americas’ annual growth rate for the last ten years (2009–2019) is 5.1 percent and 6.1 percent for the last five years (2014–2019). The Asian region increased its cocoa production at an average annual rate of 8.1 percent for the period 1961–2019. However, this region reported a deceleration in its growth rate in the last ten years by 0.03 percent and increased their production at an average rate of 1.7 percent. Cocoa production in the region of Oceania increased from 14 thousand metric tons in 1961 to 819 thousand metric tons in 2009. However, Oceania’s cocoa production decreased over the last ten years at an annual rate of 2.3

<sup>1</sup> For all production numbers, the data from FAOSTAT has been used. In some cases, the world production data reported by ICCO is mentioned. It was noticed that FAOSTAT estimates global cocoa production at 5,596,3978 metric tons in 2019, while ICCO 5,024,000 metric tons for the same year.

percent and kept the same over the last five years (2014–2019) (FAOSTAT, 2021a).

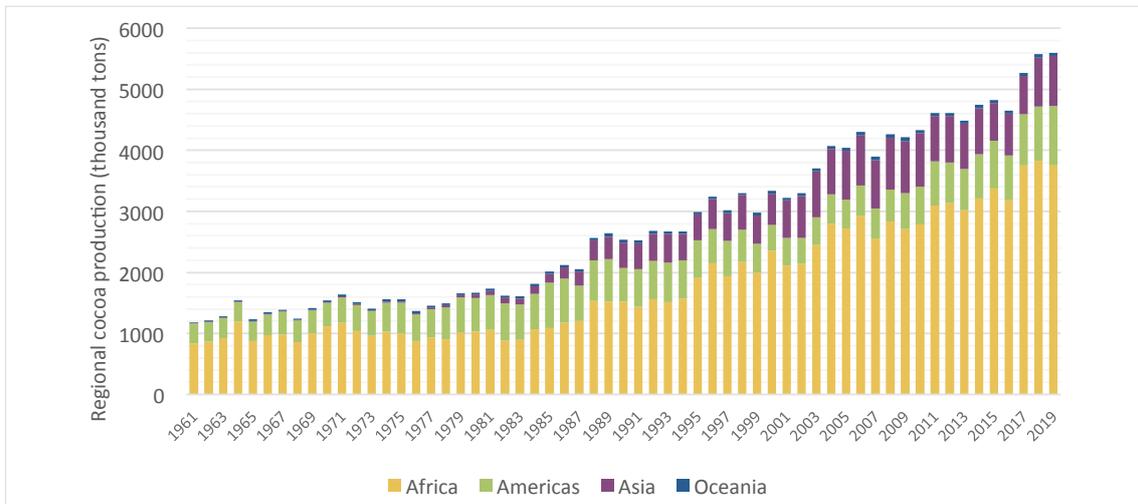


Figure 3. Regional cocoa production trends from 1961 to 2019 (in thousand metric tons). Source: Own elaboration based on data from FAOSTAT, 2021.

For the 2020/21 crop year, it is forecasted that Africa will produce approximately 3,957 thousand metric tons of cocoa beans (67% of the world production). The forecast for the countries in the Americas region will produce 885 thousand metric tons of cocoa beans (17% of the world production); and Asia and Oceania are forecasted to produce 281 thousand metric tons of cocoa beans (16% of the world production) (See Figure 4) (ICCO, 2021d).

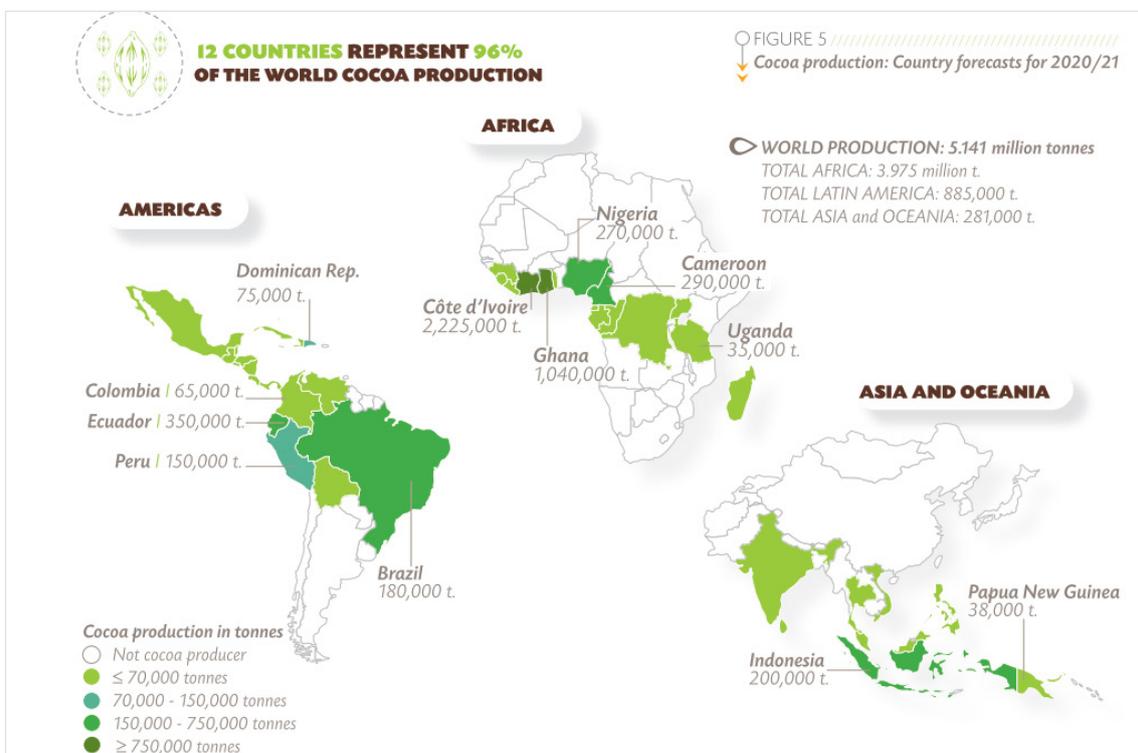


Figure 4. Cocoa production by country for the period 2020/2021 (forecast in million and thousand metric tons). Source: ICCO, 2021d.

## Cocoa Bean Supply for Main Producing Countries

Figure 5 shows production levels of the ten most important producing countries from 1961 to 2019. Côte d'Ivoire has set the pace in terms of production growth for the past decades, going from production levels of around 87 thousand metric tons in 1961 to reaching the milestone of more than 2,180 thousand metric tons in 2019 (FAOSTAT, 2021a). Other countries that have seen a major increase in their cocoa production levels over the last decades are Cameroon, Ghana, Ecuador, Indonesia, Malaysia, and Peru.

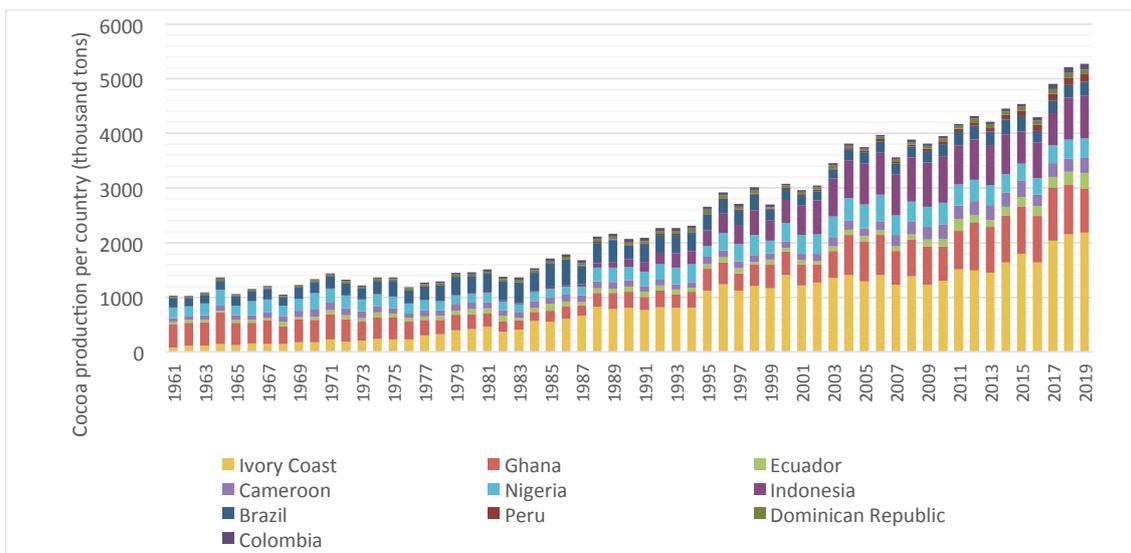


Figure 5. Evolution of cocoa production of the main producing countries from 1961 to 2019. Source: Own elaboration based on FAOSTAT, 2021.

For the year 2019, the largest cocoa producing countries were Côte d'Ivoire, Ghana, Indonesia, Nigeria, Ecuador, Cameroon, Brazil, Peru, Colombia and Dominican Republic (FAOSTAT, 2021a). To assess the recent evolution of the cocoa production in these countries, an analysis of the production figures is presented in this section for the period 2016–2019 (See Table 3).

- After a continuous increase of production in Côte d'Ivoire in the period 2016–2019 (by 33%), the country produced around 2,180 thousand metric tons of cocoa in 2019 (See Table 3), while Ghana produced around 800 thousand metric tons in 2019. Together, they produced more than 50 percent of the global cocoa production in 2019 (FAOSTAT, 2021a).
- Indonesia increased their cocoa production by 19 percent for the reviewed period. Indonesia produced 656 thousand metric tons in 2016 and 783 thousand metric tons in 2019.
- Cocoa production in Nigeria increased by 17 percent for the period 2016–2019.
- Ecuador increased its cocoa production significantly in this period. Cocoa production increased from 177 thousand metric tons (2016) to 283 thousand metric tons (2019), a 60 percent increase for 2016–2019. Production growth could be related to cocoa plantations

of CCN-51, a high yielding, and more disease-prone cocoa variety, which can be grown on small areas of land and needs less water. The CCN variety is planted widely throughout the country and mixed with other varieties. Seventy percent of Ecuador’s production is considered fine flavor cocoa by the International Cocoa Organization (ICCO). However, according to several interviewees, this percentage might be unrealistic. As the Ecuadorian Government supports the growth of cocoa production and large-scale cocoa farms are in the market, the consistency in flavor is quite standard.

- Cocoa production in Cameroon rose significantly in the period 2016–2019, from 211 thousand metric tons (2016) to 280 thousand metric tons (2019).
- Cocoa production in Brazil and Peru increased by 21 percent and by 26 percent respectively for this period.
- Colombia increased its cocoa production by 80 percent for this period.
- The Dominican Republic increased its cocoa production by 9 percent during this period.

**Table 3. Cocoa production in the ten largest producing countries from 2016 to 2019 (in metric tons)**

|                    | 2016      | 2017      | 2018       | 2019      | Increase/decrease in % between 2016 – 2019 |
|--------------------|-----------|-----------|------------|-----------|--|
| Côte d’Ivoire      | 1,634,000 | 2,034,000 | 2,154,400* | 2,180,000 | 33% ↑                                      |
| Ghana              | 858,720   | 969,300   | 904,700*   | 811,700   | -5% ↓                                      |
| Indonesia          | 656,817   | 590,684   | 767,280    | 783,978   | 19% ↑                                      |
| Nigeria            | 298,029   | 325,000   | 340,000**  | 350,146   | 17% ↑                                      |
| Ecuador            | 177,551   | 205,955   | 235,182    | 283,680   | 60% ↑                                      |
| Cameroon           | 211,000   | 246,200   | 249,900*   | 280,000   | 33% ↑                                      |
| Brazil             | 213,871   | 235,809   | 239,318    | 259,425   | 21% ↑                                      |
| Peru               | 107,922   | 121,814   | 134,676    | 135,928   | 26% ↑                                      |
| Colombia           | 56,785    | 89,282    | 97,978     | 102,154   | 80% ↑                                      |
| Dominican Republic | 81,246    | 86,599    | 85,139     | 88,961    | 9% ↑                                       |

Source: Cocoa production based on official data of FAOSTAT. Percentages in the last column are rounded off

\* Unofficial figure

\*\* FAO estimate

## Global Demand and Supply Curves

Traditionally, cocoa bean grindings are used to approximate cocoa bean demand. The estimates for both world production and grindings for the period 2008–2019 are presented in

Table 4. Global production increased from 3,592 in 2008 to 5,141 thousand metric tons in 2020. Surpluses have occurred between 2016 and 2020. All surplus/deficit balances are shown in Figure 6.

**Table 4. World cocoa bean production (thousand metric tons) and grindings (thousand metric tons) for the period 2008–2020**

|       | Production | Grindings | Surplus/Deficit |
|-------|------------|-----------|-----------------|
| 2008  | 3,592      | 3,537     | 55              |
| 2009  | 3,634      | 3,737     | -103            |
| 2010  | 4,309      | 3,938     | 371             |
| 2011  | 4,095      | 3,972     | 123             |
| 2012  | 3,943      | 4,180     | -237            |
| 2013  | 4,370      | 4,335     | 35              |
| 2014  | 4,252      | 4,152     | 100             |
| 2015  | 3,994      | 4,127     | -133            |
| 2016  | 4,768      | 4,397     | 371             |
| 2017  | 4,647      | 4,596     | 51              |
| 2018  | 4,787      | 4,784     | 3               |
| 2019  | 4,760      | 4,703     | 57              |
| 2020* | 5,141      | 4,860     | 230             |

Source: Own elaboration based on ICCO (2021)  
\*Forecast for the crop period 2020/2021 by ICCO

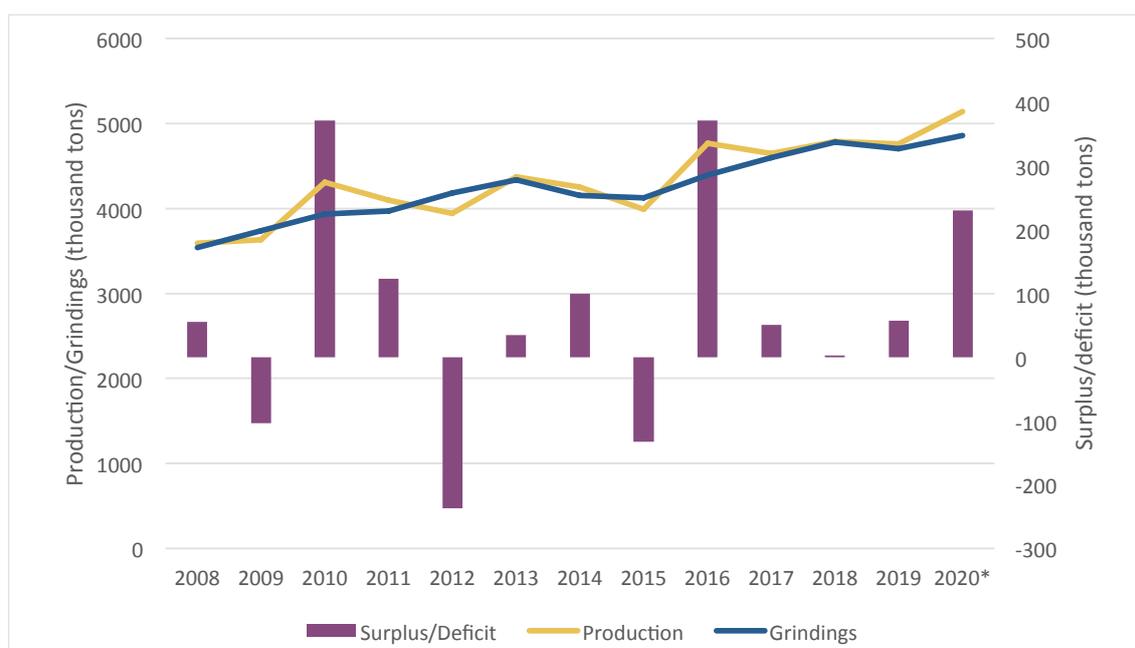


Figure 6. World cocoa bean production, grindings and supply/demand balance (in thousand metric tons). Source: Own elaboration based on ICCO 2021.

## Regional Demand and Supply Curves

Europe is the largest grinding region followed by Asia and Oceania, Africa and Americas. Grinding capacity in Africa, Asia and Oceania has increased more than in the Americas. Africa increased its grindings from 463 thousand metric tons in 2003 to around 1001 thousand metric tons in 2020. Asia and Oceania increased its grinding from 575 thousand metric tons in 2003 to 1164 thousand metric tons in 2020 (See Table 5). Cocoa production has increased more in Africa and the Americas, while production in Asia and Oceania decreased. Africa increased its production from 2445 thousand metric tons in 2003 to 3975 thousand metric tons in 2020. The Americas also increased cocoa production from 462 thousand metric tons in 2003 to 885 thousand metric tons in 2020.

**Table 5. Regional cocoa bean production, grindings (thousand metric tons) for 2003–2020**

| Year  | GRINDINGS (thousand metric tons) |        |          |                  | PRODUCTION (thousand metric tons) |          |                  |
|-------|----------------------------------|--------|----------|------------------|-----------------------------------|----------|------------------|
|       | Europe                           | Africa | Americas | Asia and Oceania | Africa                            | Americas | Asia and Oceania |
| 2003  | 1,348                            | 463    | 853      | 575              | 2,445                             | 462      | 558              |
| 2004  | 1,387                            | 500    | 849      | 627              | 2,796                             | 486      | 657              |
| 2005  | 1,467                            | 485    | 878      | 678              | 2,720                             | 475      | 738              |
| 2006  | 1,526                            | 545    | 844      | 743              | 2,926                             | 497      | 806              |
| 2007  | 1,555                            | 553    | 853      | 763              | 2,560                             | 491      | 798              |
| 2008  | 1,435                            | 641    | 765      | 653              | 2,837                             | 522      | 853              |
| 2009  | 1,523                            | 685    | 815      | 708              | 2,709                             | 589      | 886              |
| 2010  | 1,595                            | 618    | 839      | 770              | 2,784                             | 618      | 840              |
| 2011  | 1,554                            | 657    | 865      | 897              | 3,099                             | 722      | 906              |
| 2012  | 1,590                            | 799    | 907      | 885              | 3,131                             | 672      | 893              |
| 2013  | 1,602                            | 860    | 949      | 924              | 3,017                             | 676      | 929              |
| 2014  | 1,551                            | 876    | 878      | 849              | 3,216                             | 723      | 791              |
| 2015  | 1,595                            | 767    | 889      | 876              | 3,376                             | 780      | 817              |
| 2016  | 1,628                            | 901    | 880      | 988              | 3,180                             | 735      | 796              |
| 2017  | 1,710                            | 963    | 872      | 1,050            | 3,756                             | 840      | 806              |
| 2018  | 1,718                            | 1,017  | 903      | 1,146            | 3,828                             | 894      | 672              |
| 2019  | 1,706                            | 996    | 893      | 1,108            | 3,753                             | 972      | 736              |
| 2020* | 1,734                            | 1,001  | 961      | 1,164            | 3,975                             | 885      | 281              |

Source: Own elaboration based on data from ICCO and FAO  
\*ICCO forecast for the crop year 2020/2021 (ICCO, 2021)

Supply and demand curves are shown in Figure 7.

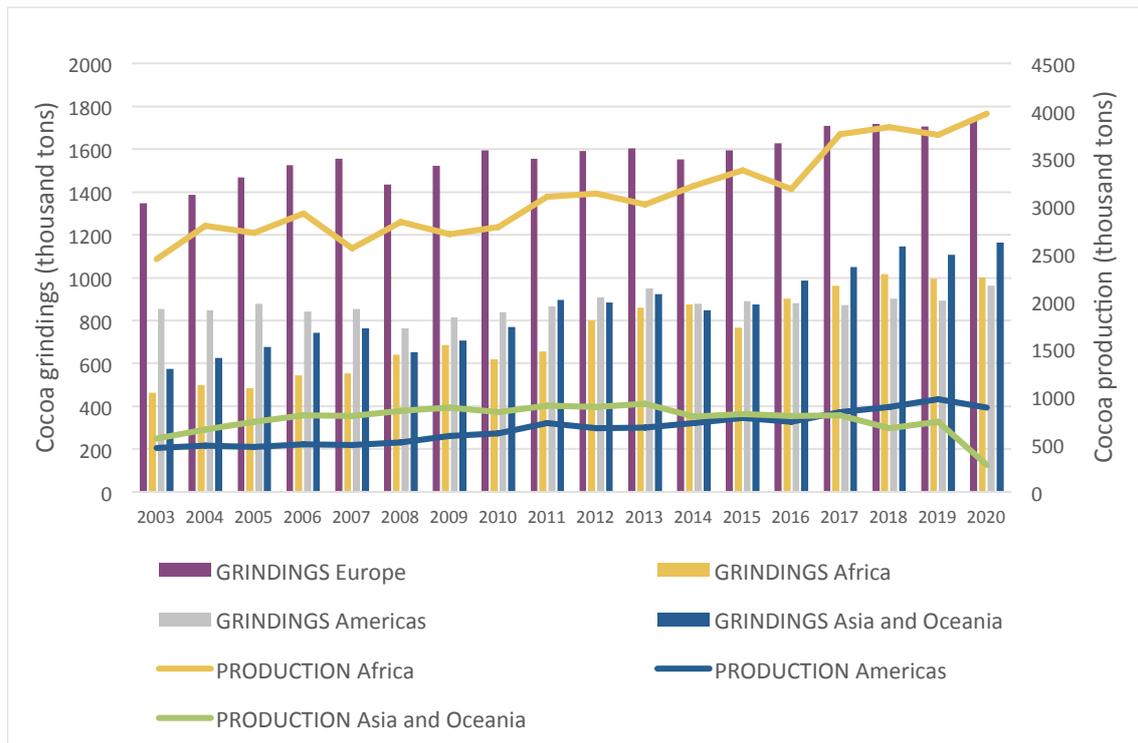


Figure 7: World cocoa bean production, grindings and supply/demand balance (in thousand metric tons). Source: Own elaboration based on ICCO 2021.

### What Impacts Cocoa Production?

Cocoa production changes from year to year and is not easy to predict. There are many factors involved but two are most prominent: the weather and politics (Oomes et al., 2016a). In the case of weather, the amount of rainfall will affect production more than any other climatic factors. Cocoa trees respond well to regular rainfall throughout the year, dry conditions may lead to reduced flowers on the plants resulting in lower bean production. Certain political factors will impact production, for example the decrease in cocoa production in Ghana in 1965/1966 due to a military issue (Oomes et al., 2016a). In another example, during 2016 when global cocoa prices collapsed, the government of Côte d'Ivoire banned several interventions including free distribution of seedlings, which diminished their production levels (A. Fountain & Huetz-Adams, 2020).

### Global Demand in Chocolate Confectionery

Chocolate confectionery is the most common form of cocoa consumption (Euromonitor Consulting, 2020). The main companies engaged in the production of chocolate confectionery such as Nestle, Hershey's, Ferrero Group, Mondelēz and Mars Inc. source cocoa and cocoa products (cocoa butter, cocoa powder, and cocoa liquor) and use it as raw material for chocolate confectionery (Lindell, 2020).

Chocolate confectionery includes boxed assortments, molded chocolate bars and "countlines" (Euromonitor Consulting, 2020). Boxed assortments consist of a selection of high-added-value individual units, covered in chocolate intended as gifts. Main global

brands of boxed assortments include Mon Chéri (Ferrero group), Ferrero Rocher (Ferrero group), Lindt (Chocoladefabriken Lindt & Sprungli AG) and Godiva (Yildiz Holding AS). Molded chocolate bars may or may not include nuts or fruit, or other fillings such as soft caramels, fondants, etc. Main global brands of molded chocolate bars include Milka (Mondelēz International Inc), Toblerone (Mondelēz International Inc), Cadbury's Dairy Milk (Mondelēz International Inc), Ritter Sport (Ritter GmbH & Co KG Alfred), Hershey's Milk Chocolate (Hershey Co, The), Côte d'Or (Mondelēz International Inc), Lindt Excellence (Chocoladefabriken Lindt & Sprungli AG). "Countlines" consist of a single individual center, covered in chocolate, usually in a form allowing it to be consumed with one hand. Centers can be combinations of wafer biscuit, caramel, nougatine, etc. Main brands of countlines are Snickers (Mars Inc), Reese's (Hershey Co, The), Mars (Mars Inc), KitKat (Nestlé SA), Milky Way (Mars Inc), Cadbury's Flake (Mondelēz International Inc), Cadbury's Wispa (Mondelēz International) (Euromonitor Consulting, 2020).

In 2017, 43 percent of global cocoa consumption came from the chocolate confectionery industry. The size of the chocolate confectionery industry has been growing over the last decade from USD 150.8 billion (2012) to USD 208.15 billion (2020) and is forecasted to reach USD 223.6 billion by 2025 (Statista, 2021). The volume of the chocolate confectionery industry reached 1.55 million metric tons in 2019 (Euromonitor Consulting, 2020).

The main consuming countries of chocolate confectionery are the United States, the UK, Germany, Russia and France. It is forecasted that the United States will grow its consumption of confectionery products at an annual rate of 3.5 percent for the period 2019–2024. The UK is forecasted to grow consumption of confectionery products at an annual rate of 2.9 percent, while Germany may grow at an annual rate of 2 percent. Russia is forecasted to grow at an annual rate of 0.5 percent while France is forecasted to grow at an annual rate of 1.8 percent (Euromonitor Consulting, 2020).

## **Global Demand in Beverages**

Global growth in the beverage industry, which uses cocoa powder and sugar, is likely to face challenges due to the high sugar content. The main consuming countries of beverages containing cocoa powder are Brazil, Indonesia, the United States, Mexico and Spain. It is forecasted that the annual growth rate for 2019–2024 will be higher in Indonesia (around 4%), followed by Mexico (around 2%), Spain (around 1%) and Brazil (1.2%). In the United States, it is expected that the beverage industry will decrease at an annual rate of 1 percent between 2019–2024 (Euromonitor Consulting, 2020).

## **Global Demand in Cosmetics**

The global cosmetics market has been increasing since the early 20<sup>th</sup> century. Average annual growth rates between 2004 and 2009 were 3.5 percent and in 2009 it was 5.5 percent. During 2020 there was a decrease of 8 percent.

In recent years 'Generation Y' has entered the job market becoming a driving force in the cosmetics market, especially in the United States. Globally, the United States has the biggest cosmetic market in the world with estimated total revenue of USD 89.5 billion; with skin care products making up 42 percent of the U.S. cosmetic market.

The European cosmetics market is increasing and presents a good opportunity for exporters of natural ingredients from developing countries. The market size of the European cosmetics sector in 2015 was EUR 75 billion and reached EUR 80 billion in 2019. The main European markets in 2019 were: Germany (EUR 19 billion), France (EUR 11.4 billion), the UK (EUR 10.7 billion), Italy (EUR 10.5 billion), Spain (EUR 7.1 billion) and Poland (EUR 4.1 billion). In 2019, the leading category products in the European cosmetics market were: skin care (21.63%), toiletries (19.82%), hair care (14.91%), fragrances and perfumes (12.29%) and decorative cosmetics (11.18%). The main drivers of this demand were the growing consumer awareness of natural cosmetics and the desire of cosmetics companies to replace synthetic ingredients with natural variants. Thanks to its large consumer population, Europe's cosmetics market is expected to continue to grow in the future and maintain its leading position in the coming years. However, the cosmetics markets in Asia and Latin America are also showing significant growth. Increasing disposable income in developing countries, such as India, China, Brazil and countries in Southeast Asia, has been driving growth in these markets (CBI, 2020i).

## **Global Demand for Cocoa Beans and Cocoa Derivatives**

Cocoa derivative products (cocoa paste/liquor, cocoa butter, cocoa powder) are mainly used in the food, beverages, and confectionery industries. They are not usually sold directly in the consumer market. The cocoa-derived product needed and used by a manufacturer will vary according to the capacities and scale of the manufacturer as well as the final use of the product. The beverage industry generally demands cocoa powder, while the baking industry demands both cocoa paste and cocoa powder. The chocolate industry uses cocoa liquor, cocoa butter and couverture. The cosmetic industry mainly demands cocoa butter, though many manufacturers increasingly replace cocoa butter with cheaper vegetable oils and fats (CBI, 2021c).

The global demand for cocoa derivative products was valued at USD 24 billion (2019) and is forecasted to grow at an annual rate of 0.5 percent to 1.5 percent in the future (Euromonitor Consulting, 2020). The consumption of cocoa derivatives in 2019 was around 3.5 million metric tons. It is forecasted that this consumption will rise in future years when the world overcomes COVID-19. By 2025, cocoa liquor is expected to reach a demand of over 1,200 thousand metric tons; while cocoa powder is expected to reach above 1,100 thousand metric tons and cocoa paste is expected to reach a demand of above 1,200 thousand metric tons (Euromonitor Consulting, 2020).

Given the limited availability of data, global import statistics will be used as a proxy for global demand of cocoa beans and cocoa derivatives.

## **Global Demand for Cocoa Beans**

Global imports of cocoa beans (HS 1801) amounted to nearly 3.5 million metric tons with a value of USD 9.6 billion in 2020 (ITC, 2021). Between 2001 and 2020 the import volume increased by an average of 2.4 percent per year. During this period, the highest growth rate was 21.8 percent in 2004. However, despite the promising CAGR rates and a nominal growth in the imports value, real value is almost the same in 2020 as 12 years ago (See Figure 8).

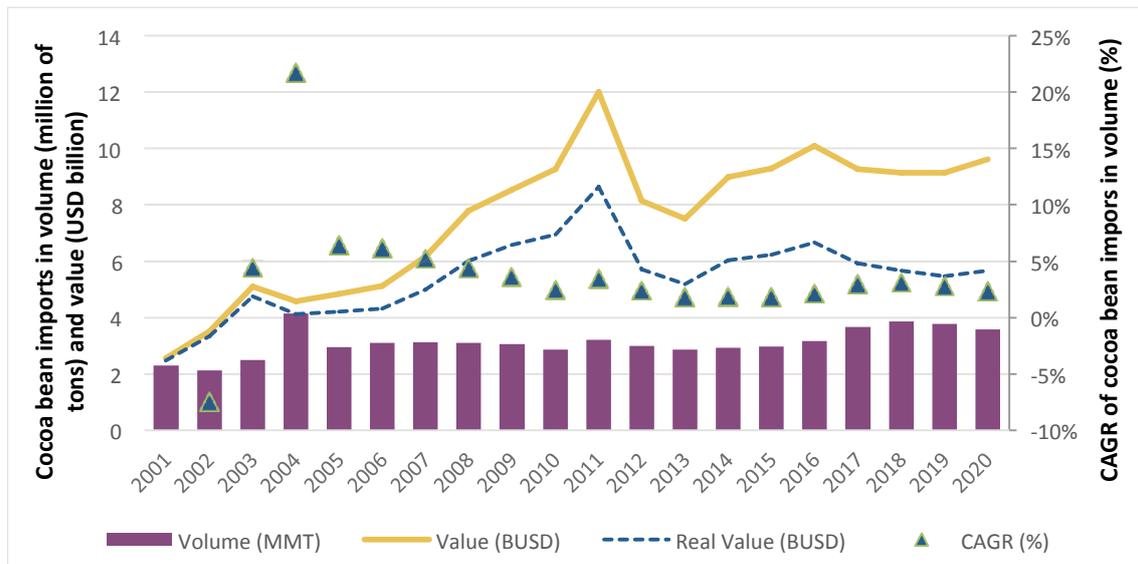


Figure 8. Global imported volume (million metric tons), value (USD billion), real value (USD billion) and CAGR (%) of imported volume (2001-2020) of cocoa beans. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Global Demand for Cocoa Paste

Cocoa liquor, the raw material used to press cocoa butter and powder, is mainly meant for the confectionery industry and food and beverage sector but is gradually finding its way into other industries such as bakery, food and beverages, cosmetics, and pharmaceuticals as a flavoring and coloring agent. The imports of cocoa paste worldwide have shown a sustained growth both in value (expressed in USD billion) and volume (expressed in million metric tons) as can be seen in Figure 9. Global imports of cocoa paste reached USD 3.59 billion in 2020 (ITC, 2021). Real value of the imports in 2020 reached USD 2.53 billion. The CAGR of the imported volumes of cocoa paste over the period 2001–2018 was 5.6 percent.

It is important to highlight that official sources did not register volumes for the imports of cocoa paste for years 2019 and 2020.

It is expected that global demand for cocoa paste will find barriers for growth over the next few years. Consumers around the world will make health a top priority diminishing the demand for favorite desserts. It is forecasted that global demand for cocoa paste will increase annually at a rate of 1 percent for the period 2021–2025. Only products recognized by consumers as nutritious and healthy will see an annual increase of 2 percent, but these products constitute only a small part of the market (Euromonitor Consulting, 2020).



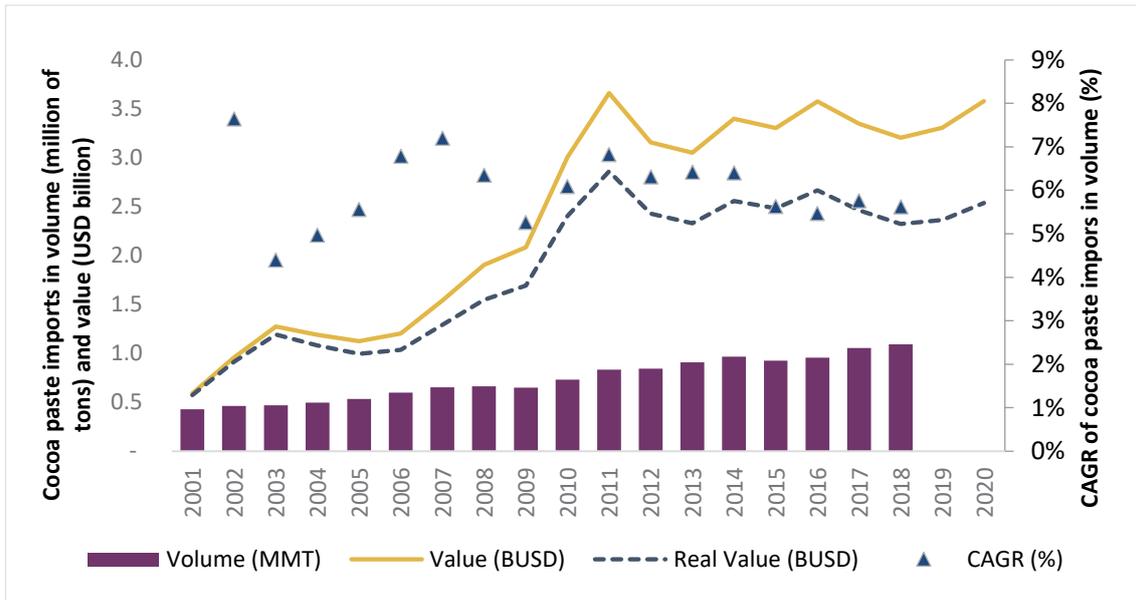
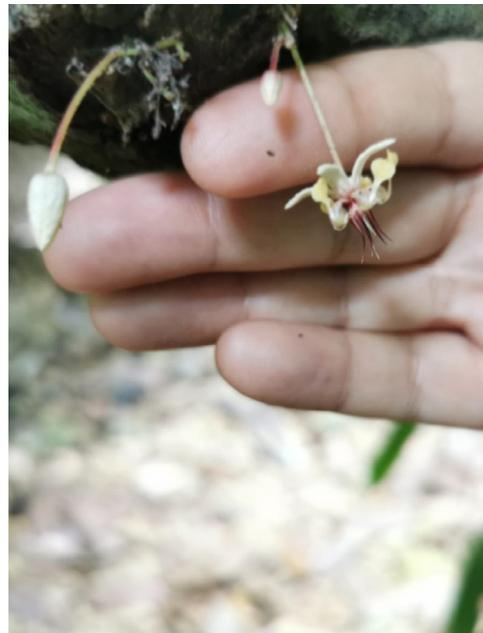


Figure 9. Global imported volume (million metric tons), value (USD billion), real value (USD billion) and CAGR (%) of imported volume (2001-2020) of cocoa paste. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Global Demand for Cocoa Butter

The global imports of cocoa butter increased in terms of value from USD 1.1 billion (2001) to USD 5.61 billion (2020). Volume imports increased from 0.53 million metric tons (2001) to 0.96 million metric tons (2020) (ITC, 2021). Cocoa butter imports in volume increased at an annual rate of 3.2 percent over the period 2001–2020. Both 2014 and 2020 had similar levels of cocoa butter import production, however, the real value of cocoa butter imports in 2020 was lower than 2014 by USD 0.69 billion. It is important to note that even with the pandemic at its peak, in 2020, the imports of this derivative did not show a significant drop. (No quantity is registered for 2013) (Figure 10).



In the following years, premium segments positioned as healthy and nutritious will encourage the growth of cocoa butter in chocolate confectionery, cookies and cream-based liquors. Chocolate confectionery represents around 75 percent of the total demand of cocoa butter. Sweet cookies, ice cream, cakes, desserts, liquors and others made up the other 25 percent. The consumption of cocoa butter by the chocolate confectionery industry reached 840 thousand metric tons in 2019, while sweet cookies used 144 thousand metric tons and ice creams 139 thousand metric tons. Cakes and desserts reached 47 and 21 thousand metric tons in the same year (Euromonitor Consulting, 2020).

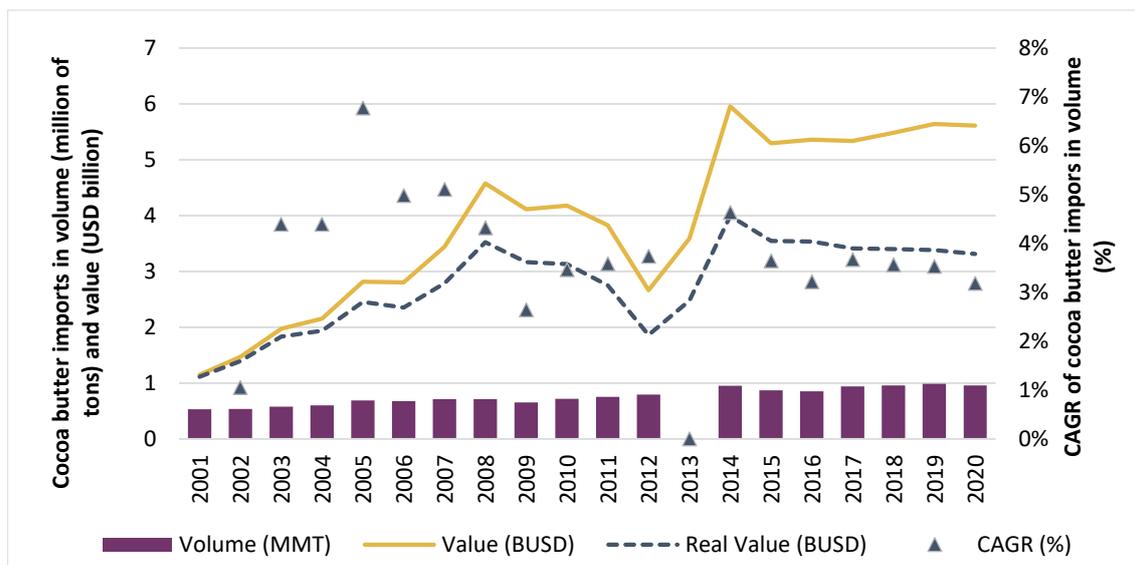


Figure 10. Global imported volume (million metric tons), value (USD billion) of cocoa beans, real value (USD billion) and CAGR (%) (2001-2020) of cocoa butter. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Global Demand for Cocoa Powder

The global imports of cocoa powder in volume have shown sustained growth over the period 2001–2020, however, its value has fluctuated considerably in the last 20 years as can be seen in Figure 11. The global imports of cocoa powder increased in terms of value from USD 0.53 billion (2001) to USD 2.47 billion (2020). Volume imports increased from 0.43 million metric tons (2001) to 1.02 million metric tons (2019) (ITC, 2021). Cocoa powder imports in volume increased at an annual rate of 4.9 percent over the period 2001–2019. Both 2018 and 2019 had similar levels of import production of cocoa butter, however, both the nominal and real value of cocoa powder imports in 2019 were lower than in 2018 by USD 0.05 billion.

The global demand for cocoa powder is expected to increase during the period 2020–2027 at an annual rate of 2.3 percent reaching USD 3.06 billion in 2027. This growth might be due to an increasing demand in the use of cocoa powder in functional food and beverages. The pharmaceutical industry is also increasing its demand for cocoa powder as it comprises several minerals valuable for the body, including magnesium, copper, calcium, zinc, sodium, potassium, and phosphorus, and other vitamins (Reports and Data, 2020).



Photo: Ahmed Jallanzo, courtesy of CBI

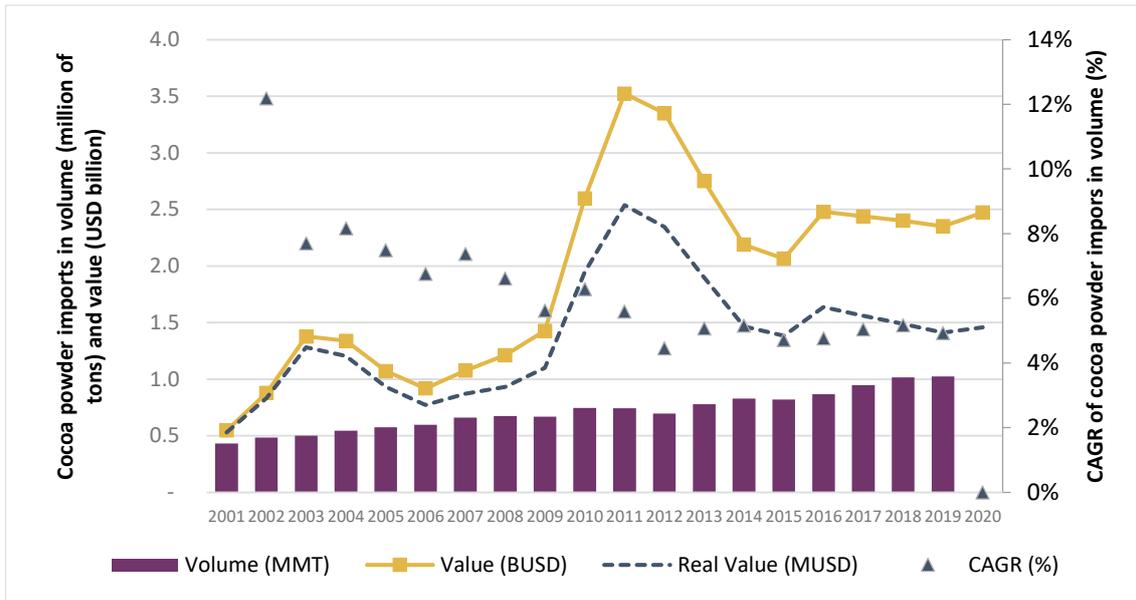


Figure 11. Global imported volume (million metric tons), value (USD billion), real value (USD billion) and CAGR (%) (2001–2020) of cocoa powder. Source: Own elaboration based on information from Trademap (ITC, 2021)



## Global Demand for Chocolate

The global volume imports of chocolate<sup>2</sup> have shown sustained growth over the period 2001–2016 and the global import value of chocolate increased from USD 0.53 billion (2001) to USD 2.47 billion (2020). Volume imports increased from 2.69 million metric tons (2001) to 5.67 million metric tons (2016) (ITC, 2021). Global chocolate volume imports increased at an annual rate of 5.1 percent over the period 2001–2016 (Figure 12).

It is important to note that there is no volume registered in some years (2011, 2013–2014, 2017–2020), but the imported value provides information on the trend in those years. It is expected that over the medium term, the global chocolate market will become highly competitive. The increasing demand and popularity of dark and organic chocolates are driving the chocolate market’s growth (Mordor Intelligence, 2020b).

<sup>2</sup> The analysis of this product relates to HS code 1806 refer to “chocolate and other food preparations that contain cocoa”

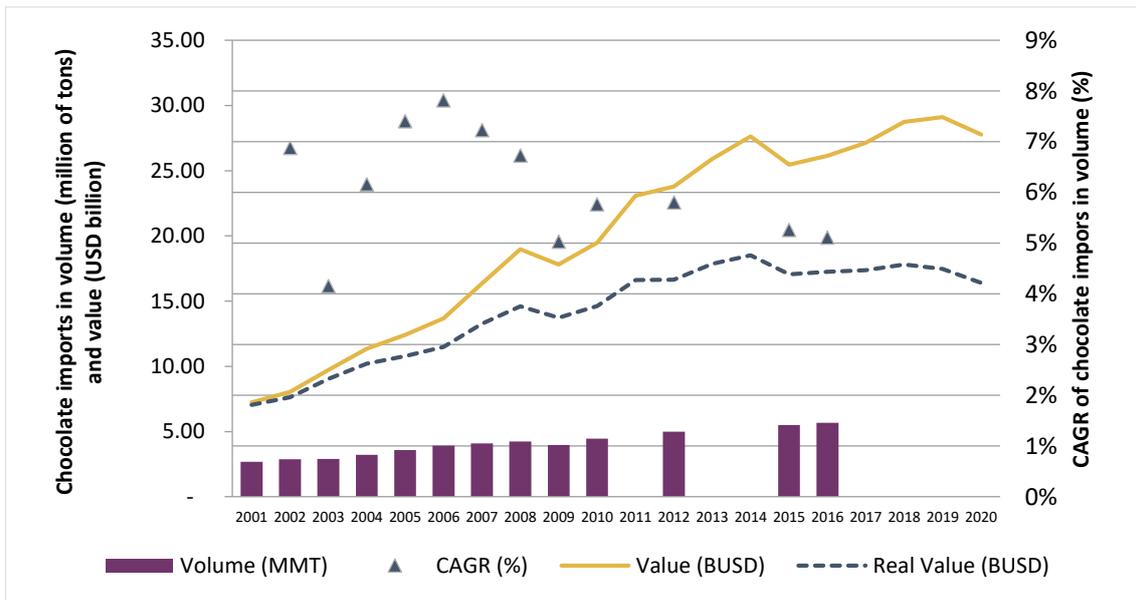


Figure 12. Global imported volume (million metric tons), value (USD billion), real value (USD billion) and CAGR (%) of imported volumes of chocolate (2001-2020). Source: Own elaboration based on information from Trademap (ITC, 2021)

## Regional Demand for Cocoa Beans and Cocoa Derivatives

### Regional Demand for Cocoa Beans

Regional demand for cocoa beans has increased in the last 17 years (Figure 13). Cocoa bean grindings are used as an approximate for market demand (CBI, 2020e). The areas where cocoa beans are grinded are: Europe, Africa, America and Asia Pacific. European grindings increased at a rate of 1.49 percent per year over the period 2003–2020. African grindings increased much faster than Europe, at a rate of 4.64 percent over the same period. The Americas region increased its grindings at a slower pace than Europe and Africa had a growth rate for the period 2003–2020 of 0.71 percent. Like Africa, grindings in Asia Pacific increased at a rate of 4.24 percent yearly. An increase in cocoa grindings is expected in all regions for 2020/2021. The Americas region is expected to take first position, up by almost 7 percent to 961 thousand metric tons, followed by Asia Pacific with an increase of 5 percent to 1,164 thousand metric tons. A little progress is expected in Europe with a growth of 2 percent reaching 1,734 thousand metric tons in this period. Africa is the last region in terms of growth where a growth of 1 percent is expected reaching 1,001 thousand metric tons (ICCO, 2021d).



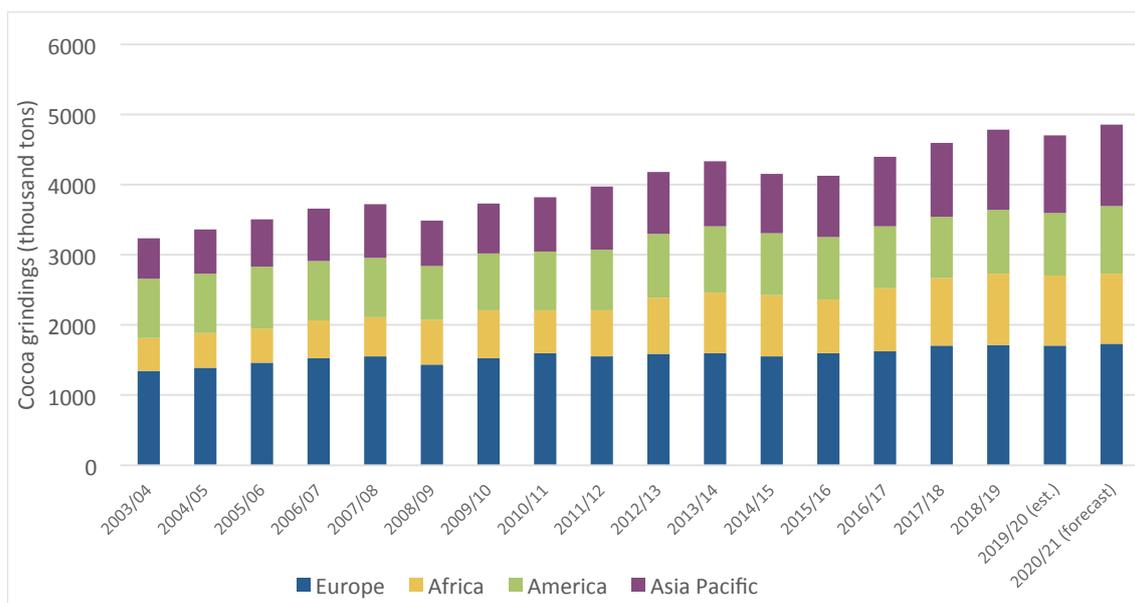


Figure 13. Regional cocoa grindings for 2003/04–2020/21 (thousand metric tons). Source: Own elaboration based on information based on ICCO, 2021

Given the limited information on regional demand for cocoa derivatives, import figures will serve as estimations for market demand. The next sections will provide detailed information about imports by region.

### Regional Demand for Cocoa Paste/Liquor

For the past five years (2015–2020), Europe has been the largest importer of cocoa paste followed by America and Asia. The participation of Africa and Oceania in the global cocoa paste market is still small. In 2020, the European region imported 650 thousand metric tons with a value of USD 2.40 billion (ITC, 2021). The CAGR rate for the value was 1.5 percent and for the volume 0.6 percent over the period 2015–2020 (See Figure 14 and 15). This means that the global import price of cocoa paste increased during this period.

America was the second largest import region of cocoa paste in 2020. America imported 195.1 thousand metric tons with a value of USD 0.63 USD billion (ITC, 2021). The cocoa paste imports increased at a yearly rate of 11 percent in volume and 11.8 percent in value.

Asia imported 134 thousand metric tons of cocoa paste with a value of USD 0.43 billion in 2020 (ITC, 2021). This region decreased its imports during this period. Its volume and value imports decreased at a rate of 2.4 percent and 5.6 percent respectively during 2015–2020 (See Figure 14 and 15).

Oceania imported 18.5 thousand metric tons with a value of USD 0.08 billion in 2020. Africa imported 10.45 thousand metric tons with a value of USD 0.04 billion (ITC, 2021). Oceania and Africa experienced a decrease in their cocoa paste imports during the period 2015–2020. Oceania’s volume and value imports decreased at a rate of 3.5 percent and 3.3 percent respectively. Africa’s volume and value imports decreased at a rate of 0.03 percent and 3.6 percent, respectively (See Figure 14 and 15).

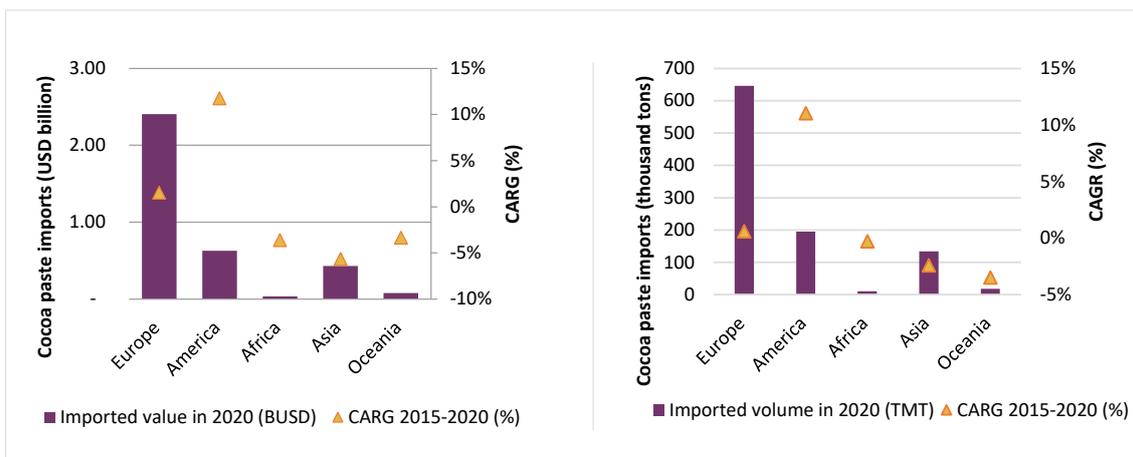


Figure 14. Regional imports of cocoa paste in value (USD billion) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 15. Regional imports of cocoa paste in volume (thousand metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Regional Demand for Cocoa Powder

For the past 5 years (2015-2020), Europe has been the largest importer of cocoa powder followed by Asia and America. The participation of Africa and Oceania in the global cocoa powder import market was small. In 2020, the European region imported 362 thousand tons with a value of USD 1,000 thousand (ITC, 2021). The CAGR yearly rate for the value was 2 percent and for the volume -0.5 percent over the period 2015-2020 (See Figure 16 and 17).

Asia is the second most important cocoa powder importer region. Asia imported 314 thousand tons of cocoa powder with a value of USD 746 thousand in 2020 (ITC, 2021). Asia's volume and value imports increased at a rate of 8.6 percent and 7.2 percent respectively during 2015-2020 (See Figure 16 and 17).

America was the third importer region of cocoa powder in 2020. America imported 213 thousand tons of cocoa powder with a value of USD 535 thousand (ITC, 2021). In this region, the cocoa powder imports increased at a yearly rate of 3.4 percent in volume and 2.4 percent in value over the period 2015-2020.

Oceania imported 20 thousand tons of cocoa powder with a value of USD 51 thousand in 2020; while Africa imported 59 thousand tons with a value of USD 134 thousand (ITC, 2021). Oceania and Africa increased their cocoa powder imports during the period 2015-2020. Oceania's volume and value imports increased at a rate of 1.4 percent and 1.2 percent, respectively. Africa's volume and value imports of this product increased at a rate of 7.3 percent and 7 percent over the covered period (See Figure 16 and 17).

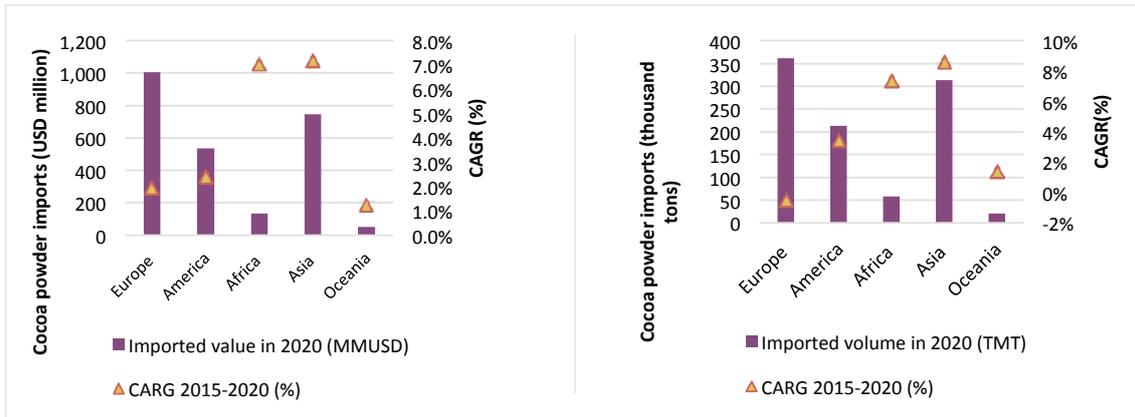


Figure 16. Regional imports of cocoa powder in value (USD million) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 17. Regional imports of cocoa powder in volume (thousand metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Regional Demand for Cocoa Butter

For the past five years (2015-2020), Europe has been the largest importer of cocoa butter, followed by America and Asia. Africa and Oceania’s participation in the global cocoa butter import market is small. In 2020, the European region imported 639 thousand metric tons with a value of USD 4,080 thousand (ITC, 2021). The volume’s CAGR was 3.3 percent and for the value 2.4 percent over the period 2015-2020 (See Figure 18 and 19).

America was the second most important importer of cocoa butter in 2020. America imported 142 thousand metric tons of cocoa butter with a value of USD 834 thousand (ITC, 2021). America’s region increased its cocoa butter imports at a yearly rate of 0.8 percent in volume and decreased at a yearly rate of 1.5 percent in value over the period 2015-2020.

Asia imported 94 thousand metric tons of cocoa butter with a value of USD 523 thousand in 2020 (ITC, 2021). This region decreased its cocoa butter imports for the period 2015-2020. Asia’s volume and value imports of cocoa butter decreased at a rate of 4.1 percent and 2.2 percent respectively during 2015-2020 (See Figure 18 and 19).



Photo: Ahmed Jallanzo, courtesy of CBI

Oceania imported 23 thousand metric tons of cocoa butter with a value of USD 129 thousand in 2020; while Africa imported 8 thousand metric tons with a value of USD 45 thousand (ITC, 2021). Oceania increased their cocoa butter imports during the period 2015-2020. Oceania’s volume imports increased at a yearly rate of 2 percent, however, the value decreased at a yearly rate of 0.8 percent. Africa’s volume and value imports of this product decreased at a rate of 0.4 percent and 2.2 percent over the period 2015-2020 (See Figure 18 and 19).

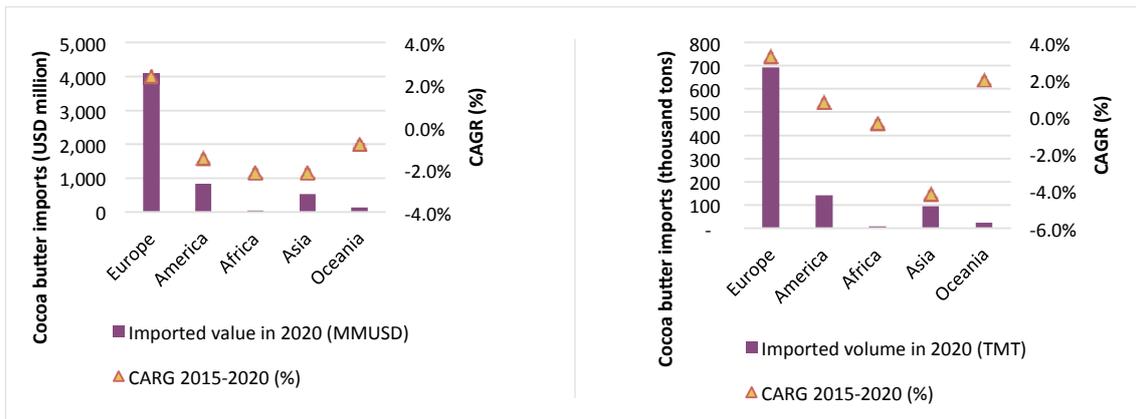


Figure 18. Regional imports of cocoa butter in value (USD million) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 19. Regional imports of cocoa butter in volume (thousand metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Regional Demand for Chocolate<sup>3</sup>

For the past five years (2015–2020), Europe has been the largest importer of chocolate (finished products) followed by America and Asia. The participation of Africa and Oceania in the global chocolate import market is still small. In 2020, the European region imported 3.49 million metric tons with a value of USD 17.2 billion (ITC, 2021). The CAGR yearly rate for the volume was 2.4 percent and for the value was 3.6 percent over the period 2015–2020 (See Figure 20 and 21).



Photo: Ahmed Jallanzo, courtesy of CBI

America was the second most important importer of chocolate in 2020. America imported 1.08 million metric tons of chocolate with a value of USD 4.73 billion (ITC, 2021). The Americas region increased its chocolate imports at a yearly rate of 0.2 percent in volume and 1.1 percent in value over the period 2015–2020.

Asia imported 0.97 million metric tons of cocoa butter with a value of USD 4.67 billion in 2020 (ITC, 2021). The Asian region decreased its chocolate imports for the period 2015–2020. Asia’s volume and value imports of chocolate decreased at a rate of 1.4 percent and 2.3 percent respectively during 2015–2020 (See Figure 20 and 21).

Oceania imported 0.11 million metric tons of chocolate with a value of USD 0.63 billion in 2020; while Africa imported 0.15 million metric tons with a value of USD 0.56 billion (ITC, 2021). Oceania and Africa decreased their chocolate imports during the period 2015–2020. Oceania’s volume and value imports decreased at a yearly rate of 0.02 percent and 1.1 percent, respectively. Africa’s volume and value imports of chocolate increased at a rate of 0.5 percent and 4.2 percent over the period 2015–2020 (See Figure 20 and 21).

<sup>3</sup>The analysis of this product relates to HS code 1806 refer to “chocolate and other food preparations that contain cocoa”

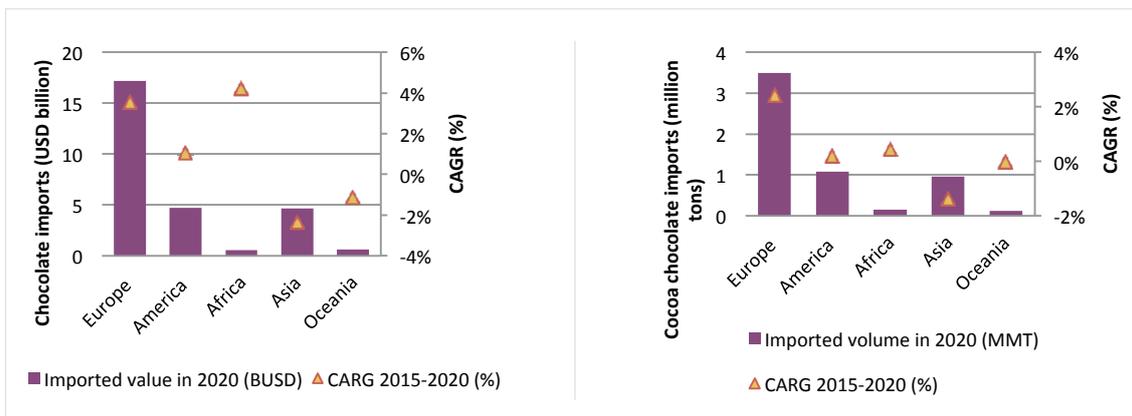


Figure 20. Regional imports of chocolate in value (USD million) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 21. Regional imports of chocolate in volume (Millions of metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

## Demand for Cocoa Beans by Principal Consuming Countries

Traditionally, cocoa bean grindings are used as an approximate for market demand (CBI, 2020e). To estimate the demand for cocoa beans by principal consuming countries, cocoa grindings figures will serve as an approximation of cocoa bean demand.

Main cocoa grinding countries are Côte d'Ivoire, the Netherlands, Indonesia, Germany, the United States, Malaysia, Ghana, Brazil, France, Canada, Turkey, Spain, Singapore, Belgium, Italy, the UK, the Russian Federation, Peru, Cameroon and Mexico (ICCO, 2021d) (Figure 22).

- Côte d'Ivoire increased its cocoa grindings from 335.2 thousand metric tons (2003/04) to 620 thousand metric tons (2020/21) (ICCO, 2021d). Its yearly growth rate for the period 2003–2020 was 3.7 percent.
- Cocoa grindings in the Netherlands increased at a rate of 1.9 percent per year over the period 2003–2020. Netherland's grindings are forecasted to reach 610 thousand metric tons in 2020/21 (ICCO, 2021d).
- Indonesia increased its cocoa grindings from 120 thousand metric tons (2003/04) to 495 thousand metric tons (2020/21) (ICCO, 2021d). Its yearly growth rate for the period 2003–2020 was 8.7 percent.
- Germany also increased its cocoa grindings at a rate of 4 percent yearly over the same period. The forecasted grindings for Germany are 440 thousand metric tons in 2020/2021.
- The United States decreased its cocoa grindings from 410 thousand metric tons (2003/04) to 400 thousand metric tons (2020/21) (ICCO, 2021d). Its yearly growth rate for the period 2003–2020 was -0.1 percent.
- Malaysia increased its cocoa grindings from 203 thousand metric tons (2003/04) to 340 thousand metric tons (2020/21) (ICCO, 2021d). Its yearly growth rate for the period 2003–

2020 was 3.1 percent.

- Ghana increased its cocoa grindings from 76.5 thousand metric tons (2003/04) to 280 thousand metric tons (2020/21) (ICCO, 2021d). Its yearly growth rate for the period 2003–2020 was 7.9 percent.
- Brazil increased its cocoa grindings from 206.8 thousand metric tons (2003/04) to 230 thousand metric tons (2020/21) (ICCO, 2021d). Its yearly growth rate for the period 2003–2020 was 0.6 percent.

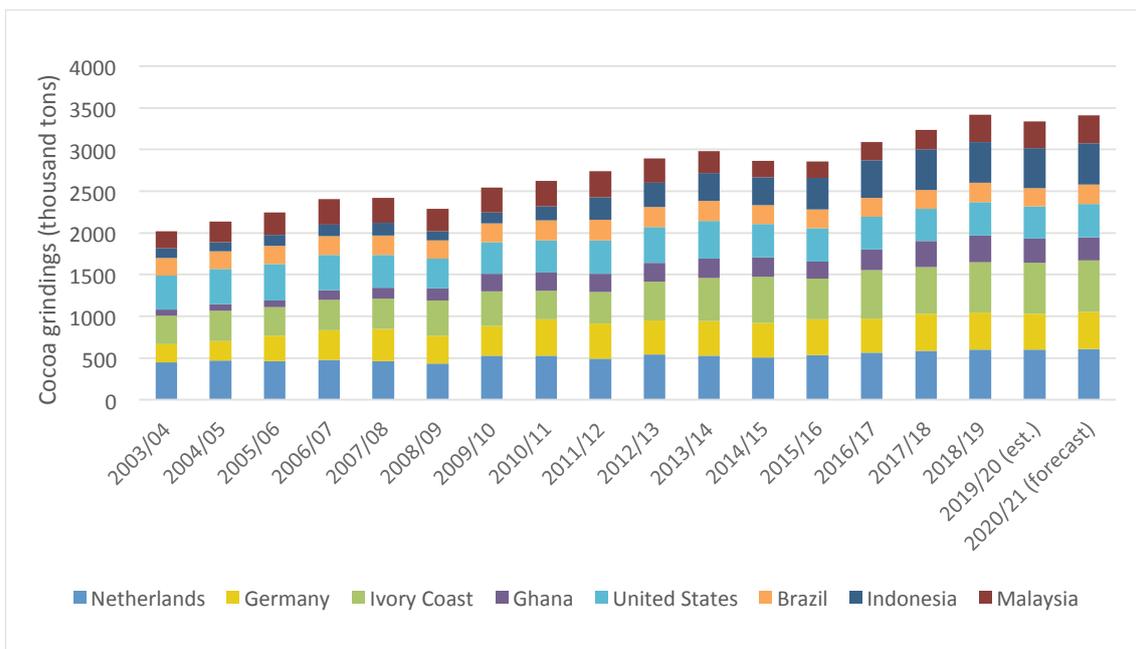


Figure 22. Cocoa grindings per country from 2003/04 to 2020/21 (thousand metric tons). Source: Own elaboration based on information from ICCO 2021

- France is forecasted to decrease its cocoa grindings from 140 thousand metric tons (2019/2020) to 135 (2020/2021) thousand metric tons (ICCO, 2021d).
- Turkey is forecasted to maintain its cocoa grindings at 100 thousand metric tons (2019/2020) for the period 2020/2021, as it was the year before (2019/2020) (ICCO, 2021d).
- Canada is forecasted to increase its cocoa grindings from 80 thousand metric tons (2019/2020) to 100 thousand metric tons (2020/2021) (ICCO, 2021d).
- Spain is forecasted to increase its cocoa grindings from 90 thousand metric tons (2019/2020) to 95 thousand metric tons (2020/2021) (ICCO, 2021d).
- Singapore is forecasted to increase its cocoa grindings from 90 thousand metric tons (2019/2020) to 95 (2020/2021) thousand metric tons (ICCO, 2021d).
- Belgium is forecasted to maintain its cocoa grindings at 90 thousand for the period 2020/2021, the same quantity as 2019/2020 (ICCO, 2021d).

- Italy is forecasted to increase its cocoa grindings from 81 thousand metric tons (2019/2020) to 85 (2020/2021) thousand metric tons (ICCO, 2021d).
- The UK is forecasted to maintain its cocoa grindings at 80 thousand for the period 2020/2021, the same quantity that had in period 2019/2020 (ICCO, 2021d).
- Russian Federation is forecasted to increase its cocoa grindings from 70 thousand metric tons (2019/2020) to 72 (2020/2021) thousand metric tons (ICCO, 2021d).
- Peru is forecasted to slightly increase its cocoa grindings from 64 thousand metric tons (2019/2020) to 65 (2020/2021) thousand metric tons (ICCO, 2021d).
- Cameroon is forecasted to increase its cocoa grindings from 51 thousand metric tons (2019/2020) to 60 (2020/2021) thousand metric tons (ICCO, 2021d).
- Mexico is forecasted to increase its cocoa grindings from 45 thousand metric tons (2019/2020) to 60 (2020/2021) thousand metric tons (ICCO, 2021d).

Given the limited information on country demand for cocoa derivatives, import figures will serve as estimates for market demand. The next sections will provide detailed information about imports by country.

## **Top 10 Importer Countries of Cocoa Paste/Liquor**

For the past five years (2015–2020), the Netherlands has been the largest importer of cocoa paste followed by the United States, Germany, Belgium, France, Poland, Spain, Russia, Italy and Canada.

- In 2020, the Netherlands imported 141 thousand metric tons with a value of USD 457 million (ITC, 2021). The CAGR rate for the value was 2.7 percent and for the volume 4.1 percent over the period 2015–2020 (See Figure 23 and 24). This may mean that the import price of cocoa paste decreased during this period.
- The United States was also a large importer of cocoa paste in 2020. The United States imported 132 thousand metric tons with a value of USD 427 million (ITC, 2021). The cocoa paste imports increased at a yearly rate of 19 percent in volume and 22 percent in value (See Figure 23 and 24).
- In 2020, Germany imported 100.5 thousand metric tons of cocoa paste with a value of USD 333 million (ITC, 2021). This country decreased its imports for the covered period. Its volume and value imports decreased at a yearly rate of 0.8 percent and 3 percent respectively during 2015–2020 (See Figure 23 and 24).
- Belgian cocoa paste imports increased at an average annual rate of 4.6 percent in value over the period 2015–2020. This country imported cocoa paste for a value of USD 324 million in 2020 (ITC, 2021). No data is available for cocoa paste volumes in 2020.
- Polish cocoa paste imports increased at an annual rate of 3.6 percent in volume and 1.3

percent in value during 2016–2020 (ITC, 2021). Poland imported 59.5 thousand metric tons with a value of USD 210 million in 2020.

- Spain mainly imports cocoa paste. About 90 percent of cocoa paste imports by Spain are sourced directly from producing countries. Spanish cocoa paste imports grew at an average annual rate of 3.1 percent in volume between 2016 and 2020 reaching 89 thousand metric tons in 2020 (ITC, 2021) (See Figure 23 and 24).

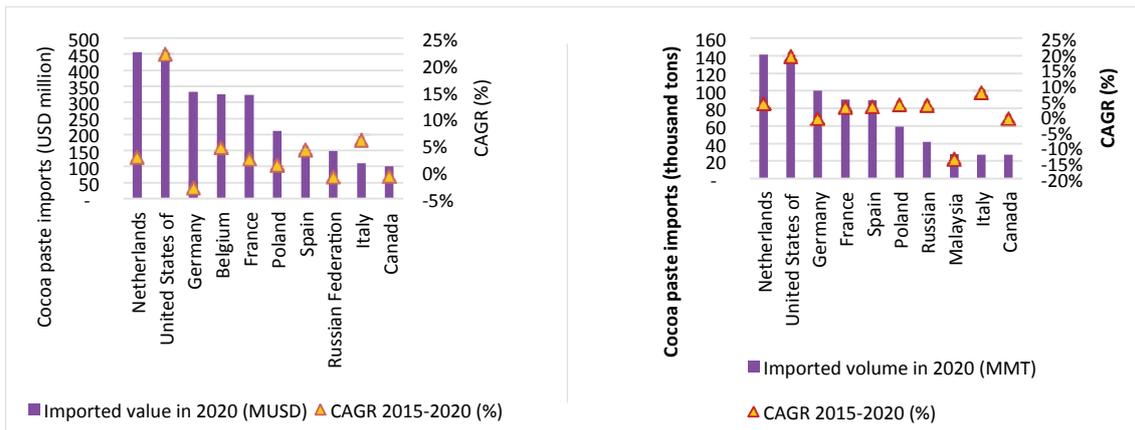


Figure 23. Top 10 importers countries of cocoa paste in value (Million USD) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 24. Top 10 importers countries of cocoa paste in volume (Thousand metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Top 10 Importer Countries of Cocoa Powder

- The United States was the largest importer of cocoa powder in 2020. The United States imported 100 thousand metric tons with a value of USD 273 million (ITC, 2021). American cocoa powder imports increased at a yearly rate of 0.6 percent in volume and 0.9 percent in value over 2015–2020 (See Figure 25 and 26).
- Dutch cocoa powder imports registered an average annual growth rate of 10 percent in quantity and 8.9 percent in value over 2015–2020 (ITC, 2021). German cocoa powder imports decreased by 3.2 percent in volume and 0.9 percent in value (2015–2020) (ITC, 2021) (See Figure 25 and 26).
- Russian cocoa powder imports reached 52 thousand metric tons with a value of USD 110 thousand in 2020 (ITC, 2021). Russian imports increased at an annual rate of 2.8 in volume and 1.4 percent in value for the period 2015–2020. French cocoa powder imports remained stable, reaching 39 thousand metric tons in 2020 with a value of USD 107 million (ITC, 2021) (See Figure 25 and 26).



Photo: Ahmed Jallanzo, courtesy of CBI

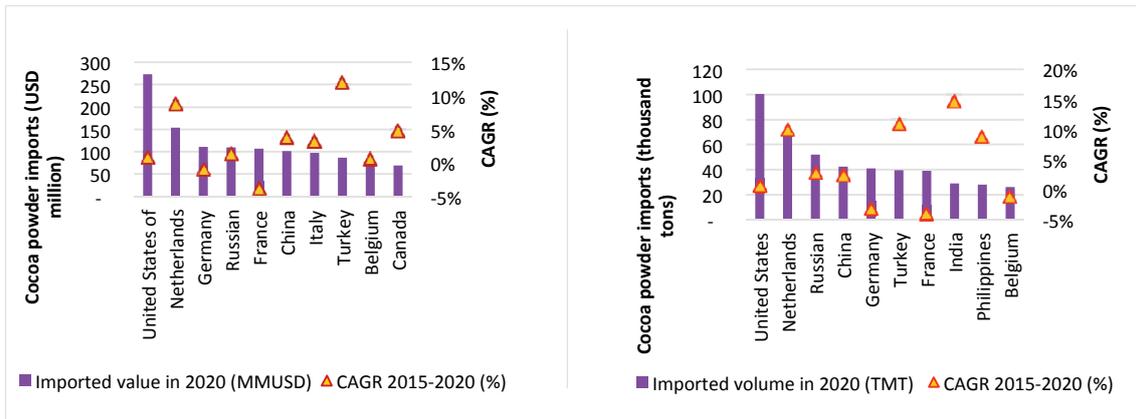


Figure 25. Top 10 importers countries of cocoa powder in value (Million USD) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 26. Top 10 importers countries of cocoa powder in volume (Thousand metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)



### Top 10 Importer Countries of Cocoa Butter

Between 2015 and 2020, cocoa butter imports by Germany increased at an average annual rate of 3.2 percent in value and 5.1 percent in volume. German cocoa butter imports reached 152 thousand metric tons with a value of USD 884 million in 2020 (ITC, 2021) (See Figure 27 and 28).

Belgian cocoa butter imports increased at a rate of 5.9 percent and 4.3 percent in volume and value, respectively. Imports reached 0.1 million metric tons with a value of USD 0.62 billion (ITC, 2021) (See Figure 27 and 28).

The United States was the third largest importer of cocoa butter in 2020. The United States imported 98 thousand metric tons with a value of USD 574 million (ITC, 2021). American cocoa powder imports increased at a yearly rate of 0.6 percent in volume and decreased 1.9 percent in value over 2015–2020 (See Figure 27 and 28).

Dutch cocoa butter imports decreased at a year-to-year rate of 0.9 percent in volume and 0.8 percent in value between 2015 and 2020. In 2020, the Netherlands imported 83 thousand metric tons of cocoa butter with a value of USD 465 million (ITC, 2021) (See Figure 27 and 28).

French cocoa butter imports increased at an average annual rate of 4.3 percent (in volume), reaching around 78 thousand metric tons in 2020 (ITC, 2021).

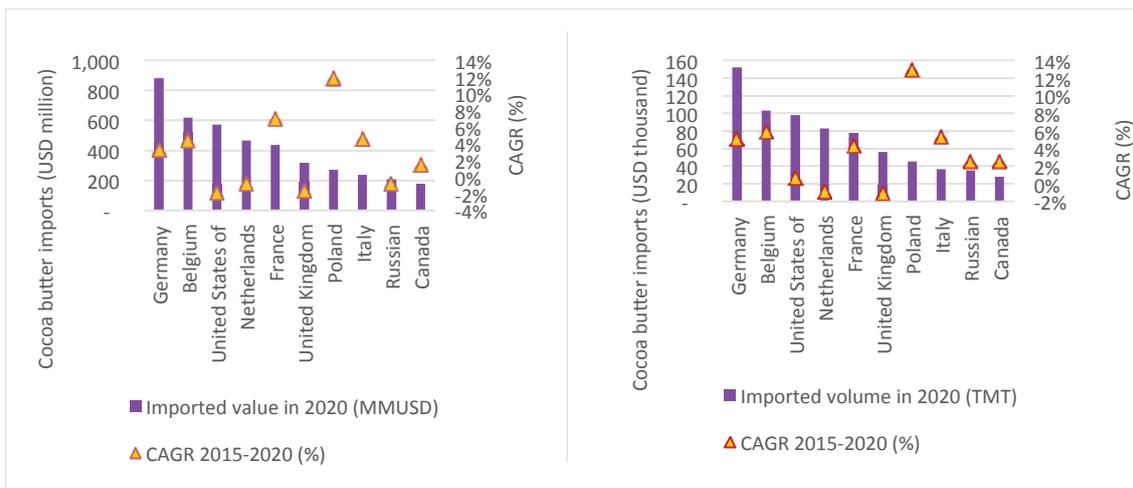


Figure 27. Top 10 importers countries of cocoa butter in value (Million USD) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 28. Top 10 importers countries of cocoa butter in volume (Thousand metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021)

### Top 10 Importer Countries of Chocolate<sup>4</sup>

The United States was the largest importer of chocolate in 2020. The United States imported 686 thousand metric tons with a value of USD 2.89 billion (ITC, 2021). American chocolate imports increased at a yearly rate of 2.4 percent in volume and 3.2 percent in value over 2015–2020. Main countries supplying chocolate to the United States were Canada (52.5 percent of market share), Mexico (19.2%), Germany (4.9%), Belgium (4.6%) and Poland (2.6%) (ITC, 2021) (See Figure 29 and 30).

Between 2015 and 2020, chocolate imports by Germany increased at an average annual rate of 2.4 percent in value and 2.5 percent in volume. German chocolate imports reached 484 thousand metric tons with a value of USD 2.39 billion in 2020 (ITC, 2021) (See Figure 29 and 30).

The UK and France also increased their chocolate imports over the period 2015–2020. The UK increased its imports at an average annual rate of 2.9 percent in volume and 1.9 percent in value. France increased its imports by 1.3 percent in volume and 1.9 percent in value (ITC, 2021) (See Figure 29 and 30).

Although demand is high, chocolate manufacturers in Europe tend to either process cocoa beans themselves or purchase semi-finished cocoa products from European processors. Multinationals such as Barry Callebaut, Cargill, Cémoi, ECOM/Dutch Cocoa, Olam, Nederland SA, and Crown of Holland (only organic) are based in Europe and supply the full range of semi-finished cocoa products to the European food and confectionery industry. Chocolate makers and manufacturers prefer sourcing cocoa products from multinational companies because they have the scale and finance to guarantee quality, quality consistency and availability (CBI, 2021c) (See Figure 29 and 30).

<sup>4</sup>The analysis of this product relates to HS code 1806 refer to “chocolate and other food preparations that contain cocoa”.

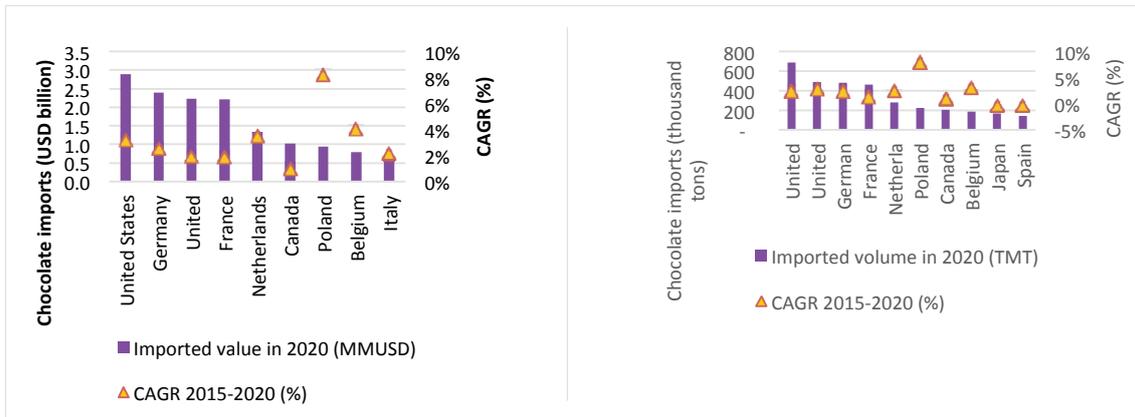


Figure 29. Top 10 importers countries of chocolate in value (Billion USD) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021).

Figure 30. Top 10 importers countries of chocolate in volume (Thousand metric tons) and CAGR from 2015 to 2020. Source: Own elaboration based on information from Trademap (ITC, 2021).

## Local Market Surplus Alternatives

To calculate the production surplus of a producing country, the total demand is deducted from the total supply. Total demand is the result of cocoa bean exports and cocoa derivatives exports. Total supply is the result of domestic production, cocoa bean imports and cocoa derivatives imports.

The results of applying this formula are presented in Table 6, where Côte d’Ivoire obtained the highest surplus in Africa, while in the Americas, Brazil, Peru and Colombia obtained the highest surpluses. In Asia and Oceania, Indonesia obtained a negative surplus.

To have a representative sample for assessing local market alternatives, one country of each region was selected: Côte d’Ivoire, Brazil and Indonesia. However, Côte d’Ivoire was removed because it would not add much to local market alternatives given that cocoa producing countries in Africa do not traditionally buy products made with cocoa. Only a very small amount of cocoa growing in this continent is consumed locally. It is more common to find local markets in cocoa producing countries in Latin America because they have a long tradition of consuming cocoa products (Hütz-Adams et al., 2016). According to ICCO, domestic consumption of Central and South American countries is around 450 thousand metric tons per year. Some Asian countries, like Indonesia, also have important local cocoa demand (A. Fountain & Huetz-Adams, 2020). Currently, Indonesia is also an importer of beans from West Africa due to increasing internal demand, despite being an important producer (Rios et al., 2017).

Colombia was chosen to replace Côte d’Ivoire and the selected countries for assessment are Brazil, Colombia, Peru and Indonesia. Given the limited availability of information on Peru, only Brazil, Colombia and Indonesia are selected as case studies of local market alternatives.

**Table 6. Surplus of cocoa beans and derivatives in main producing countries**

|   | TOTAL SUPPLY                       |                    |   |              | TOTAL DEMAND        |  |              | Surplus (Supply - demand) |
|---|------------------------------------|--------------------|---|--------------|---------------------|--|--------------|---------------------------|
|   | Domestic production of cocoa beans | Cocoa bean imports | Derivatives imports (paste, butter, powder) | Total supply | Cocoa beans exports | Derivatives export (paste, butter, powder) | Total demand |                           |
| Quantities expressed in Thousand metric tons (2020) |                                    |                    |   |              |                     |  |              |                           |
| Africa  |                                    |                    |   |              |                     |  |              |                           |
| Cameroon  | 290                                | 0                  | 0   | 290          | 218                 | 43   | 261          | 29                        |
| Côte d'Ivoire                                       | 2,225                              | 0                  | 0   | 2,225        | 1,619               | 328  | 1,947        | 278                       |
| Ghana   | 1,040                              | 0                  | 0   | 1,040        | 643                 | 263  | 906          | 134                       |
| Nigeria   | 270                                | 0                  | 0   | 270          | 127                 | 19   | 146          | 124                       |
| Americas  |                                    |                    |   |              |                     |  |              |                           |
| Brazil  | 180                                | 46                 | 38  | 264          | 1                   | 50   | 51           | 213                       |
| Colombia  | 65                                 | 0                  | 4   | 69           | 11                  | 6  | 17           | 52                        |
| Ecuador   | 350                                | 0                  | 1   | 351          | 323                 | 22   | 345          | 6                         |
| Peru  | 150                                | 0                  | 5   | 155          | 53                  | 24   | 77           | 78                        |
| Dominican Republic                                  | 75                                 | 0                  | 1   | 76           | 64                  | 1  | 65           | 11                        |
| Asia & Oceania                                      |                                    |                    |   |              |                     |  |              |                           |
| Indonesia   | 200                                | 190                | 30  | 420          | 210                 | 320  | 530          | -110                      |

Source: Own elaboration based on information from ICCO (2021) and Trademap (ITC, 2021).

## Local Market Alternatives for Brazil

During the last 15 years, a growing local demand has contributed to increase Brazil's cocoa production and import of cocoa beans. The country's local demand is significant when compared with the largest cocoa producing countries. A strong cocoa processing industry is the result of this important local demand, which is estimated to have the highest cocoa per capita consumption in Latin America (2.5 Kg/person/year) (Kozicka et al., 2018). This growing local demand is forecasted to grow at a CAGR of 3.12 percent over the period 2020–2025. The preference of Brazilian consumers for healthy products has increased the demand of dark chocolate, which has lower sugar content.

Five main companies processed most of Brazil's total cocoa production: Cargill, Delfi, Joanes, Barry Callebaut and Indeca, with Olam also looking to expand its global processing with a plant in Brazil. These companies had in total five processing plants: four of them are in Bahia and one in São Paulo. The installed capacity of the Brazilian cocoa-processing industry is 250 thousand metric tons of cocoa per year. These processing plants absorb 97 percent of Brazil

cocoa bean production. They convert the beans in cocoa derivatives (liquor, butter, cake and powder) for the export markets or domestic market. Final products for the domestic market are distributed to consumers through several Brazilian retail brands (Camargo et al., 2021) (International Labour Organization, 2018).

Brazil is one of the six countries that reports a high volume of chocolate retail sales. The other five countries are: the United States, Germany, Switzerland, Belgium, the UK and France. What makes Brazil unique in this group? Brazil is the only country that is at the same time a producer and a consumer. In 2020, Brazil chocolate market recorded revenues worth USD 4.2 billion (Mordor Intelligence, 2020a). In Brazil, chocolate consumption has increased more than production. For this reason, Brazil has reduced its exports and increased imports to satisfy its domestic chocolate demand. Main supplying countries are Peru, Chile, Argentina, South Korea and Japan (Trade Promotion and Commercial Section, 2020).

Recently, gourmet chocolate emerged in Brazil, and this segment is expanding in the Brazilian chocolate market. Gourmet chocolate normally uses more cocoa than average chocolate making (Trade Promotion and Commercial Section, 2020).

The Brazilian cocoa-chocolate value chain is unique because their cocoa production is not sold as a commodity only, but it receives added value. By having a developed domestic market for chocolate confectionery, Brazilian cocoa farmers are able to obtain prices that are not related to international market prices. Local processing contributes to the generation of employment and generation of revenues.

Hence, the Brazilian case shows the example of a producing country that is capable of generating added value in their own territory, benefiting their own population (farmers, consumers, employees, etc.).

On the other hand, Brazil's drawback policy to encourage industries to engage in the processing of cocoa by exempting cocoa bean imports from tariffs, allowed companies to import cocoa beans from producing countries like Côte d'Ivoire and Ghana more cheaply. This made the local raw materials less competitive, and discouraged local production.

### **Local Market Alternatives for Colombia**

Colombia is one of the largest chocolate consumer markets in Latin America (Escobar et al., 2020). The local industry absorbs most of Colombia's cocoa production: 75 percent of cocoa production goes to the local industry, while 25 percent is exported (Rios et al., 2017).

Colombia's situation differs from large cocoa exporters like Côte d'Ivoire, Ghana or Ecuador, in that global multinational companies do not have an important presence. Casa Luker and Nutresa, Colombia-based multinational companies purchase around 80 percent of Colombian cocoa bean production. Most of these companies' productions go to the local market, where there is a demand for "chocolate de mesa" – bars specifically for making hot chocolate drinks. Regarding the market for "fine and flavor" cocoa in Colombia, both Casa Luker and Nutresa have products that target higher end niche markets related to origins. Other Colombian companies also started to deliver chocolate products for niche markets like: Tibitó, Cacao Fusion, Antoragí, Lust, Suagú and Cacao Hunters. The artisanal bean-to-bar chocolate market,

however, is still very small (Abbott et al., 2018).

The Colombian case is another notable example of how adding value to cocoa benefits the country. However, it differs from Brazil in that global multinational companies are not present.

### **Local Market Alternatives for Indonesia**

Indonesia is the largest cocoa producing country in Asia and the third worldwide, with 784 thousand metric tons of cocoa produced annually. The country has a large population of approximately 270 million people and a healthy economic growth of between 4 – 6 percent annually over the last 14 years, so not surprisingly chocolate-based products have also enjoyed an increase of 10 percent annually; Indonesians ate 400g per capita in 2017 (Snapcart, 2017) (Switzerland Global Enterprise, 2019).

Local processing started to grow not only because of increased confectionery consumption in Indonesia, but also because of an initiative from the Indonesian Government, which introduced an export tax of 10 percent on cocoa beans. Since then, local processing capacity started growing, stimulating the local market demand as well. According to the International Cocoa Organization (ICCO), the capacity of Indonesian cocoa processing industries was 476 thousand metric tons of cocoa beans in 2018 (Kozicka et al., 2018).

However, most of the processed cocoa products leave the country: exports account for 67,000 (paste) + 144,000 (butter) + 106,000 (powder) + 18,000 (chocolate food) = 335,000 metric tons, or 70 percent based on the 2018 capacity (ITC, 2021).

Indonesia's chocolate market is highly concentrated. Two local companies, Mayora Indah and Petra Food, together have almost 80 percent market share. The rest is shared by multinational companies such as Mondelez International, Mars, Ferrero, Nestlé, Lindt, Hershey, Cargill, Olam and Barry Callebaut (ISDB, 2020). In the early 2010s, fierce competition put a lot of local processing plants out of business, such as Cocoa Venture (Medan), Mas Ganda (Tangerang), Hope and Unicom (both Makassar). For Indonesian processors to stay competitive, it is important to purchase sufficient cocoa in the main crop from June to August to tie over the low productive season when cocoa is more expensive.

The confectionery category is at 8 percent average market share from all cocoa categories. Within the confectionery category, chocolate is leading with 28 percent share among other confectionery sub-categories. Petra Food's Silver Queen chocolate bars lead the market with a value share of 65 percent. Chocolate consumption increases about 5 percent every February, compared to the other months, due to the popularity of Valentine's Day. Indonesia also imports considerable amounts of chocolate, in 2017 worth USD 88 million, originating from India (25%), Malaysia (21%), Singapore (9%) and Australia (8%) (Snapcart, 2017) (Switzerland Global Enterprise, 2019).

## Regional Markets for Cocoa Producing Countries

The main cocoa-producing countries are Côte d'Ivoire, Ghana, Nigeria, Cameroon, Ecuador, Brazil, Peru, Dominican Republic, Indonesia and Papua New Guinea. Most of these have as main markets European countries or the United States. For instance, in 2020, Côte d'Ivoire, Ghana, Nigeria, Cameroon and Peru had The Netherlands as their main export market (ITC, 2021).

However, it could be beneficial for exporters in producing countries to explore business opportunities in their vicinity. With this in mind, immediate markets within the region of the producing country will be explored in this section.

Regional markets for Ecuador, Indonesia and Côte d'Ivoire have been selected since they are among the main producing countries in the Americas, Africa and Asia regions, respectively (See Table 7) (ICCO, 2021d). Possible synergies between these countries and neighbors may be found by analyzing their export markets. Note that export markets for cocoa beans, cocoa paste, cocoa butter, cocoa powder, and chocolate have been assessed, with data obtained from ITC Trademap (ITC, 2021).

**Table 7. Main cocoa producing countries by region**

| Region         | Production 2020/2021 (1000 metric tons) | Share of world production | Main producing countries                     |
|----------------|---|---------------------------|--|
| Africa         | 3,975                                   | 77%                       | Côte d'Ivoire, Ghana, Nigeria and Cameroon   |
| Americas       | 885                                     | 17%                       | Ecuador, Brazil, Peru and Dominican Republic |
| Asia & Oceania | 281                                     | 6%                        | Indonesia and Papua New Guinea               |

Source: Own elaboration based on information from ICCO (2021).

### Regional Markets for Ecuador

Regional markets for Ecuador are those countries located in the South American and Central American region. Ecuador's export markets for cocoa beans and derivatives will be assessed to find possible synergies obtained from regional trade.

Main regional markets for Ecuadorian cocoa beans (whole or broken, raw or roasted; HS code 1801) are Mexico, Panama, Peru and Argentina. Mexico stands out with the import of 14.8 thousand metric tons in 2020, which represented 4.6 percent of Ecuador's bean export (ITC, 2021). Potential synergies between Ecuador and Mexico may be based on the Mexican needs of relatively cheap beans for the large confectionery industry in the country, as well as the local use of cocoa beans in culinary preparations. Additionally, Mexican cocoa production has dropped slightly in the last few years. These factors may explain Mexico's growing interest in importing cocoa beans and cocoa derivatives (CEDRSSA, 2020) (See Figure 31).

Argentina, Chile and Peru were the largest neighboring markets of Ecuadorian cocoa paste exports (whether or not defatted; HS code 1803). Argentina, Chile and Peru accounted for 22 percent of Ecuador's exports of cocoa paste. Argentina and Chile do not produce cocoa beans, so they need to import either cocoa beans or cocoa products (Ministerio de Agroindustria Argentina, 2018). In Argentina, the production of chocolate and cocoa derivatives is carried out by multinational companies such as Kraft International, Mondelēz,

Nestlé and Ferrero; and by domestic companies such as Arcor, Felfort and Georgalos (MINCETUR, 2020). Peru does produce cocoa beans, but its quality has been improving (and carries many certifications) while the quality of Ecuador has been changing to accommodate more industrial cocoa (Jano & Mainville, 2007) (Anonymous, personal communication, Oct, 2021). It can be concluded that Peru favors exporting their high-quality beans (and not processing them) and importing cheaper cocoa paste from its neighbor. An interesting fourth place is Guatemala. This country may need relatively cheap cocoa products as well (Central American beans are expensive due to scarcity) for its confectionery industry or re-export to Mexico (See Figure 32).

Cocoa butter (HS 1804) was exported to Peru (25% of total exports by Ecuador), Mexico and Argentina, possibly for a wide variety of applications, from chocolate food products to cosmetics (See Figure 33). Colombia is the closest importer of Ecuadorian powder (HS 1805). Colombia has a relatively large domestic cocoa consumption and will need the powder to mix with other (non-cocoa) substitute fats to produce cheaper “sucedáneo” chocolate (See Figure 34).

Ecuadorian chocolate is exported to four neighboring countries: Chile, Argentina, Colombia and Brazil, where domestic consumption of cocoa-products is high. It is important to highlight that Brazil’s imports of Ecuadorian chocolate decreased in 2020, possibly due to the impact of the COVID-19 pandemic. Brazilian consumers have likely decelerated their purchases of luxury goods like chocolate (See Figure 35).

Sixty-three percent of the total exports of cocoa waste (HS 1802) from Ecuador were exported to Brazil in 2020. However, Argentina maintained a long-term relationship with Ecuador over the period 2016–2020. Argentinian imports are stable year by year, although it reported decline especially in 2020 (See Figure 36). Cocoa shells are a rich source of dietary fiber and protein, as well as valuable bioactive compounds (theobromine, caffeine, flavonoids, etc.), and because of their composition, they can be used for further applications as an ingredient in food processing—or in other industries such as pharmaceutical, cosmetic, or agricultural industries (Panak Balentić et al., 2018).

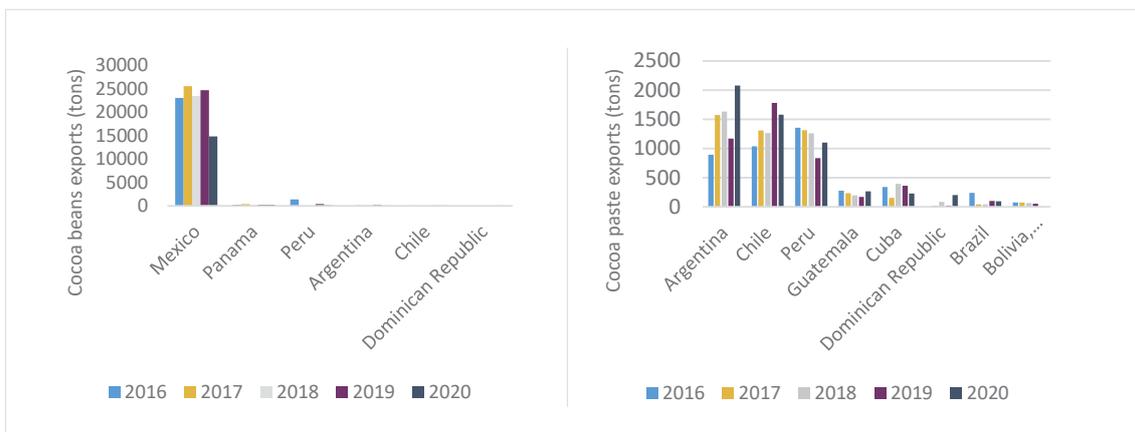


Figure 31. Regional markets for Ecuadorian cocoa beans (HS 1801) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 32. Regional markets for Ecuadorian cocoa paste (HS 1803) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

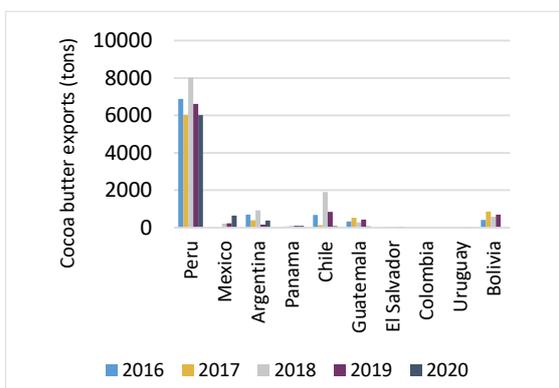


Figure 33. Regional markets for Ecuadorian cocoa butter (HS 1804) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

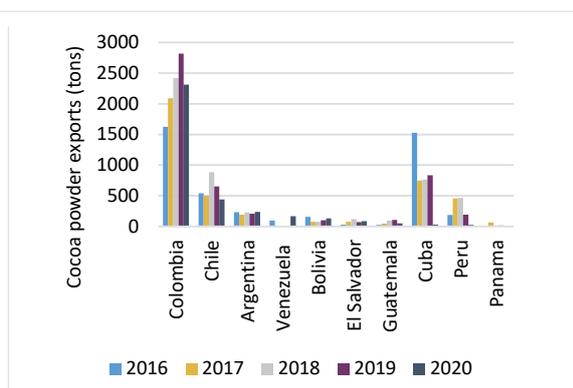


Figure 34. Regional markets for Ecuadorian cocoa powder (HS 1805) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

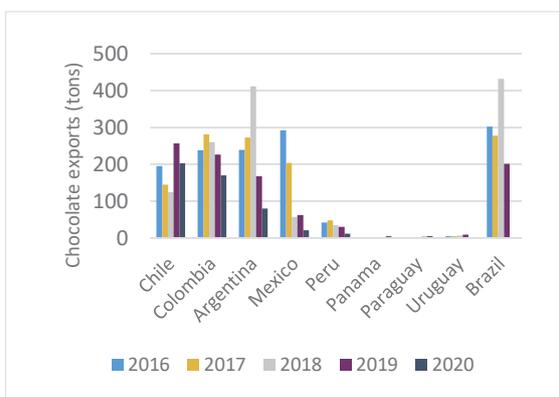


Figure 35. Regional markets for Ecuadorian chocolate (HS 1806) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

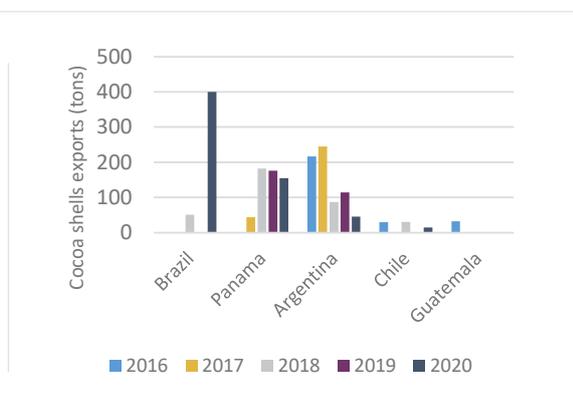


Figure 36. Regional markets for Ecuadorian cocoa shells (HS 1802) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

## Regional Markets for Indonesia

Regional markets for Indonesia are those countries geographically close: countries located in the Asian and African region.

Indonesia is the main producer of cocoa beans in Asia. Immediate markets for Indonesian exports of cocoa beans (whole or broken, raw or roasted; HS code 1801) in 2020 were: Malaysia, Singapore and India (See Figure 37). Malaysia has consistently imported cocoa beans in the last five years, becoming the main importer of Indonesian cocoa beans (99% of total cocoa exports). However, the Malaysian imports of Indonesian cocoa beans have been decreasing because the Indonesian Government imposed an export tax on cocoa beans in 2010. The objective of this export tax was to promote the growth of processing industries, because before 2010, there was a shortage of cocoa beans for domestic use. Indonesian industry's capacity utilization in 2009 was only 42 percent (Yudyanto & Hastiadi, 2019).

The main regional markets for Indonesian cocoa paste (HS code 1803) in 2020 were: Malaysia,

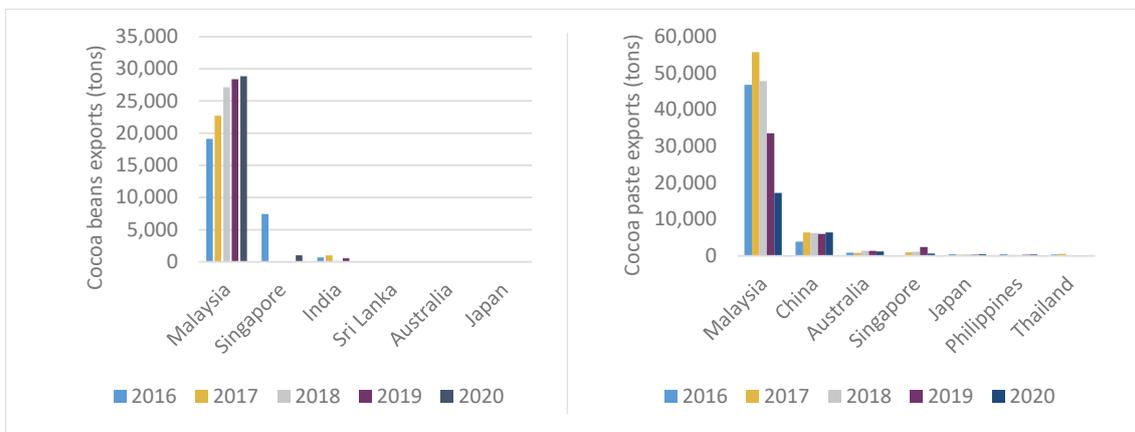
China, Australia, Singapore, Japan, Philippines, and Thailand. Malaysian imports comprised a large part of cocoa paste imports (26%), however, they have been declining. In 2016, Malaysia imported 46,816 metric tons of Indonesian cocoa butter, while in 2020, they imported only 17,245 metric tons (See Figure 38).

The main regional markets for Indonesian cocoa butter (HS code 1804) in 2020 were: India, Australia, China, Japan, United Arab Emirates, Malaysia, South Africa, Israel and Egypt, among others. India’s imports of cocoa butter have increased consistently in the last five years and together with Australia, were not negatively impacted by COVID-19 because their imports in 2020 increased compared to the previous year (See Figure 39).

The main regional markets for Indonesian cocoa powder (HS code 1805) in 2020 were: India, Philippines, China, Malaysia, Turkey and Egypt (See Figure 40).

The main importing markets for Indonesian chocolate (HS code 1806) were: China, Malaysia, Thailand, Philippines, United Arab Emirates and India. China became the leading importer of Indonesian chocolate in 2020 (23%) and together with India, are consistently importing more from Indonesia. Malaysia and Thailand have decreased their imports over the last five years (See Figure 41).

The main regional markets for Indonesian cocoa shells, husks, skins and other cocoa waste (HS code 1801) were: Malaysia, Philippines, Republic of Korea and China. In 2020, Malaysia imported 7,690 metric tons of this product, becoming the main importer (67.7%) (See Figure 42).



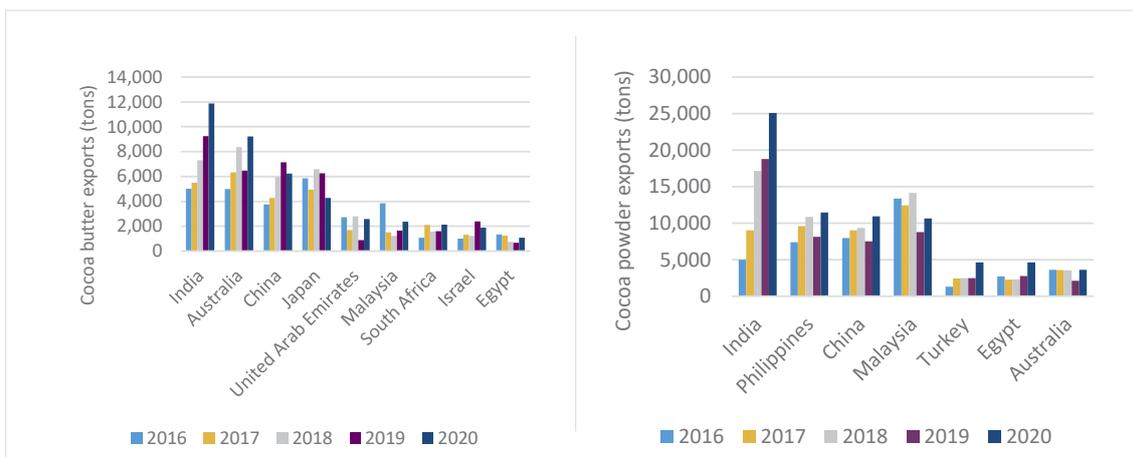


Figure 39. Regional markets for Indonesian cocoa butter (HS 1804) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

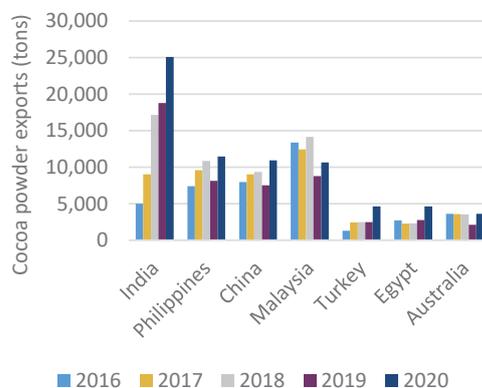


Figure 40. Regional markets for Indonesian cocoa powder (HS 1805) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

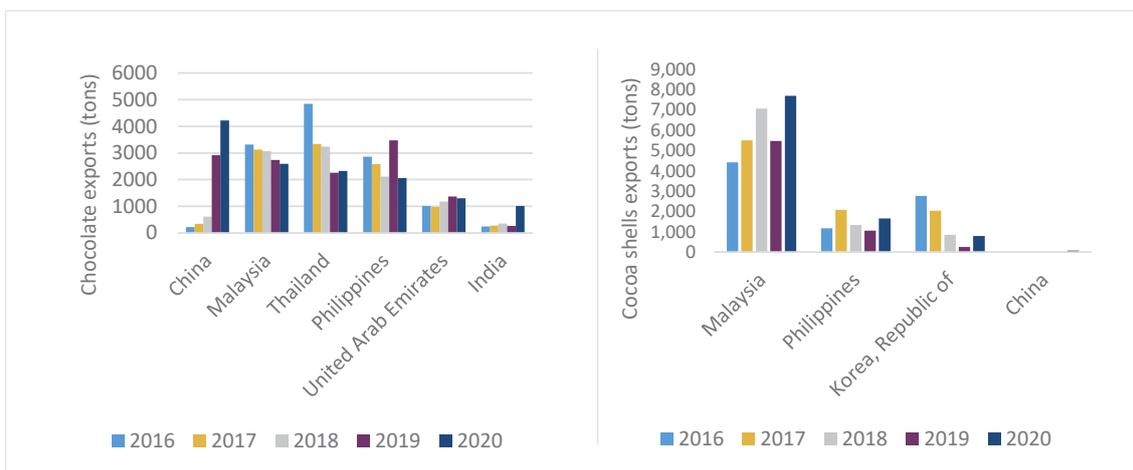


Figure 41. Regional markets for Indonesian chocolate (HS 1806) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

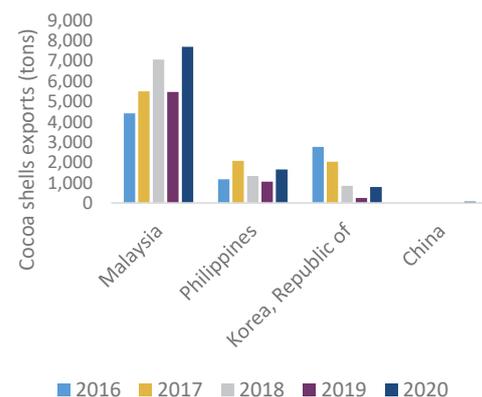


Figure 42. Regional markets for Indonesian cocoa shells (HS 1802) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

## Regional Markets for Côte d’Ivoire

Regional markets for Côte d’Ivoire are those markets that are geographically close: countries located in the African region, mainly. To identify those countries, for cocoa beans and cocoa derivatives, export statistics will be assessed based on the HS code.

The only significant regional market for Ivorian cocoa beans (HS code 1801) was Tunisia. Tunisia imported 1,003 metric tons in 2015 and 3,754 metric tons in 2019 (See Figure 43).

The main regional markets for Ivorian cocoa paste (HS code 1803) were: South Africa, Algeria, and Morocco. South Africa has been decreasing its imports of cocoa paste during the period 2015–2019. Algeria decreased its imports by a considerable amount in 2019 (See Figure 44).

The main regional countries for Ivorian cocoa butter, fat and oil (HS code 1804) were: South Africa and Algeria. However, their importance is very low because they accounted for 0.04 percent and 0.02 percent respectively (See Figure 45). Senegal and Togo were the regional markets for Ivorian cocoa powder (HS 1805) (See Figure 46).

Côte d'Ivoire exported chocolate and other food preparations containing cocoa (HS code 1806) to immediate markets: Mali, Burkina Faso, Ghana, Guinea and Senegal (See Figure 47). Only a small percentage of cocoa waste (HS 1802) from Côte d'Ivoire was exported to Egypt and Cameroon in 2019. Egypt imported 220 metric tons (0.2%) and Cameroon only 20 metric tons (0.02%).

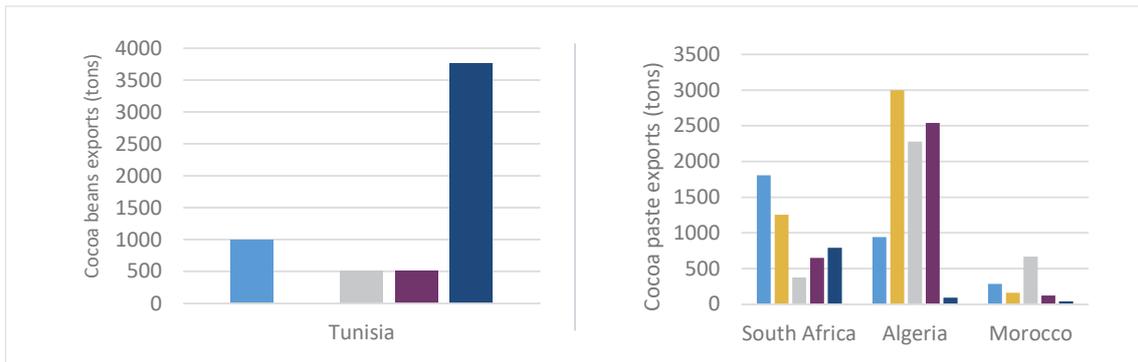


Figure 43. Regional markets for Ivorian cocoa beans (HS 1801) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 44. Regional markets for Ivorian cocoa paste (HS 1803) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

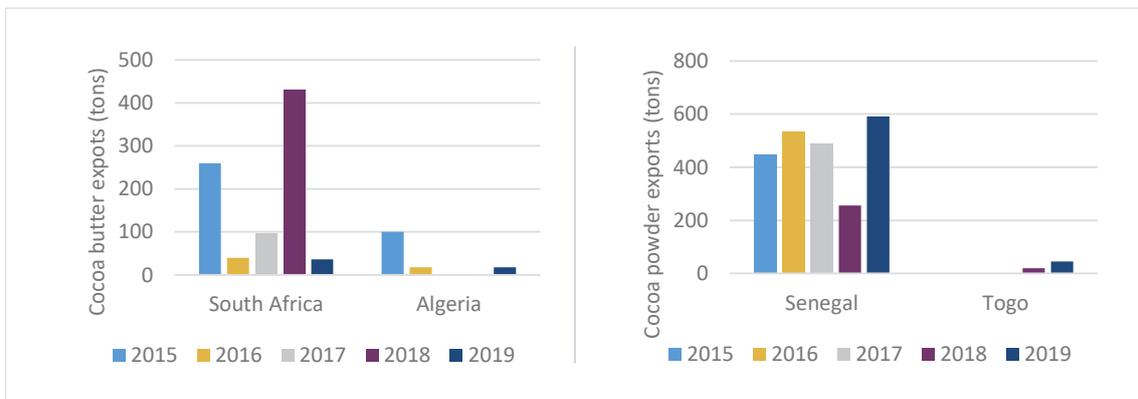


Figure 45. Regional markets for Ivorian cocoa butter (HS 1804) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

Figure 46. Regional markets for Ivorian cocoa powder HS 1805 (Metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

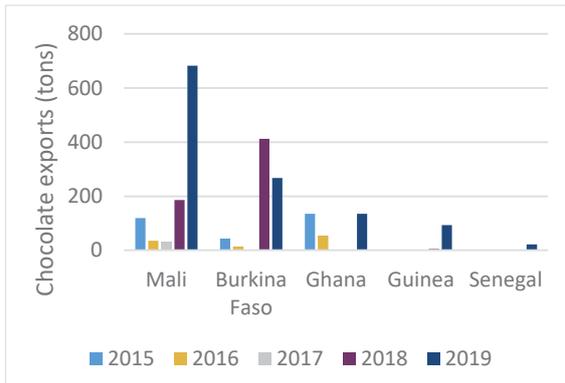


Figure 47. Regional markets for Ivorian chocolate (HS 1806) (metric tons). Source: Own elaboration based on information from Trademap (ITC, 2021)

## Impact of COVID-19 on Global Demand and Supply

The COVID-19 pandemic has impacted the world in unprecedented and devastating ways. Lockdowns, social distancing measures, closing of borders and travel restrictions were among the disruptive effects of the pandemic. These also had a clear impact on all actors in the cocoa value chain, both in consuming and producing countries, and across the various segments of the market and sectors. The rollout of vaccines, especially across consuming countries, and improved containment measures of the pandemic, are moving the world into the direction of stabilization and recovery – and that includes the cocoa value chain.

Since the outbreak of the COVID-19 pandemic in December 2019, the virus has spread to almost 213 countries worldwide, with the World Health Organization (WHO) declaring it a public health emergency on Mar. 11, 2020.

The section below summarizes the key effects of COVID-19 observed along the cocoa value chain:

### Impact on Commodity Market Estimates and Forecasting

- The recent figures reported by ICCO indicate that the world cocoa production had a slight decline of -1.8 percent in 2020, when compared with the previous year's harvest (ICCO, 2021d).
- The reason for the slight decline in production is due to the fact that the outbreak first hit West Africa towards the end of the main crop, thus around April when cases started to rise in the region, the main crop was already over meaning that the impact on prices and volume was minimal (George, 2020).
- In spite of this decline in production, the 2020/2021 harvest is performing better than expected. The world production and grindings are projected to be higher than the previous season, and production is forecasted to reach a record volume of 5,141 million metric tons (ICCO, 2021d).
- Most producing countries are reporting positive harvests due to favorable weather

conditions and thanks to the adoption of production-enhancement measures. Hence, production is foreseen to be up by 8 percent year-on-year, primarily driven by record volumes from the West African region (ICCO, 2021d).

- The negative consequences of the pandemic, and the current recovery of the sector, has a potential impact on cocoa supply-demand cycles, since the excess supply of the 2020/2021 harvest is expected to lead to a possible structural surplus within the market and a potential drop in prices.
- Regarding prices for the 2019/2020 cocoa year, the global excess supply added to the low demand for cocoa products (substantiated by a drop in cocoa imports and grindings) amidst the pandemic maintained them at levels lower than projected as indicated by the downward trend in Figure 48.
- Since October 2020, cocoa prices have followed an upward trend, thanks to the extension of the global rollout of vaccines and improved prospects of containment of the pandemic, associated with the recovery of the economy in most consuming countries. The combination of these elements has raised optimism in the demand for most commodities, including cocoa. The upward trend is also indicated in Figure 48 (Comunicaffe International, 2021).

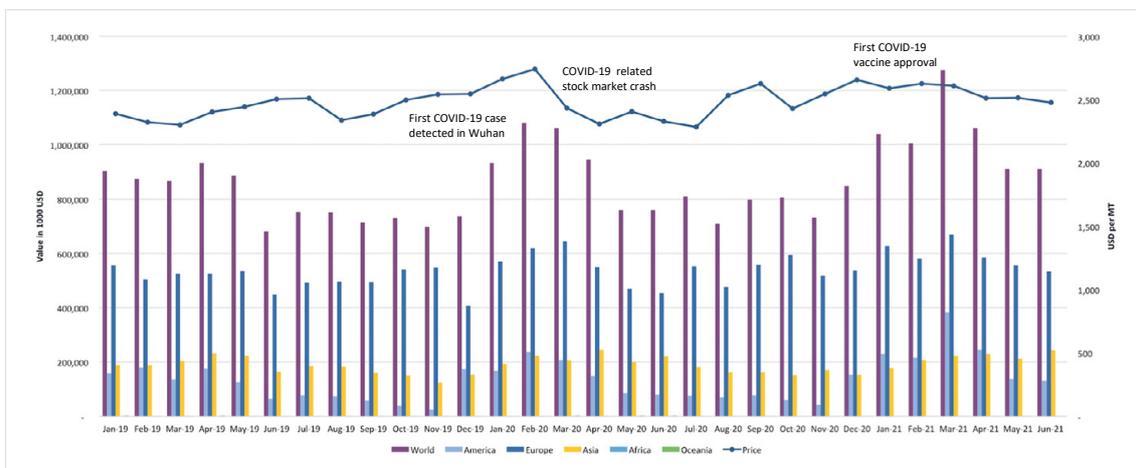


Figure 48. Cocoa Market Price and Cocoa Imports Value per 1000 USD from Jan 2019 – Jun 2021. Source: Own elaboration based on ITC Trademap (2020) and average world market prices

## Impact on Grindings

- Grindings in cocoa importing countries are projected to rise by 4 percent to 2,657 million metric tons by the end of 2021. Data released by the Association of the German Confectionery Industry (BDSI) for the second quarter of 2021 revealed that cocoa grindings rose by 18 percent year-on-year to 93,064 metric tons. The data depict that the quarterly grindings are heading towards pre-pandemic levels. According to the association, “the ending of lockdowns, reopening of retailing and restaurants plus the resumption of some events had helped confectionery demand”. Statistics published by the European Cocoa Association (ECA) showed that cocoa grindings for the second quarter of 2021 rose by 13.6 percent from a year earlier to 356,854 metric tons. Hence,

grindings in the Netherlands and France are expected at 610,000 metric tons and 135,000 metric tons respectively for the 2020/21 season (ICCO, 2021d).

- The National Confectioners' Association (NCA) reported that North American cocoa grindings increased and were above expectations. For the second quarter of 2021, grindings are reported at 123,719 metric tons, up by 11.7 percent from the same period a year earlier. The Secretariat's forecast for the United States for the 2020/21 season is 400,000 metric tons, while that of Canada and Mexico are up from 80,000 metric tons to 100,000 metric tons and from 45,000 metric tons to 60,000 metric tons respectively (ICCO, 2021d).
- Origin grindings are expected to rise by over 2 percent to 2,203 million metric tons, accounting for 45 percent of total world grindings in 2020/21. The share of cocoa-producing countries in global grindings has been following an upward trend.
  - Among the cocoa producing countries, grindings in Côte d'Ivoire are expected at 620,000 metric tons and Ghana at 280,000 metric tons.
  - Data published by the Cocoa Association of Asia (CAA) indicate that grindings have continued to increase as the second quarter cocoa grind rose by 9 percent year-on-year to 220,865 metric tons. According to the Malaysia Cocoa Board, the country's cocoa grindings were up by 12.8 percent to 87,331 metric tons in the second quarter from 77,426 metric tons a year earlier. For the current season, grindings are anticipated to increase to 495,000 metric tons in Indonesia, to 340,000 metric tons in Malaysia, 95,000 metric tons in Singapore and in Turkey to 100,000 metric tons (ICCO, 2021d).

### Impact of Closure in Logistics and Overall Costs

- The outbreak led to partial or complete shutdown of production facilities that were considered as not manufacturing essential goods; this included chocolate manufacturing.
- Apart from the impact at manufacturing level, there have also been several effects for cocoa farming communities globally, including an increase in the costs of daily living, for farming inputs, and for health care services (FCCI, 2021).
- Government-enforced road closures, in-country travel restrictions and lack of accessibility to affordable fuel intensified in many cocoa-producing countries (Well Tempered, 2020). Farmers had to put key agricultural practices on halt and now fear that due to the labor shortage during the pandemic in fundamental farming activities such as weeding, harvesting, and others related to land preparation. These effects were expected to lead to a decrease in productivity in the longer term. Large producers from Ecuador, for example, indicated during the interviews an expected reduction of 8-10 percent in yields for the total country in the next 5-10 years.
- The long-term impact of the COVID-19 pandemic on logistics is continuing to disrupt



- An interesting commercial alternative that has gained importance within the segment is e-commerce. The effects of the pandemic have leveraged a huge rise of e-commerce activities across almost all sectors of the world economy, cocoa and chocolate included (Euromonitor Consulting, 2020). Many small businesses have been reinventing themselves to deal with the crisis, for instance by boosting online sales through e-commerce platforms (CBI, 2020a). According to The National Confectioners' Association, 60 percent of fine flavor chocolate can be purchased online.
- It is worth mentioning there is a promising segment that arises amid the COVID-19 pandemic: Healthy Chocolate. Some estimations state that healthy chocolates will double compared to traditional mainstream chocolates, due to health concerns that the pandemic has created among citizens around the world (Euromonitor Consulting, 2020). This is also true for organic-certified chocolates; in addition to having experienced an increase in sales during the pandemic in various consuming markets in North America and Europe during the pandemic, an increase will be expected for organic-certified and ethically sourced products in the near future.

### Impact on Tourism, Travel and the Specialty Cocoa Segment

- Many craft chocolate makers source specialty cocoa from origin using direct trade agreements with farmers to produce higher-quality beans. With international and domestic restrictions disrupting travel to cocoa origins, reduced interactions with producers have effectively removed a major quality control and communication channel. The travel restrictions due to the pandemic affected the ability of craft industry members to sustain in-person trading relationships (Cadby, 2020). Nonetheless, online connections brought a new way of communicating to ensure business continuity despite mobility restrictions. Personal relationships create a sense of belonging and in an effort to help businesses survive; trust building was gained through the virtual space.
- Despite all negative consequences of the COVID-19 pandemic to the cocoa sector, key industry actors interviewed during the study even reported that their business has actually flourished in terms of sales and growth. However, a few have not made it through the harsh scenario brought by the pandemic.

# GLOBAL DYNAMICS FOR COCOA AND EACH DERIVATIVE PRODUCT

Supply chain analysis and mapping of the different players in the global market for each product and market segment, from producing to consuming countries, including an analysis of sourcing models/distribution channels, demand cycles, purchasing procedures, contract and negotiation power dynamics, and analysis requirements in terms of quality, origin, flavor, consistency, certifications, sustainability, labeling and packaging, storytelling, ingredients, price, traceability, and direct sourcing.

## Global Supply Chain and Power Dynamics

### Value Chain Mapping and Market Dynamics

The global cocoa supply chain includes cocoa production, trade of cocoa beans, manufacturing of derivatives and finished consumer products, as well as the distribution and marketing of those products (Figure 50). Cocoa derivatives are cocoa paste (liquor), cocoa butter, cocoa powder and couverture (industrial chocolate). Finished consumer products include chocolate and the many forms it comes in, as well as its use in various food and beverages, cosmetics and health products. The chocolate industry is estimated to absorb approximately 90 percent of the global cocoa demand (Rios et al., 2017), and is therefore the focus of this analysis. In this chapter we will look at all the actors in the cocoa value chain and analyze the dynamics amongst them.



Photo: Ahmed Jallanzo, courtesy of CBI

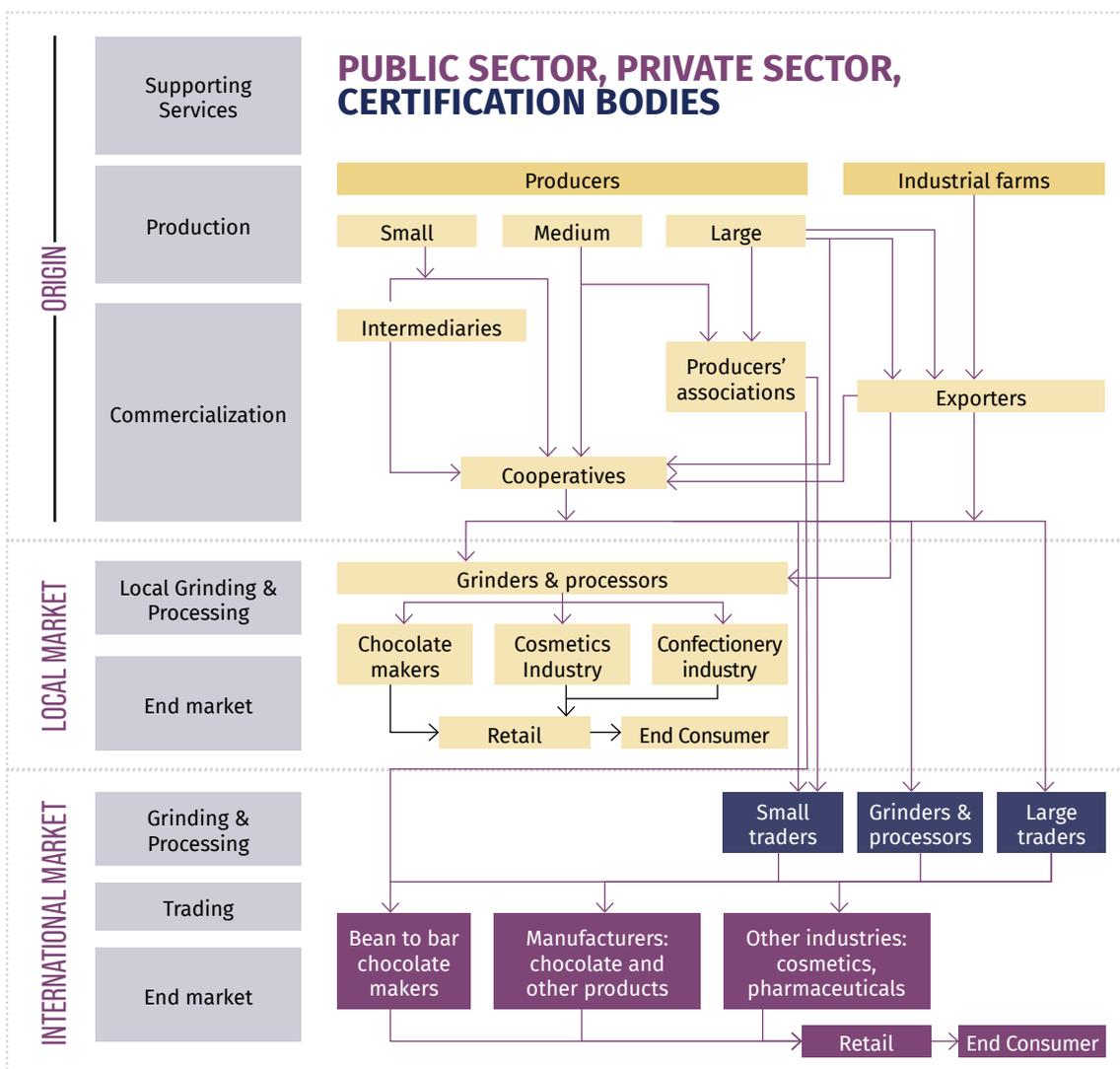


Figure 50. The global cocoa value chain. Source: Own elaboration, 2021

### Cocoa Producers

It is estimated that 5.5 million smallholder farmers cultivate cocoa in more than 50 countries worldwide (Rios et al., 2017). A producer is usually considered as such if a large share of his or her income (30-40%) comes from cocoa production. Most cocoa producers grow other crops on their farm for their own consumption or commercialization. This is mainly due to the pronounced seasonal labor and cash flows offered by cocoa production, which often makes it part of a producer household's diversified income generating activities (Siegel & Alwang, 2004). In some regions and countries, however, cocoa can represent as much as 70 percent to 100 percent of the income of a household (Oduro-gyimah, 2012). Most producers involved in cocoa production are smallholders; the average farm size in Africa and Asia is approximately two to four hectares (Beg et al., 2017).

The average cocoa producer's age is relatively high, estimated to be over 50, as younger generations are much less involved in cocoa production. Youth tend to be attracted to other

economic activities that can bring them higher profitability (FairtradeFoundation, 2016). This was confirmed and mentioned often as a challenge for the sector in the interviews conducted during this study. One of the FBOs in Ghana mentioned that 65.5 percent of their associated farmers are above 45 years old, and only 13.2 percent are less than 35 years. Sources from other global regions point towards the same challenge; in Nicaragua, for instance, the average age of cocoa producers is 58 years old (Rikolto, n.d.).

Most cocoa producers are not organized in associations or cooperatives. It is estimated that the percentage of associated farmers in the main cocoa-producing countries are: Côte d'Ivoire (21%), Ghana (11%), Ecuador (30%) and Cameroon (20-30%) (German Initiative on Sustainable Cocoa, 2019).

The lack of associativity is believed to give producers a low bargaining power in the value chain (Beg et al., 2017; Bymolt, Laven, & Tyzler, 2018). Collective marketing through associativity does not necessarily result in higher prices, particularly in countries where the farmgate price is fixed, but it may give access to favorable marketing channels (Oomes et al., 2016a). However, producers' bargaining power can be higher when they have multiple options to sell cocoa beans to, even when they are not part of a cooperative or association, as in the context of the Dominican Republic (Dominican sector stakeholders, personal communication, July 2021), or have realistic opportunities to opt out of cocoa, as in the case of Indonesia (Oomes et al., 2016a).

For certification, it is almost a prerequisite to have some form of organization, particularly for Fairtrade, which is directed towards cooperatives. For organic or Rainforest Alliance certification, no formal group is needed, but certain rules and agricultural practices need to be followed, requiring some form of organizational structure to impart this knowledge to the participating producers.

Producers generally select the marketing channel depending on their specific needs, location, personal connection, and organization within the country sector. They can sell to intermediaries or agents, associations, cooperatives or directly to exporters.



Photo: Ahmed Jallanzo, courtesy of CBI

**Table 8. Summary of producers' typology**

|  |
|--|
| <b>Estimated number of actors and concentration level</b>  |
| An estimated 5.5 million smallholder farmers cultivate cocoa in more than 50 countries worldwide (Rios et al., 2017).  |
| <b>Main role and activities in the cocoa value chain</b>   |
| Main activities performed by cocoa producers: cocoa growing, harvesting and, in some cases, fermentation and drying. Producers can sell cocoa with the pulp (wet cocoa), or fermented and dried beans to intermediaries, agents, FBOs or directly to exporters.        |
| Producers can be independent or organized into FBOs, cooperatives and associations, which gives them the capacity to aggregate larger volumes and perform post-harvest processes such as fermentation and drying in higher volumes and more consistently (CBI, 2018a). |

## Intermediaries

Also known as collectors or aggregators, intermediaries are actors in the supply chain that aggregate smaller volumes from cocoa producers into export-viable amounts by collecting wet or fermented and dried cocoa beans from individual producers or producer groups, thus facilitating handling and transport at later stages of the value chain.

Intermediaries usually do not export directly, nor do they have the license to perform export activities but sell to FBOs or exporters. They can purchase on behalf of a specific exporter or processor (i.e., performing the role of an agent), or independently. These intermediaries, 'middlemen' or agents also work with subagents. Depending on their scale, installed capacity, capital availability, and role in the value chain, intermediaries may also perform post-harvest activities such as fermentation and drying. Intermediaries are also an informal channel for producers to gain access to credit, in contrast to the formal and more bureaucratic system of FBOs.

In most cocoa-producing countries, intermediaries have a key role, as most cocoa farmers are not organized in an association or cooperative, as mentioned previously. In their effort to secure the supply of cocoa beans, local collectors may bring down farmgate prices (Abdulsamad et al., 2015).

Intermediation is more common, but not exclusive, in value chains where small traditional producers are linked to the market by local traders and where usually, (price) differentiation or reward between different qualities is paid. As in the case of a cooperative, they play a logistical role, picking up cocoa beans from producers and selling it forward into the supply chain. Intermediaries are less common in cocoa chains where there is a higher level of contact between producers and cooperatives, and where quality protocols are largely imposed and maintained (CBI, 2018b). Nonetheless, some level of intermediation is common, even in well-organized cocoa value chains known to produce high-quality cocoa, such as the Dominican Republic (Dominican sector stakeholders, personal communication, July 2021).

**Table 9. Summary of intermediaries’ typology**

|   |
|---|
| <b>Estimated number of actors and concentration level</b>   |
| Local cocoa trade involves many intermediaries that act on behalf of large traders or subsidiaries of multinationals or work independently. It is not possible to estimate an exact number of intermediaries in the global cocoa value chain, but an exporter in a West African country sourcing 3,000 to 5,000 metric tons of cocoa beans, for instance, will work with some 50 agents who would have under them a network of 1,000 subagents purchasing from the farmers. |
| <b>Main role and activities in the cocoa value chain</b>  |
| Intermediaries purchase, collect and aggregate cocoa volumes from producers and producers’ groups, to sell them to larger FBOs, processors and exporters. The specific activities of intermediaries may vary according to the complexity of their infrastructure and to their capacity to perform post-harvest processes. On occasions, intermediaries can provide informal credit to producers.  |

## Farmer-Based Organizations

Farmer organizations are formal or informal (registered or unregistered) membership-based collective action groups serving their members, who receive part or their entire livelihood from agriculture (crops, livestock, fisheries and/or other rural activities) (Foundation Rural and Agricultural Finance Learning Lab, n.d). FBOs commonly purchase cocoa beans directly from their members. However, additional purchases can occur via intermediaries. When producers are organized into FBOs, their collective marketing, volume, quality control and possible certification provide leverage for bargaining (Oomes et al., 2016).

A good example of a complex structure is the *Confederación Nacional de Cacaocultores Dominicanos* (CONACADO), in the Dominican Republic, which is composed of three different entities to carry out different activities: 1) the agro-industrial unit: collects/aggregates, processes, manufactures and commercialize cocoa from its members; 2) the NGO: provides technical and social assistance to its members; 3) the *Cooperativa Nacional de Cacaocultores Dominicanos, Inc.* (COOPNACADO): the financial entity which provides credit, savings and insurance services to its members (CONACADO, 2020).

The grouping of producers into FBOs varies widely across different cocoa-producing countries. The estimation of the share of producers belonging to an FBO or to a cooperative varies widely amongst different studies. As mentioned above, the German Initiative on Sustainable Cocoa (GISCO) estimates that the share of farmers that have some sort of association ranges from 11 to 30 percent in the main cocoa producing countries. It is estimated that in West Africa, the producing region of about 75 percent of the global cocoa, only 30 percent of farmers are organized, although there are also indications that in Côte d’Ivoire the percentage of farmers belonging to a cooperative might be as high as 50 percent because multinationals are active in the country (Bymolt, Laven, & Tyzler, 2018; ICCO, 2021d).

In Central America (and in other regions across Latin America and the Caribbean), small cocoa producers are often organized into cooperatives or associations that have the capacity to aggregate larger volumes and perform post-harvest processing. The common practice in Latin America of central processing using fermentation boxes and solar dryers requires farmers to organize around a collection center of their cooperative to carry out the post-harvest process. In contrast, West African farmers mostly do ‘basket fermentation’ (or heap fermentation) and drying individually and can sell their beans to anyone when reasonably

dry. Both in Latin America and in West Africa, there are cooperatives that are organized into larger secondary ‘apex’ organizations, ‘unions’ or ‘federations’. For instance, FEDECOVERA in Guatemala, UNOCACE in Ecuador and NGOFCU in Sierra Leone are a federation and unions, respectively, each composed of multiple cooperatives, giving them added scale and thus efficiency. Cooperatives, Unions, Federations and Associations may also be exporters.

**Table 10. Summary of Farmer-Based Organizations’ typology**

| <b>Estimated number of actors and concentration level</b>   |
|---|
| The exact number of Farmer-Based Organizations at the global level is impossible to determine because it includes several types of organizations, ranging from associations and cooperatives, to unions and federations. Their concentration level varies widely per country.   |
| <b>Main role and activities in the cocoa value chain</b>  |
| Farmer-Based Organizations purchase, aggregate and re-sell cocoa beans to exporters (within the producing countries), to importers (in consuming markets) and other buyers in the value chain. Depending on the size and capacities of FBOs, they also perform post-harvest processing and, in some cases, manufacture derivatives and finished products. |
| FBOs provide technical, social and financial services to their members, such as trainings, loans and market information. In addition, FBOs commonly provide certification to producers. Some FBOs in cocoa-producing countries also provide inputs such as seedlings, fertilizers, etc. They may also be involved in advocacy (S. Gayi & Tsowou, 2016).   |
| Some FBOs are involved in exports of cocoa beans, derivatives and, less commonly, finished products.  |

## Exporters

Exporters are commercial firms that have the infrastructure, license and capital to purchase and arrange exports of cocoa beans and cocoa products. Exporters can be local exporters or subsidiaries of foreign companies; these would register themselves in the producing country to source the cocoa beans. Examples are Barry Callebaut, Cargill, ECOM, Olam, and other large companies (see section below) but also smaller ones like Ritter Sport and Ingemann in Nicaragua, and Halba Chocolats in Honduras.

**Table 11. Summary of exporters’ typology**

| <b>Estimated number of actors and concentration level</b>  |
|--|
| Local cocoa trade involves many exporters across various countries. The level of concentration per country varies widely. For example, Ghana’s Cocoa Marketing Company (CMC) maintains a monopoly over exports due to the country’s cocoa market regulation (Bymolt, Laven, & Tyzler, 2018). In Côte d’Ivoire, 91 companies obtained an export license in 2020/21 – note this number includes multinationals with a local exporting company registered in the country. In another example, the Dominican Republic registered cocoa exports from 31 companies in 2020/21 (CNC, 2021). |
| <b>Main role and activities in the cocoa value chain</b>   |
| Exporters can source cocoa beans directly from producers, FBOs or via intermediaries; some exporters also make use of their own agents to purchase cocoa beans from farmers. Exporters sell to foreign importers or directly to manufacturers. In the case of multinationals, they will export within the structure of the same company, from one subsidiary to another.   |
| <ol style="list-style-type: none"> <li>1. Other services exporters can provide:</li> <li>2. Purchasing, aggregating and re-selling cocoa beans to exporters and other actors in the value chain.</li> <li>3. Post-harvest processing.</li> <li>4. On occasions, (mostly large) exporters manufacture and export derivatives.</li> <li>5. Providing technical, social and financial services to suppliers.</li> <li>6. Providing inputs such as seedlings, fertilizers, etc. to suppliers.</li> </ol>   |

## Traders (importers)

Traders are defined in this study as independent importers that do not belong to multinational groups. They are characterized by having a wide range of cocoa origins and a diverse client base. Sometimes they are involved in further cocoa processing through third-party companies and in sales of cocoa derivatives.

The services of traders in the cocoa value chain include logistics, customs clearance and documentation, risk management (sourcing from origin, price, exchange rate), quality control, etc. Traders can be specialized in one specific market segment: organic, organic plus fair trade, specialty cocoa, or in importing only from specific origins. Sometimes importers also own cocoa farms or subsidiaries in selected origins.

Importers of bulk cocoa beans normally handle large quantities and have direct contacts with exporters in producing countries. In most cases, importers have long-standing relationships with their suppliers. They either sell the cocoa beans and derivatives to domestic companies or re-export them to other countries or regions.

The room for a trader to maneuver towards a higher price (to allow for the cooperative to source the cocoa from its farmers at competitive prices) is limited, as the trader has made own commitments with manufacturers, who in turn have agreements with retailers regarding pricing. Retailer will not change their prices substantially, especially not upwards, in the constant battle to offer consumers the most attractive prices. In that sense, traders and manufacturers, regardless of their size, are not the main decision-makers in the value chain.

**Table 12. Summary of traders' typology**

| Estimated number of actors and concentration level   |
|--|
| <p>Cocoa trade involves many companies, and an estimate is not possible. In general, however, the number of traders involved in the premium segment is lower than registered in the bulk and bulk certified segments, due to the small volumes commanded and specialized nature of this business. Examples of traders per product segment:</p> <p><b>Bulk and bulk certified</b></p> <ul style="list-style-type: none"> <li>● Albrecht &amp; Dill</li> <li>● Cocoanect</li> <li>● Dietz Cacao Trading</li> <li>● Facta International</li> <li>● Huyser Moeller</li> <li>● Kemofina</li> <li>● Theobroma</li> <li>● Walter Matter</li> </ul> <p><b>Premium</b></p> <ul style="list-style-type: none"> <li>● Bohnkaf Kolonial</li> <li>● Crafting Markets</li> <li>● Daarnhouwer</li> <li>● Le Cercle du Cacao</li> <li>● Meridian Cacao</li> <li>● Silva Cacao</li> <li>● Uncommon Cacao</li> </ul> |

| <b>Main role and activities in the cocoa value chain</b>  |
|---|
| <p>Traders source cocoa beans (and sometimes derivatives) in cocoa-producing countries and operate across a wide range of cocoa origins and a diverse client base. The services of traders in the cocoa value chain include logistics, customs clearance and documentation, risk management (sourcing from origin, price, exchange rate), quality control, etc. Traders can be specialized in one specific market segment: organic, organic plus fair trade, specialty cocoa, or in importing only from specific origins. Sometimes importers also own cocoa farms or subsidiaries in selected origins. The main end-buyer categories of traders include:</p> <p><b>Cocoa beans</b></p> <ul style="list-style-type: none"> <li>• Chocolate manufacturers</li> <li>• Bean-to-bar chocolate makers</li> <li>• Food industries with cocoa-grinding and processing operations</li> </ul> <p><b>Cocoa derivatives</b></p> <ul style="list-style-type: none"> <li>• Chocolate manufacturers</li> <li>• Chocolate makers</li> <li>• Other food industries</li> <li>• Other industries: cosmetics, pharmaceuticals</li> </ul>   |
| <b>Requirements</b>   |
| <p><b>Annual volume:</b></p> <p>Varies per trader and the size of their operations and product focus. The annual volume of their operations can range from 200 metric tons to 5,000 metric tons for importers of specialty cocoa operating in the premium segment, to roughly 10,000 to 20,000 metric tons among traders of bulk certified cocoa. Volumes can reach up to 100,000 metric tons for importers involved in the bulk market (Ferro et al., 2021a).</p> <p><b>Volume and frequency of orders:</b></p> <p>Importers commonly have a minimum volume requirement of one or more full containers. Specialized importers, focusing on specialty cocoa beans, sometimes purchase LCL (Less than Container Load). Purchases are made once a year (per origin), and in smaller quantities in a possible second harvest.</p> <p><b>Quality:</b></p> <p>Quality requirements will depend on the product segment in which the traders operate, and the specific requirements of their end-customers. The minimum requirements commonly relate to:</p> <ul style="list-style-type: none"> <li>• appearance and aroma</li> <li>• bean count and weight</li> <li>• cut test</li> <li>• moisture content</li> <li>• mycotoxin levels and other MRLs</li> <li>• free fatty acid (FFA) content and fat content</li> <li>• cadmium and other heavy metals</li> </ul> <p>Sensory evaluation is most commonly conducted among traders active in the premium segment, though traders involved in the bulk and bulk certified segments might also implement this evaluation, depending on the origin and end-use. It is usually conducted by a panel of trained sensory assessors and collects information on cocoa bean attributes (including off-flavors) and global quality (expressed flavor potential, uniqueness, balance, and cleanliness) (Ferro et al., 2021a).</p> <p><b>Certification:</b></p> <p>Some importers specialize in certified cocoa, and only offer products with UTZ/Rainforest Alliance, organic and/or fair-trade certification. Other importers have a range of conventional and certified cocoa.</p> <p><b>Contracts:</b></p> <p>Contracts are either based on individual shipments or annual projected/estimated harvests.</p> |

## Grinders (Processors)

Processors or grinders are generally large multinational companies that source their cocoa beans directly from producing countries but can also consist of smaller but still significant operations, such as those of Crown of Holland, in the Netherlands.

Grinders process cocoa beans into cocoa paste, cocoa butter and/or cocoa powder, which they distribute to the confectionery, food, cosmetic, and pharmaceutical industries globally. They are referred to in some studies as integrated processors; their activities include exporting and importing cocoa beans and performing the first processing and second processing. In the first processing, they sell the cocoa derivatives to companies in consuming markets that use this in final products. They may also do second processing, which refers to the processing into chocolate couverture, which is sold to (inter)national brands and artisans (FAO & BASIC, 2020). Processors have the capability to produce a complete range of cocoa derivatives targeting various end-using industries, particularly in the confectionery, as well as food and beverages market:

- Cocoa liquor is transported to clients as either solid blocks (large ingots), in easy-to-melt liquor thins, or in a liquid in temperature regulated IBC's – intermediate bulk container, or in trucks up to nine metric tons that connect directly to the chocolate makers vessels, from which the manufacturer can add ingredients or refine further (conching) before dropping the resulting couverture in its molds for its bars, cookies or other final product (D. Davies, personal communication, July 2021).
- Cocoa butter can be produced with different fat contents, flavor and color intensities and natural and deodorized options. It will include fully and partially deodorized options, such as liquid, blocks and cocoa butter chips. Some processors, such as Olam, offer specialty fats, such as Cocoa Butter Equivalent Fats (CBE), Cocoa Butter Improver Fats (CBI), Cocoa Butter Substitutes (CBS), and Confectionery Fats (Olam Cocoa, 2021).
- Cocoa powders are a highly technical product to produce and can vary in flavor from fruity natural to bitter, and in color from vibrant red to dark brown and black. Processors can offer natural and alkalized pH options. This allows manufacturers to create highly differentiated end products that meet the needs of both individual customers and vast market segments (Olam Cocoa, 2021).

The three large grinders are Olam, Cargill and Barry Callebaut, where Olam is a bean to cocoa product company, Barry Callebaut a bean to chocolate company and Cargill in between those two models. These large-scale companies have factories strategically based in the main producing countries, and in primary consumption markets to optimize transportation and environmental efficiencies (Barry Callebaut, 2020). They typically have registered export companies at origin. For example, Olam has 11 processing facilities (plus powder milling, blending and refining) worldwide (Olam Cocoa, 2021). Barry Callebaut, as another example, operates more than 60 production facilities worldwide (Barry Callebaut, 2020). Apart from the above-mentioned multinationals, there are also regional processing giants such as Guang Chong manufacturers SDN (GCB). This Malaysian company has a total of five cocoa processing facilities in Asia, four units in Malaysia and one unit in Indonesia, and one in Germany (acquired in 2019), with combined annual grinding capacity of 257,000 metric tons/annual industrial

chocolate capacity of 90,000 metric tons (GCB, 2021; Thakur et al., 2021).

Studies show that the grinding companies in the cocoa sector have achieved massive scale in recent years. In interviews, it was revealed that Barry Callebaut, Cargill and Olam each represent around 20 percent of the market, or around one million tons of cocoa annually. Each of these companies' sources from hundreds of thousands of farmers. Although some claim that the exact extent of the market concentration in this part of the value chain is difficult to calculate (A. Fountain & Huetz-Adams, 2020), a thorough study by SEO/KIT found that market concentration is moderate, does not distort markets, and is not the reason for farmer poverty (Oomes et al., 2016). Read more about this in the chapter on Global Prices, Trends and Market Drivers.

**Table 13. Summary of grinders' typology**

| <b>Estimated number of actors and concentration level</b>  |
|--|
| <p>The cocoa market is very concentrated at the grinding/processing level. Five vertically integrated multinational companies control approximately 56 percent of trade and processing: Cargill, ECOM, Olam, Barry Callebaut, and Touton. Two of these companies, Barry Callebaut and Olam, control 34 percent of industrial chocolate production worldwide (A. Fountain &amp; Huetz-Adams, 2020).</p> <p>The grinding statistics reported by the European Cocoa Association currently include 19 companies. The National Confectioner's Association's grinding statistics include 10 companies. The Cocoa Association of Asia's statistics has eight reporting companies.</p>   |
| <b>Main role and activities in the cocoa value chain</b>   |
| <p>Grinders are commonly large-scale companies/multinationals operating at high volumes that process cocoa beans into different derivatives.</p> <p>Grinders source cocoa directly from farmers through their own in-country large producers, from FBOs or from local exporters. In the case of multinationals, they are exporters and importers of their own cocoa products from subsidiaries in selected origins, therefore controlling the value chain from the first stages of production. They supply ingredients for various industrial end-users (manufacturers):</p> <ul style="list-style-type: none"> <li>● Food industry</li> <li>● Chocolate manufacturers</li> <li>● Chocolate makers</li> <li>● Chefs and other HORECA</li> <li>● Cosmetic companies (butter)</li> <li>● Health products (nibs and paste)</li> </ul> <p>Examples of cocoa processors (either bean to product or bean to chocolate):</p> <ul style="list-style-type: none"> <li>● Barry Callebaut</li> <li>● Cargill</li> <li>● CÉMOI</li> <li>● Crown of Holland</li> <li>● ECOM</li> <li>● Fuji Oil</li> <li>● Guan Chong</li> <li>● JS Cocoa</li> <li>● Natra</li> <li>● Nederland SA</li> <li>● OLAM</li> <li>● PT BC-Comextra</li> </ul> |

### Requirements

#### Annual volume:

Smaller grinders have an annual demand/processing capacity of approximately 10,000 to 20,000 metric tons, while larger multinationals can reach up to one million metric tons.

#### Volume and frequency of orders:

Large-scale/multinational grinders, processors and traders will usually have a minimum order quantity (example: 50 metric tons of cocoa), to be delivered at different periods (example: 25 metric tons in August – September, 25 metric tons in October – November) (Anonymous, personal communication, July 2021).

#### Quality:

Large-scale/multinational grinders will look at cocoa bean quality in terms of:

- appearance and aroma
- bean count and weight
- cut test
- moisture content
- mycotoxin levels and other MRLs
- free fatty acid (FFA) content and fat content
- cadmium and other heavy metals
- flavor profile, depending on the origin and end-use

#### Certification:

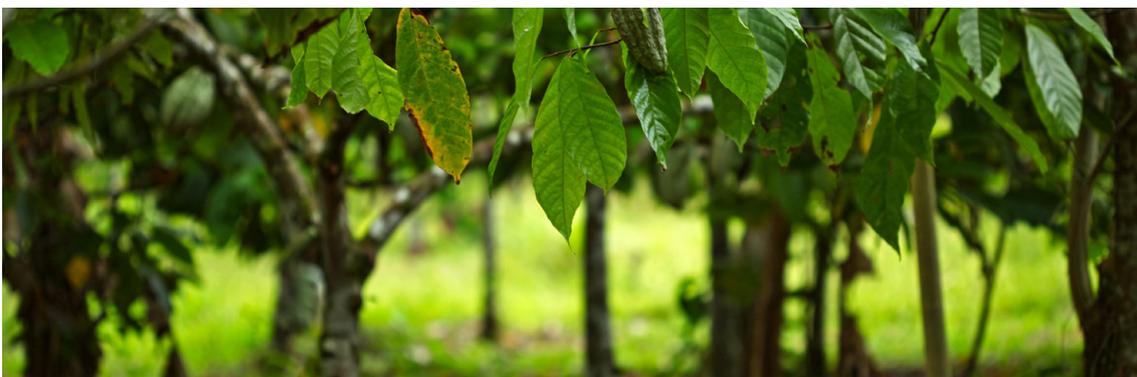
Larger multinational grinders mainly use UTZ/Rainforest Alliance or Fairtrade for their marketing. They may hire certification bodies that would audit against their own certification standards. Own certification schemes, examples are: Barry Callebaut Horizons, Olam's AtSource.

#### Contracts:

Contracts are mostly between subsidiaries but can also be issued to exporters as FOB-imports (indirect supply chain). These would include typical FCC-rules for shipments to Europe and Asia and CMAA-rules for North American destinations (See section on contracts in the chapter on Global Prices).

## Manufacturers

Manufacturers can be defined as companies producing finished consumer products using cocoa as an ingredient. A manufacturer typically buys cocoa paste, butter, powder or couverture to make chocolate, candy bars and other confectionery. Other companies have grinding activities integrated into their operations, and commonly buy cocoa beans, which are then processed into these finished products – although they may also supply derivatives to industrial buyers as well.



Manufacturers that buy cocoa beans will often have a hybrid-sourcing model. Sourcing directly from producers or cooperatives is sometimes preferred due to social impact and traceability. Purchasing from exporters is usually possible if traceability can be guaranteed. Purchasing via importers occurs where the manufacturer demands small volumes, or when it is less familiar with a certain origin or if the origin offers higher risks; example: regarding quality, logistics, etc. (Ferro et al., 2021a).

Manufacturers are involved in the production of various consumer products under their own brands or under private labels. Industry debate exists on this point, but many stakeholders consider a chocolate manufacturer to be a manufacturer (and not a chocolate maker) when it has an annual processing capacity of more than 200 metric ton (C. Martin, personal communication, Oct 2021).

Examples of large manufacturers are Mars, Mondēlez, Nestlé, Ferrero, Hershey and Lindt & Sprüngli. These companies buy cocoa products from the multinational grinders established in the countries like Ghana and Côte d'Ivoire: Cargill, Barry Callebaut, Olam, Sucden, Touton and Ecom (Reuters staff, n.d.), although Mars claims in its sustainability report that it sources beans directly in the sourcing countries. Nestlé has been moving away from sourcing beans and even from grinding, an example of a trend that has been ongoing – manufacturers are moving away from sourcing and grinding across the board due to high costs and risks, leaving the large grinders to carry out these activities. Read more about this in the chapter on Global Prices.

**Table 14. Summary of Manufacturers' typology**

| <b>Estimated number of actors and concentration level</b>   |
|---|
| The six largest chocolate manufacturers (Mondēlez International, Nestlé, Mars, Hershey's, Ferrero, Lindt & Sprüngli) transform 40 percent of chocolate products worldwide (Oomes et al., 2016). Apart from these large chocolate manufacturers, manufacturers represent a quite fragmented and diverse market in terms of number, size and end-products.  |
| <b>Main role and activities in the cocoa value chain</b>  |
| Manufacturers produce finished consumer products using cocoa as an ingredient. They buy cocoa paste, butter, powder or couverture to make chocolate, candy bars and other confectionery, or may buy cocoa beans when they have grinding activities integrated into their operations. Manufacturers that buy cocoa beans will often have a hybrid sourcing model, consisting of producers and cooperatives, exporters and importers. |
| Manufacturers are involved in the production of various consumer products under their own brands or under private labels, selling these products to various retail and HORECA channels.   |
| Examples of manufacturers (chocolate/confectionery)   |
| <ul style="list-style-type: none"> <li>● Ferrero</li> <li>● Guittard</li> <li>● Halba Chocolats</li> <li>● Hershey Company</li> <li>● Lindt &amp; Sprüngli</li> <li>● Mars</li> <li>● Mondelēz International</li> <li>● Nestlé</li> <li>● Ritter Sport</li> <li>● Stella Bernain</li> <li>● Thompson Chocolate</li> </ul>   |

| Requirements   |
|--|
| <p><b>Annual volume:</b></p> <p><i>Cocoa beans:</i> Industry debate exists on this point, but many stakeholders consider a chocolate manufacturer to be a manufacturer (and not a chocolate maker) when it has an annual processing capacity of more than 200 metric ton (C. Martin, personal communication, Oct. 2021).</p> <p><b>Volume and frequency of orders:</b></p> <p><i>Cocoa beans:</i> Minimum volumes per order start at 2 – 3 containers or more. Some buyers require a minimum annual supply for long-term collaboration; example: 100 metric tons/year.</p> <p><b>Quality:</b></p> <p><i>Cocoa beans</i></p> <p>Quality requirements will depend on the product segment in which the manufacturer operates. The minimum requirements commonly relate to:</p> <ul style="list-style-type: none"> <li>● appearance and aroma</li> <li>● bean count and weight</li> <li>● cut test</li> <li>● moisture content</li> <li>● mycotoxin levels and other MRLs</li> <li>● free fatty acid (FFA) content and fat content</li> <li>● cadmium and other heavy metals</li> </ul> <p>Sensory evaluation is most commonly conducted among manufacturers active in the premium segment, though other manufacturers may also implement this evaluation, depending on the origin and end-use. It is usually conducted by a panel of trained sensory assessors and collects information on cocoa bean attributes (including off-flavors) and global quality (expressed flavor potential, uniqueness, balance and cleanliness) (Ferro et al., 2021a).</p> <p><i>Cocoa derivatives</i></p> <ul style="list-style-type: none"> <li>● Manufacturers will look at cocoa product quality in terms of:</li> <li>● mycotoxin levels and other MRLs (measured in butter)</li> <li>● cadmium and other heavy metals</li> <li>● flavor profile, depending on the origin and end-use</li> <li>● percentage of fat in powder</li> <li>● alkalized or “Dutch” powder</li> </ul> <p><b>Certification:</b></p> <p>Some manufacturers specialize in certified chocolate and other consumer products, and only offer products with UTZ/ Rainforest Alliance, organic and/or fair-trade certification. Larger multinational manufacturers will mainly use UTZ/Rainforest Alliance or Fairtrade for their marketing. They may hire certification bodies that would audit against their own certification standards. Own certification schemes, examples are: Nestlé Cocoa Plan, Mars’ Cocoa for Generation Plan, and Hershey’s Cocoa for Good.</p> <p><b>Contracts:</b></p> <p><i>Cocoa beans:</i> Contracts are normally based on annual projected/estimated harvests. Annual or long-term contracts and buying/payment schedules facilitate access to credit by the supplier (Ferro et al., 2021a).</p> |

## Chocolate Makers

The small-sized chocolate market typology includes bean-to-bar chocolate makers and other chocolate markets that do not produce chocolate directly from the cocoa bean. Bean-to-bar

chocolate makers produce chocolate in small batches, using less than or equal to 200 metric tons of cocoa/year, in-house, from fermented and dried specialty cocoa instead of a broad range of mass market chocolate. This is different from chocolatiers, for example, who produce truffles, bonbons, etc. from chocolate produced by another manufacturer (C. Martin, 2017).

The Fine Chocolate Industry Association (FCIA) refers to small chocolate makers as artisans who understand their craft intimately. Artisan chocolate must be made under the care and supervision of a knowledgeable chocolate maker who could be defined as an artisan. If there is no artisan at a company, then the chocolate cannot accurately be called artisanal. A chocolate maker is a craft chocolate maker when they tolerate and embrace inconsistency (Gordon, 2019).

Especially in the specialty segment, cocoa beans are increasingly traded directly from farmers (or farmer associations and cooperatives) to the chocolate maker. Although direct trade is growing, it still represents a small part of the cocoa market. Not all chocolate makers are able to sustain direct trade and all the responsibilities that are usually outsourced to traders, such as logistics, documentation, and pre-financing. In this respect, what is referred to as “direct trade” often happens with an importer serving as intermediary, acting as a service provider and contact point in the transactions between the producer and the chocolate maker. Bean-to-bar makers commonly source from importers specialized in specialty cocoa beans that can safeguard traceability and communicate the story of the cocoa beans accurately along the chain (CBI, 2020f). While the market for small chocolate makers is very fragmented and diverse, the number of importers serving this market and specializing in specialty beans at low volumes is relatively low – thus the market access point for this segment is very concentrated. In addition, the market is gradually seeing the engagement of multinationals in this segment, illustrated by the recent launch of the specialty cocoa importer Twenty Degrees, part of OLAM, and Cacao Latitudes, part of ECOM.

When the bean-to-bar maker (or tree-to-bar maker) is in the cocoa-producing country, direct trade with FBOs and producers is common, as revealed during interviews conducted in this study. The target market for at-origin bean-to-bar makers varies widely. Although the market for higher-quality products sold at a higher value, including fine chocolates, is increasing in cocoa-producing countries such as Indonesia, Brazil, and Colombia, it remains a small niche. At the same time, exporting bean-to-bar chocolates requires special transportation and storage capacities (reefer containers or air freight), and warehousing/distribution in the consuming markets. On top of that, competition from local and often more well-known brands is fierce for a market which commands small volumes. When a bean-to-bar maker at origin exports their bars successfully, this often happens via a specialized distributor that has a wide network of (online) shops and clients or via their own sales representative located at the export market.

Not all small chocolate makers produce chocolate from the cocoa bean; as such, they demand cocoa derivatives instead of cocoa beans – mainly cocoa paste and butter, or couverture (industrial chocolate) (Ferro & Groothuis, 2021). The small quantities of cocoa derivatives delivered to chocolatiers and other end-users such as pastry chefs are usually sourced from within the consuming market. This is because the frequency of orders from clients is very small and variable, requiring marketing and logistical capacities.

**Table 15. Summary of Chocolate makers' typology**

| <b>Estimated number of actors and concentration level</b>  |
|--|
| <p>In 2017, small-sized chocolate makers were estimated to total 450 globally, with variation in production size from less than one ton up to at most 200 metric tons of cocoa per year (C. Martin, 2017). These estimates are currently being reviewed by the Fine Cacao and Chocolate Institute (FCCI); preliminary data indicate that there are currently more than 1,000 craft chocolate makers globally, more than double the number in 2017 (C. Martin, personal communication, Oct. 15, 2021). Combined, the chocolate makers have a demand that ranges between 8,000 – 10,000 metric tons (Ferro et al., 2021a) mainly concentrated in the United States and Europe.</p>   |
| <b>Main role and activities in the cocoa value chain</b>   |
| <p>Chocolate makers source small volumes from a few hand-picked origins, from specific estates, producers or FBOs. Cocoa bean quality and storytelling components are key to authenticity as well as excellent quality and differentiated prices paid for the cocoa beans. Small chocolate markets offer finished products at the retail level with differentiated prices, usually distributed via specialized (chocolate) stores, delicatessen and other high-end retail. Some chocolate makers supply high-quality couvertures to small craft makers, as well as chefs, high-end restaurants, hotels and other service channels (Ferro et al., 2021a; CBI, 2020).</p>  |
| <b>Sourcing model</b>  |
| <p>Small-sized chocolate makers will commonly source via an importer. A few bean-to-bar makers source directly from origin, usually from producers and sometimes cooperatives. The incidence of this sourcing model is usually proportional to the size of their demand for cocoa beans. It has been observed that bean-to-bar makers in the United States increasingly adopt hybrid models, and work both directly with FBOs and exporters, and via importers, depending on the origin (Ferro et al., 2021; Anonymous, personal communication, July 2021).</p> <p>Direct trade can also happen with an importer or a specialized representative as intermediary, who acts as a service provider and contact point in the transactions between the source and the end market. Such importers can also aggregate volumes, guarantee traceability and communicate the story of the cocoa beans accurately along the chain (CBI, 2020f).</p>  |
| <b>Requirements</b>  |
| <p><b>Annual volume:</b><br/>Starts at around 100 kg or less, up to 200 metric tons. Most small chocolate makers do not reach 100 metric tons annually (C. Martin, 2017). Worldwide demand for the bean-to-bar chocolate maker market is not more than 10,000 metric tons (Ferro et al., 2021).</p> <p><b>Volume per order:</b><br/>Each order starts at a few metric tons when sourced directly from origin. Some small chocolate makers may also share containers when sourcing from the same origin. When sourcing via a (specialized) importer in the consuming country, a single order could be one or a few 65-70 kg bags (Ferro et al., 2021).</p> <p><b>Frequency of orders:</b><br/>Orders are usually made once a year, if directly from origin. Spot purchasing (via importer) can happen 2-3 times a year or when needed (Ferro et al., 2021; Anonymous, personal communication, July 2021).</p> <p><b>Quality:</b><br/>The focus is on the sensory evaluation to establish the flavor profile of the cocoa bean. Consistency is important, but it is acceptable that the flavor profile varies according to harvest and fermentation protocols applied. Small-sized chocolate makers can change recipes and create different product lines (Ferro et al., 2021).</p> <p>Sample inspections are a basic requirement to avoid broken beans, mold, insects, etc. Physical assessments are also conducted, but there is less focus on aspects such as degree of fermentation if this does not result in off-flavors/defects (Ferro et al., 2021).</p> <p><b>Certification:</b><br/>If the chocolate maker works directly with a producer or cooperative, certification is usually not required or desired, although there are a number of chocolate makers specialized in certified products (mainly organic and fair trade) using good-quality cocoa (Ferro et al., 2021).</p> |

The amount of specialty cocoa that is also likely to have certification is very low, and there is a variety among companies in how they approach communication around sustainability and transparency (C. Martin, 2017). Organic certification is becoming a requirement for chocolate makers operating in the specialty segment (Ferro et al., 2021); in fact, organic is the most standard certification in countries producing and exporting specialty cocoa (C. Martin, 2017).

**Contracts:**

Contracts are normally based on individual shipments, but long-term commitments are common due to close relationships (Ferro et al., 2021).

## Other End-User Industries

- **Cosmetics Industry**

The cosmetics industry covers a wide range of products from everyday hygiene such as soap, shampoo, deodorant, and toothpaste to luxury beauty items including perfumes and makeup (CBI, 2020h). The main cocoa derivative used as an ingredient in this industry is cocoa butter.

Cocoa butter for the cosmetic industry is mainly imported in the form of cocoa beans and then processed in Europe or other consuming markets by medium and large-sized processors and manufacturers; alternatively, cocoa butter enters international consuming markets as crude cocoa butter and is then further refined and/or deodorized by specialized vegetable oil and fat refineries (Ferro & Groothuis, 2021).

Some natural cosmetics companies do source cocoa butter directly from selected local processors, which can produce deodorized cocoa butter, an important requirement in this industry. The interviews conducted during this study confirmed there are very few companies in producing countries that can comply with the technical requirements to produce deodorized cocoa butter for the cosmetics industry. Interviews also revealed that most cosmetics companies will have a small annual demand for cocoa butter; as such, the sourcing is done via importers specialized in vegetable oils and fats or generally in natural ingredients or chemical products. It is also important to note that companies processing butter will also need to sell cocoa powder equally, which is a different market (Anonymous, personal communication, July 2021).

- **Pharmaceutical Industry**

The pharmaceutical industry covers drugs used as medications. Cocoa butter is the main cocoa derivatives used in the pharmaceutical industry. Similarly, to the cosmetics industry, this industry commonly sources cocoa butter which has been processed in consuming markets – even more so due to the pharmaceutical industry’s strict quality and safety requirements for ingredients in the main consuming markets (European Commission, 2020b; Anonymous, personal communication, July 2021).

- **Animal Feed Industry**

Animal feed refers to the industry focused on food manufactured for domestic animals. The use of cocoa by-products (pod husk, shell, meal) in animal feed is limited. According to the studies reviewed, previous attempts to utilize cocoa by-products as feed have shown that, when dietary concentrations exceed 10–15 percent, growth and reproductive indices are

negatively affected in ruminant animals. The consumption of cocoa by-products is reported to cause vomiting, central nervous system depression, restlessness, diarrhea, muscle tremor, ataxia, hematuria, tachycardia, and seizures due to the high fiber content – which would require the addition of enzymes for their utilization as feed ingredients (John Makinde et al., 2019). Further studies must be conducted on the (potential) market structure and dynamics for cocoa by-products in animal feed.

## Retailers

Hypermarkets, supermarkets and discount stores constitute the modern retailing sector. They play a significant role in worldwide food chains because they provide farmers, processors and brands the necessary access to millions of consumers. Modern retail sales account for around 54 percent of total food sales (FAO & BASIC, 2020).

Retailers put a lot of pressure on chocolate producers, trying to get the lowest prices possible. This conflicts with the necessity to pay more for cocoa at farm level, and with the necessity to invest more in sustainability. A growing amount of cocoa is sold as private label in the big retailers. As such, they have become chocolate companies themselves. In Germany, the biggest market in Europe, almost a third of the chocolate sales comes from retailers' own brands. Retailers—together with the chocolate producers—get the highest part of the turnover of the whole supply chain (FAO & BASIC, 2020).

European retailers with a specific focus on combating deforestation, are examples of actors in broader collaboration, although it is felt that more transparency and ambition are necessary regarding their aims and activities (Anonymous, personal communication, July 2021). In some countries retailers are increasingly becoming part of the discussion and live up to their responsibility, especially on national levels, through the national cocoa platforms mentioned above. Several individual retailers have started sustainability projects, often in collaboration with actors from further upstream in the supply chain. Lidl's "Way to Go" project with the Kuapa Kokoo cooperative in Ghana, and Ahold's collaboration with Tony's Chocolonely for Ahold's "Delicate" home-brand, are examples of how retailers are starting to move towards more sustainable cocoa sourcing. Another example is the German retailer initiative for living income. The Retailer Cocoa Coalition, bringing together several European retailers with a specific focus on combating deforestation, is an example of a broader collaboration (A. Fountain & Huetz-Adams, 2020).

## Global and Regional Legal and Non-Legal Market Requirements

There are legal requirements an exporter of cocoa beans, cocoa derivatives, and finished products must meet to enter the international market regarding food safety and product information. This chapter includes legal requirements for cocoa products in the main export markets, using the EU and the United States as references, and highlighting applicable regulation at the international level, as seen in Table 16.

**Table 16. European and U.S. requirements for cocoa and cocoa products**

| Subject                          | Description   | Regulation/Guide  | Applicable to                  | Restrictions, maximum levels or instructions   |
|----------------------------------|---|---|--------------------------------|--|
| Pesticide Residues               | Despite the protective barrier of the cocoa pods and shells (if undamaged), the use of pesticides on cocoa trees and in cocoa stores can lead to the presence of residues in cocoa products. There is a growing body of knowledge and increasing public awareness of this subject, which have led to limits being set for the maximum level of pesticide residues in raw materials including cocoa beans. | EU:<br><br>EU Regulation 396/2005 and its amendments (European Commission, 2005).   | Cocoa beans                    | EU:<br><br>Maximum Residue Levels (MRL) less than 0.01 mg/kg. For cocoa, the MRLs are determined on “beans after removal of shells”, as referred to in Regulation EC 178/2006. However, in some other countries MRLs are determined on whole beans.  |
|                                  |   | The United States:<br><br>Code of Federal Regulations (CFR), <a href="#">Title 40 (Protection of the Environment), Chapter I (Environmental Protection Agency), Subchapter E (Pesticide Programs)</a> |                                | The United States:<br><br>Check the U.S. Code of Federal Regulations for specific tolerances and exemptions for pesticide residues in food.<br><br>Search the document with “cacao bean” and “cocoa bean” for limits applicable to cocoa beans.  |
| Mycotoxins                       | Improper drying (high percentage of moisture), improper storage and transportation (no ventilation, high temperature) can cause mold in cocoa beans and in cocoa derivatives. Ochratoxin A is of special concern for cocoa.   | The appropriate maximum level for OTA in cocoa and cocoa products has not yet been established.   | Cocoa beans, cocoa derivatives | No defined limits for cocoa beans or derivatives. But the shipment will be rejected if mold infestation is found.<br><br>International:<br><br>Read and follow the Codex Alimentarius’ <a href="#">Code of Practice for the Prevention and Reduction of Ochratoxin A Contamination in Cocoa</a> (CXC 72-2013). |
| Chemicals to control infestation | Cocoa beans frequently become infested at origin by several species of insects and other pests. If these infestations are not treated at origin by effective pre-shipment fumigation, these species will survive the transportation to traders, processors and manufacturers.   | <b>International:</b><br><br>Montréal Protocol.   | Cocoa beans                    | <b>International:</b><br><br>The use of methyl bromide as a fumigant has been banned. The only alternative accepted is Phosphine (hydrogen phosphide PH <sub>3</sub> ), generated from compounds such as aluminum phosphide or in the form of a cylinderized gas.  |

|                               |  |   |   |   |  |
|-------------------------------|--|---|---|---|--|
| <p><b>Microbiological</b></p> | <p>There is a risk of microbiological contamination at different steps of the supply chain for cocoa beans, cocoa derivatives and finished products. Contamination can occur from various sources.</p> | <p><b>International:</b></p> <p>Guide to Good Hygiene Practices, CAOBISCO (2011).</p>   | <p>Cocoa beans, cocoa derivatives</p>   | <p>No specific requirements for cocoa products are described by legislation, but the presence of contaminants such as E. coli, Salmonella, Enterobacteriaceae, molds and yeast may result in market withdrawal.</p> |  |
| <p>Heavy Metals</p>           | <p>Cadmium</p>   | <p>This heavy metal can accumulate in human tissue over time and can cause kidney and bone damage as well as being a carcinogen. The cadmium problem relates to beans from certain regions of some producing countries, particularly in the Latin America and Caribbean area. Although high levels in the beans are generally associated with naturally high levels of cadmium in the soil, levels are likely to be affected by a number of factors including the physical and chemical nature of the soil, the variety of cocoa and anthropogenic factors including the use of contaminated fertilizers.</p> | <p><b>EU:</b></p> <p>Commission Regulation (EU) No 488/2014 amending Regulation (EC) No 1881/2006 (European Commission, 2014).</p>  | <p>Cocoa derivatives, finished products</p>   | <p><b>EU:</b></p> <p>Maximum cadmium levels:</p> <ul style="list-style-type: none"> <li>• Milk chocolate with &lt;30% total dry cocoa solids: 0.10mg/kg</li> <li>• Chocolate with &lt;50% total dry cocoa solids; milk chocolate with ≥ 30% total dry cocoa solids: 0.30mg/kg</li> <li>• Chocolate with ≥ 50% total dry cocoa solids: 0.80mg/kg</li> <li>• 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</li> </ul> |
|                               |  |   | <p>The United States:</p> <p>California has a specific requirement regarding cadmium contamination in cocoa products and chocolate through <a href="#">Proposition 65</a>. Buyers in other states will also measure and control cadmium levels in cocoa beans and cocoa products.</p> |   | <p>The United States:</p> <ul style="list-style-type: none"> <li>• Cadmium concentration above which a warning is required in parts per million (ppm):</li> <li>• Chocolate with up to 65% cocoa content: 0.400 ppm</li> <li>• Between 65% and 95% cocoa content: 0.450 ppm</li> <li>• More than 95% cocoa content: 0.960 ppm</li> </ul>   |

|                       |   |  |  |  |  |
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|                       | Lead  | <p>This heavy metal can accumulate in human tissue over time and can cause kidney failure and brain damage. Lead can occur naturally in the soil though, depending on soil factors such as pH and organic matter content, it is often insoluble and thus not taken up by the plant. However, lead can be released into the environment during forest fires, mining, smelting and petroleum extraction operations and when fossil fuels are burned.</p> | <p>EU:<br/>EU Regulation 1881/2006 (European Commission, 2006).</p>  | Cocoa derivatives (cocoa butter only)        | <p>EU:<br/>0.10 mg/kg lead in vegetable oils and fats.</p> |
|                       |   | <p>The United States:<br/>California has a specific requirement regarding lead contamination in cocoa products and chocolate through <a href="#">Proposition 65</a>. Buyers in other states will also measure and control lead levels in cocoa beans and cocoa products.</p>   | <p>The United States:<br/>Lead concentration above which a warning is required in parts per million (ppm):</p> <ul style="list-style-type: none"> <li>• Chocolate with up to 65% cocoa content: 0.100 ppm</li> <li>• Between 65% and 95% cocoa content: 0.150 ppm</li> <li>• More than 95% cocoa content: 0.225 ppm</li> </ul> |  |  |
| Free Fatty Acid (FFA) | <p>FFA can have an impact on the hardness of cocoa butter and therefore its processing quality, specifically its crystallization properties. High FFA butter results in poor quality chocolate; it affects bloom, tempering, and can affect the flavor.</p> | <p>EU:<br/>Directive 2000/36/EC (EU, 2000).</p>  | Cocoa derivatives (cocoa butter only)  | FFA content in cocoa butter less than 1.75%. |  |
|                       | <p>The United States and International:<br/>No specific legal limits, but <i>Codex Alimentarius</i> provides guidelines at the international level.</p>   |  |  |  |  |

|                                 |   |   |  |  |
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| <p>Extraction solvents</p>      | <p>Extraction solvents are solvents used in an extraction procedure during the processing of raw materials, of foodstuffs, or of components or ingredients of these products and which are removed but which may result in the unintentional, but technically unavoidable, presence of residues or derivatives in the foodstuff or food ingredient.</p>   | <p>EU:<br/>Directive 2009/32/EC (European Commission, 2009).</p> <p>The United States and International:<br/>The Codex Alimentarius provides guidelines at the international level<br/><br/>CODEX STANDARD FOR COCOA BUTTER STAN 86-1981.</p> | <p>Cocoa butter</p>  | <p>Limit on the use of Hexane (1 mg/kg) in cocoa butter.</p>         |
| <p>Mineral Oil Hydrocarbons</p> | <p>Cocoa products, in common with many other foods, could potentially be exposed to mineral oil hydrocarbons (MOH) at various points in the chain from the farm to the consumer since they are found in various packaging materials and food additives as well as arising from contamination by lubricants, fuels, and debris from tires and road bitumen. MOH are considered of potential concern, as they may be mutagenic and carcinogenic. Recycled cardboard packaging, including the dressings used to line containers for shipping, may be contaminated by mineral oil-based printing inks from the recycled paper used to produce it. Another source of contamination can be jute sacks manufactured using fibers, which have been processed using mineral oils rather than vegetable oils.</p> | <p>EU:<br/>European Standard EN 766 on bags for the transport of food aid.</p> <p>The United States and International:<br/>International Jute Organization (IJO) Standard 98/01.</p>  | <p>Materials that come into contact with cocoa beans, cocoa derivatives.</p> | <p>MOH content/unsaponificables less than 1,250 mg/kg jute fiber</p> |

|   |  |  |  |  |
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| <p>Polycyclic Aromatic Hydrocarbons (PAH)</p>   | <p>Polycyclic aromatic hydrocarbons are a group of compounds present in the environment due to past and current incomplete combustion (burning) of organic substances (e.g., wood, gas, diesel) and geochemical processes. For cocoa, the principal source is from smoke contamination during artificial drying.</p> | <p>EU:<br/>Regulation 1881/2006 as amended by Regulation 835/2011 and 1933/2015 (European Commission, 2011a).</p> <p>The United States:<br/>The United States has no established standards governing the PAH content of foodstuffs. It is advisable, however, to avoid contamination and use the EU maximum levels as reference.</p> | <p>Cocoa beans, Cocoa derivatives</p>                      | <p>EU:</p> <ul style="list-style-type: none"> <li>• Cocoa beans and derived products: less than 5.0 mg/kg fat of Benzo(a)pyrene and less than 30.0 mg/kg fat of benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene</li> <li>• Cocoa fiber and products derived from cocoa fiber, intended for use as an ingredient in food: less than 3.0 mg/kg of Benzo(a)pyrene and less than 15.0 mg/kg of benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene</li> </ul>  |
| <p>Labeling of cocoa and chocolate products</p> | <p>The labeling rules for cocoa and chocolate products enable citizens to obtain comprehensive information about the content and composition of these products.</p>  | <p>EU:<br/>Directive 2000/36/EC (European Commission, 2000).</p>   | <p>Cocoa derivatives and finished products (chocolate)</p> | <p>EU:</p> <p>Cocoa butter: fat obtained from cocoa beans or parts of cocoa beans with the following characteristics:</p> <ul style="list-style-type: none"> <li>• free fatty acid content: not more than 1.75%.</li> <li>• unsaponifiable matter: not more than 0.5%, except in the case of press cocoa butter, where it shall not be more than 0.35%</li> </ul> <p>Cocoa powder: obtained by converting into powder cocoa beans which have been cleaned, shelled and roasted, and which contains not less than 20% cocoa butter, calculated according to the weight of the dry matter, and not more than 9% water.</p> <p>Fat-reduced cocoa, fat-reduced cocoa powder: cocoa powder containing less than 20% cocoa butter, calculated according to the weight of the dry matter.</p> |

|  |  |  |  |  |
|--|--|--|--|--|
|  | <p>The United States:<br/>Code of Federal Regulations,</p> |  | <p>Cocoa derivatives and finished products (chocolate)</p> | <p>Powdered chocolate, chocolate in powder: consisting of a mixture of cocoa powder and sugars, containing not less than 32% cocoa powder.</p> <p>Drinking chocolate, sweetened cocoa, sweetened cocoa powder: consisting of a mixture of cocoa powder and sugars, containing not less than 25% cocoa powder.</p> <p>Chocolate: obtained from cocoa products and sugars which, subject to (b), contains not less than 35% total dry cocoa solids, including not less than 18% cocoa butter and not less than 14% of dry non-fat cocoa solids.</p> <p>Milk chocolate: obtained from cocoa products, sugars and milk or milk products containing:</p> <ul style="list-style-type: none"> <li>• not less than 25% total dry cocoa solids</li> <li>• not less than 14% dry milk solids obtained by partly or wholly dehydrating whole milk, semi- or full-skimmed milk, cream, or from partly or wholly dehydrated cream, butter or milk fat</li> <li>• not less than 2.5% dry non-fat cocoa solids</li> <li>• not less than 3.5% milk fat</li> <li>• not less than 25% total fat (cocoa butter and milk fat)</li> </ul> |
|  |  | <p><a href="#">TITLE 21--FOOD AND DRUGS</a><br/><a href="#">CHAPTER I--FOOD AND DRUG ADMINISTRATION</a><br/><a href="#">DEPARTMENT OF HEALTH AND HUMAN SERVICES</a><br/><a href="#">SUBCHAPTER B – FOOD FOR HUMAN CONSUMPTION</a><br/><br/><a href="#">PART 163 CACAO PRODUCTS</a></p> |  | <p><a href="#">TITLE 21--FOOD AND DRUGS</a><br/><a href="#">CHAPTER I--FOOD AND DRUG ADMINISTRATION</a><br/><a href="#">DEPARTMENT OF HEALTH AND HUMAN SERVICES</a><br/><a href="#">SUBCHAPTER B – FOOD FOR HUMAN CONSUMPTION</a><br/><br/><a href="#">PART 163 CACAO PRODUCTS</a></p>   |

|           |   |  |                   |  |
|-----------|---|--|-------------------|--|
| Labeling  | Labeling regulation enables citizens to obtain comprehensive information on the content and composition of food products.   | EU:<br>Regulation (EU) No 1169/2011 (European Commission, 2011b).  |                   | The Regulation clarifies the responsibilities of food business operators with respect to food information.               |
| Allergens | Food allergies can be fatal. Chocolate, biscuit and confectionery manufacturers face specific challenges, since allergens such as peanuts, tree nuts, milk, eggs, soya and gluten-containing cereals are commonly used. | The United States:<br><br>The FDA (U.S. Food and Drug Administration) enforces the Federal Food, Drug, and Cosmetic Act (FD&C Act). Food labels must also comply with the following laws:<br><br>Nutrition Labeling and Education Act (NLEA)<br><br>Fair Packaging and Labeling Act (FPLA)<br><br>Food Allergen Labeling and Consumer Protection Act (FALCPA), among others. | Finished products | For allergens present as an ingredient, it is a legal requirement that these be clearly labeled in the ingredients list. |

# GLOBAL PRICES

## Factors in Global Price Formation

In an optimally structured market, the cocoa price would be the result of harvest volume (supply) and consumption (demand), particularly because cocoa has limited uses and no major substitutes (Hütz-Adams & Schneeweiß, 2018). But the market is not optimally structured, and so there are additional factors determining price, such as hedging (either for physical trade or for speculation), tariffs, trade agreements, taxes, global events and crises (politics, weather).

### Price Determining Factor: Supply

With increasing cocoa supply, prices go down with a steady demand. The following factors can influence supply:

- 1. The planted area:** This usually increases during high prices (cocoa boom), leading to a supply surplus, resulting first in the fall and then in the stagnation of cocoa prices, which subsequently has a negative effect on harvesting and planting, prompting cocoa farmers to shift to alternative crops. This permits world cocoa prices to rise again (François. Ruf & Siswoputranto, 1995; UNCTAD, 2008).
- 2. Weather:** Weather can severely influence a harvest. For example, dry weather patterns in West Africa in August and October can prevent cocoa trees from flowering and can lower production. It is notable that production growth steadily increased even during periods of lower prices in the 1990s and early 2000s (Bymolt, Laven, & Tyzler, 2018).
- 3. Factors affecting agricultural practices and yield:** Here, one can identify pests and plant disease, changes in government-led cocoa investment programs, or changes in the availability of inputs, increased knowledge among farmers to properly prune or to make organic compost and organic liquid fertilizer (Oomes et al., 2016).

### Price Determining Factor: Demand

With increased demand for a product, prices will rise if the supply does not rise along with it. The stocks-to-use ratio (or in cocoa: grinding ratio) is a convenient measure of the supply and demand interrelationship of commodities and is an important determinant of price. It is calculated as:

$$\frac{\text{beginning stock} + \text{total production} - \text{total use (also known as carryover stock)}}{\text{total use}}$$

The ratio indicates whether current and projected stock levels are critical or plentiful (Trading Charts, 2021). A low stock-to-grinding ratio means there is little cocoa stock left and will most likely stimulate a price increase.

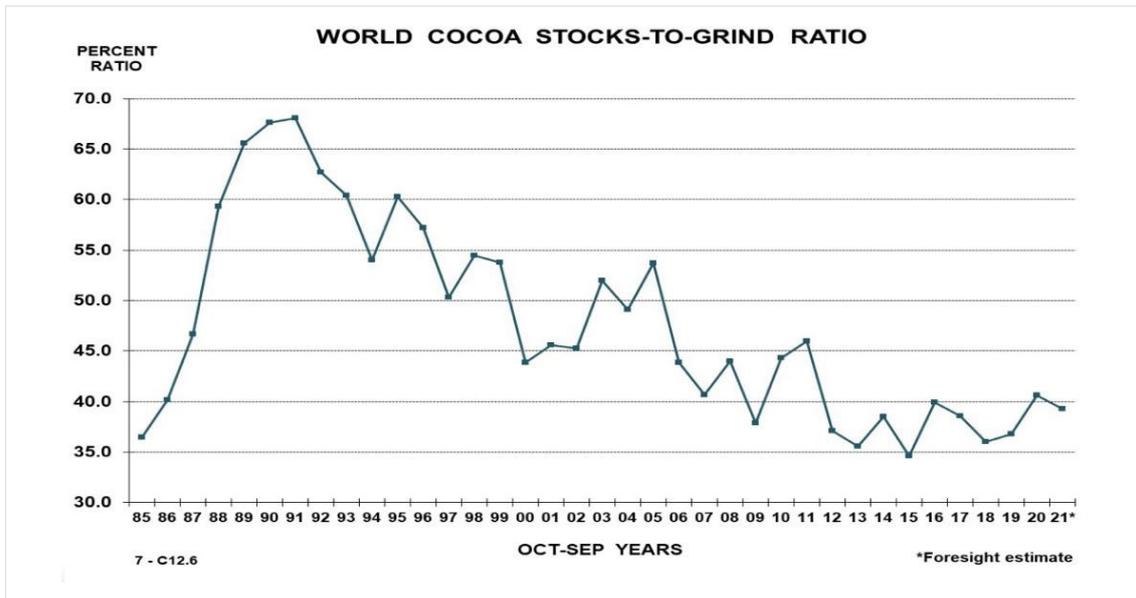


Figure 51. Illustration of historical cocoa stocks-to-grind ratio. Source: Foresight, 2021

Examples of aspects that influence demand are:

1. Global economic growth – for instance, chocolate sales in China grew to USD 11.3 billion in 2018, up from USD 2.7 billion in 2014, driven by demand from the growing urban population (CNBC News, n.d.; Marketing To China, 2021).
2. Pandemics – for instance, there was a decrease in chocolate consumption during COVID-19 lockdowns of airports, gourmet restaurants and specialty chocolate shops.
3. The perception of chocolate as a (un)healthy or (ir)responsibly produced product.
4. For more drivers and constraints of the market, please see the next chapter.

### Price Determining Factor: Hedging

Hedging is a strategy used in commodity trade, also in cocoa, designed to reduce investment risk. Even though this trade is ‘virtual’ (paper trade), it influences the price of cocoa because participants will affect the supply and demand of the virtually traded cocoa. The number of market participants consists of professional hedgers, institutional investors such as pension funds, and speculators, including those speculators that will have a bank or other intermediary investing it, which is the “managed money” category. This last group is one that brings a lot of liquidity to the market. It is difficult for the stock market to tell what trades result from hedge orders or from speculative orders. The investments by speculators have, contrary to popular belief, a *mitigating* effect on the volatility of the market prices, as described in the chapter related to Prices.

Cocoa trading companies sometimes mitigate or ‘hedge’ their price risks when providing a contract to a supplier to deliver cocoa later (a future or forward contract), as the price between time of signing the contract and the price at time of delivery may have changed. For

instance, if a trader fixes a price with their supplier (e.g., a cooperative) but not with their buyer (e.g., a chocolate maker), the trader is exposed to a potential loss if the price goes down – the trader had to buy relatively high from the cooperative and now must sell relatively low to the chocolate maker. Conversely, if a trader fixes the price with their buyer but allows the supplier to fix at the (future exchange) price later, the trader is exposed to a potential loss if the (future exchange) price goes up and the supplier fixes at this later (higher) price.

To protect themselves from these potential losses, the trader can purchase a contract (an ‘option’) on the future exchange to receive or sell the volume of that contract at the time of termination of the contract. A contract size is 10 metric tons of cocoa in both the New York and London future exchanges. Before the contract ends, the trader will sell this option again and will have made a profit (if the price has gone up) or loss (if the price went down), which will offset any profit or loss the trader was exposed to with his own physical trade of cocoa beans. The price they pay for this is a commission, which can be considered an insurance fee against the fluctuations of the world market price. The buying (going ‘long’) and selling (going ‘short’) on these contracts affect the world market price, as these activities influence supply and demand. For instance, if many investors sell contracts (they go ‘short’), there will be more (virtual) supply of cocoa, and this will drive the price down. The price will go down until other investors will buy (going ‘long’) these contracts to stabilize the drop in price and perhaps have it increase again.

Contrary to investors in this ‘paper trade’, cocoa traders, processors and manufacturers are in the ‘physical trade’ and will ‘take delivery’ of real cocoa lots (a lot is defined as the same volume as a contract, 10 metric tons) at planned intervals, as they need this for their business. But these physical cocoa traders also participate in the paper trade to protect them, as explained above. As a cocoa trader at a Swiss trade desk explains: “For every physical activity you do the opposite in the paper market to protect yourself” (Anonymous, personal communication, Oct. 2021).

### **Price Determining Factor: Managed Money**

Investors such as hedge funds or pension funds, but also individuals, may invest in cocoa as they feel that it is a good haven for their savings to generate profit, especially considering (lately) the very low interest rates banks offer for money in traditional savings accounts. There are various ways of investing in cocoa: actively trade with derivatives, speculating on price rises or falls of the cocoa price with CFDs (Contracts for Difference). With CFDs orders can be placed on both a falling and a rising price. A party to actively trade in cocoa with CFDs is Plus500 (BeleggenInfo, 2021). Alternatively, investing long-term in cocoa, is called ‘blind speculation’. Here, cocoa futures are bought irrespective of price and without a view on the cocoa market. Long-term investment can be done by buying an ETF (Exchange Traded Fund) that deals with cocoa. A cocoa ETF is a fund that tries to track the cocoa price as closely as possible. Another option is to invest in an ‘index’ which combines various commodities, like coffee, cocoa and pork bellies (Anonymous, personal communication, Oct., 2021). Another way to invest in cocoa is by purchasing shares in companies involved in the production of cocoa or chocolate, like Hershey, Mondelēz, Rocky Mountain Chocolate Factory, Tootsie Roll Industries, Famous Swiss chocolate stocks, Nestlé, Barry Callebaut, or Lindt & Sprüngli. All these companies are traded on various national stock exchanges (BeleggenInfo, 2021). It is not clear to what degree purchases of company shares affect price dynamics in the cocoa

sector, but it is safe to assume that these are negligible in comparison to factors of physical supply and demand.

### Price Determining Factor: Speculation

An extreme extension of investing in cocoa is speculation, where investors are neither the physical cocoa traders nor institutions or individuals looking for a good long-term investment. Instead, the speculator looks toward quick gains by profiting from up and downward moves of the market. As an extreme example of speculation, one can take the July 2010 action by Anthony ‘choc-finger’ Ward and his London-based commodities hedge fund Armajaro, when they took delivery (in other words, he did not sell his options) of 240 thousand metric tons of cocoa on the London cocoa futures market. This meant he held approximately seven percent of the world’s physical supply of cocoa, resulting in perceived scarcity of ‘left over cocoa’ consequently pushing up the price of cocoa to a 33-year high. This sale may have been an attempt to control the futures price, but if so, it failed. There have been fines for traders who violated futures market regulation put in place to secure a fair way of trading; in 2013, Olam received a USD 3 million fine for violating trading regulations on the cocoa futures market (Oomes et al., 2016).

The volume of this ‘paper trade’ represents, according to industry experts, over 90 percent of trade in cocoa. (Anonymous, personal communication, Sep. 2021). How much speculation affects the market is up for debate: in interviews, people felt very strongly about the influence of speculators, and Harold de Boer of Transtrend (2018) found strong indications that these ‘investments’ have a potentially disturbing market impact. “(...) (T)he ‘blindly’ repetitive process of buying further-ahead futures to sell them as they approach delivery (at that point taking the profit or loss) does impact the demand and thus price of futures contracts, resulting in higher costs of hedging for the demand side that is really in the business of cocoa trade and processing. In the end, this results in a higher price to be paid by the chocolate consumers; they pay a premium that the farmers producing the cocoa beans will not receive, as they will line the pockets of these speculators” (Transtrend, 2018).

However, de Boer also found that speculators do not necessarily drive-up commodity prices above their reasonable levels. Others agree: a time-series analysis of spot and future prices revealed that the pricing process in the cocoa market operates efficiently without distortion from speculators (Ohemeng et al., 2016). In an extensive empirical study using prices over a 20-year period, Bohl & Stephan (2013) likewise tested whether futures speculation destabilizes commodity spot prices for six different commodities. For none of the six commodities was it proven that speculation influenced prices, despite the strong increase in speculation over the period under examination. “Price spikes do occur in commodity markets but there is no evidence that speculation is the cause of price volatility” (Ohemeng et al., 2016).

### Price Determining Factor: Liquidity

Despite the price amplification effect that investments from speculators might cause in the markets, the investments from speculators also play a mitigating role regarding the market’s price volatility. This is because speculators provide the liquidity to the London and New York futures markets to prevent traders from being confronted with a situation where they may cause the market to swing up and down due to the trader’s buying and selling, which will

happen when there are not enough counterparties to absorb the volume he needs to trade (Anonymous industry expert, July 2021). Examples of how speculators can reduce price volatility:

- If a large trader buys a certain tonnage from the CCC in Côte d'Ivoire or the CMC in Ghana, he will have to hedge it immediately because these are outright purchases (in CFA or USD)<sup>5</sup>. Example: Company X buys 20,000 metric tons of Ivorian beans for April 2022 shipment at a price of CFA Y per ton. In return, he sells 20,000 tons May '22 lots in London or New York at the highest possible price. He can also sell cocoa products at the same time on an outright basis, a so-called "physical hedge", but it is near impossible to find a counterparty that is willing to sign a physical contract at just that moment for just that position and for just that volume in bean equivalent that company X just bought. This means that selling the purchased bean tonnage on the futures market is always the logical step if you buy beans in origin to reduce price risk from overtime volatility.
- In a case where there are no investors (speculators) in the market, the market would be devoid of liquidity and the following could happen. Example: In a particular month, USD 2,100 is the call (buy) price and USD 2,101 is the put (sell) price. Company Y wants to sell 20,000 tons. The company sells 1,000 tons (100 lots). Because the paper trading is absent, this now has a relatively large effect on the market: the price goes from USD 2,100 to USD 2,050. The company tries to sell another 1,000 tons, but the buyers want USD 2,000. The company has no choice but to sell at USD 2,000. The market sees this continued selling, so it drops even further: Company Y is "selling the market down".
- Brokers play an important role in matching large selling orders with investors (speculators). Example: Company Z tells a broker that they expect to sell 20,000 tons in May. Company Z asks what kind of volume the broker can find buyers "at current market level". Often, the broker only needs to enter the number of lots and the price into his or her computer to find the right parties to absorb the sale. The results are: no ripples in the market level; the buyers and sellers do business that hardly influences the market level; and even before the physical business takes place, the buyer already has an idea after his conversation with the broker where the buyers are in the futures market (Anonymous, personal communication, Sep. 2021).

The bottom line is that without the futures market, it is impossible to keep the risks of price fluctuations manageable for almost all market participants. An industry specialist mentioned that "it is nonsense to blame speculators for the fluctuations of the futures market. In the end it is supply and demand, and if the price goes up then more cocoa is grown because farmers will take advantage of that. This will then make the price goes down again. If the prices are right, more cocoa will come on the market within a few years, and if low prices really stop production like in Malaysia, it is because the farmers have better alternatives such as rubber, oil palm, and fresh fruits that are available in Northern consumer markets in a matter of days" (Anonymous, personal communication, Sep. 2021).

<sup>5</sup> The origin countries do little or no forward business because that situation can cause political complications if the market falls after selling based on future terms; the counties would have to pay a 'margin call' (additional funds because of the adverse price movement).

## Price Determining Factor: Computerized Trading

Automated – or computerized, mechanical, or machine trading are systems which work with algorithms allowing traders to establish specific rules for trade that can be automatically executed via a computer. Various platforms report 70 to 80 percent or more of shares traded on the U.S. stock exchanges come from automatic trading systems (Chatterjee, 2019). One of the biggest attractions of strategy automation is that it can take some of the emotion out of trading. Trades are automatically placed once certain criteria are met (Folger, 2019). A Financial Times article of Apr. 26, 2018 stated: “Computerized trading drives up New York cocoa price”, after prices had surged more than 50 percent over four months. According to the article, computers were behind not only the price rise, but also the cause of “dramatic divergence in the longstanding price relationship with the London market” (Financial Times, 2018). Although sharing the concern that the price development in the cocoa futures market does not match the developments in the underlying physical market, Transtrend’s Harold de Boer (2018) found no grounds to support the argument that computerized trading has driven up cocoa prices above reasonable levels. Nor did he support the statement that computerized trading has sparked an unreasonable divergence between the prices in New York and London (Transtrend, 2018) (Transtrend, 2018). However, the world is entering an era where artificial intelligence is developing at an astounding speed and computerized trading will be something to keep a close eye on in years to come.



Photo: Ahmed Jallanzo, courtesy of CBI

## Price Determining Factor: Tariffs, Trade Agreements and Taxes

Import tariffs, or duties, make commodities more expensive. In 2018, the average tariff for importing cocoa beans was 6.19 percent. The countries with the highest tariffs for importing cocoa beans were Bahamas (36.8%), Tunisia (36%), Sudan (35%), Cameroon (29.4%), and Gabon (29.4%) (OEC, 2021). The United States, the EU, and other developed countries have a Generalized System of Preference (GSP), providing nonreciprocal, duty-free tariff treatment to certain products imported from designated beneficiary developing countries (BDCs). These programs have been in existence since the 1970s (Every CRS Report, 2021). The United States has a Free Trade Agreement (FTA) for agricultural products with Peru, Colombia, the Dominican Republic and the Central American countries of Honduras, El Salvador, Guatemala and Costa Rica, where the import tariff of beans diminished from 4.5 percent (DR 12,6%) in 2006 to zero percent in 2015 (Colombia was at zero percent in 2012) (USDA, 2021). Currently, all beans, no matter what origin, are exempt from import tax in the United States and the EU. The situation is different regarding the import of beans into cocoa producing countries. Ecuador, for instance, prohibits the import of cocoa beans (Anonymous, personal communication, July 2021).

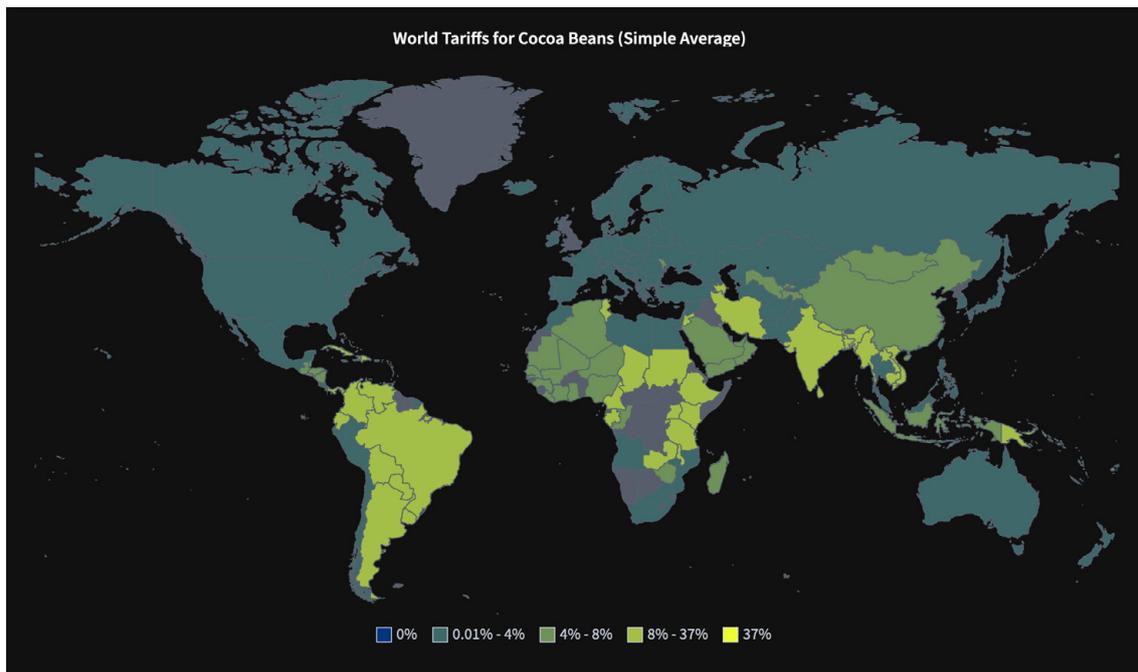


Figure 52. World tariffs for cocoa beans. Source: OEC World, 2021

However, these industrialized countries may impose tariffs on processed cocoa products (FAO, 2021). While the EU tariff on cocoa beans, cocoa shells and husks is zero percent for all producing countries, Gabon and Libya face a tariff of 8 percent on cocoa powder, 7.7 percent on cocoa butter and 9.6 percent on cocoa paste exports – the maximum tariffs the EU imposes on these products being imported from any country in the world. Nigeria and the Democratic Republic of Congo (DRC) benefit from the GSP, lowering the tariff on cocoa powder to 2.8 percent, cocoa butter to 4.2 percent and cocoa paste to 6.1 percent. The remaining 51 African countries face no tariffs on cocoa powder, butter or paste, by virtue of either trade agreements with the EU (Full Fact, 2019). Thanks to EPA (Economic Partnership Agreements) trade agreements, Côte d'Ivoire and Ghana have duty-free access to the European market, not only for raw cocoa but also for cocoa products processed in the country. The fact that Nigeria has no EPA agreement with the EU (and pays 6.1 percent on processed cocoa products as mentioned above) is possibly a reason for the low-capacity utilization of the processing plants in the country (Hütz-Adams & Schneeweiß, 2018). For industrial chocolate import into the EU, a zero percent tariff applies and an (average) 2.35 percent for finished chocolate. In the United States, the average tariff for cocoa beans from around the world is zero percent. The same goes for butter, shells, husks and non-defatted paste (USITC, 2020). But for cocoa preparations the average was 10.6 percent in 2017. Specifically, there is an import duty on paste that is wholly or partly defatted (USD 0.82/kg), powder not containing added sugar (USD 0.82/kg), chocolate less than 65 percent by weight of sugar (free), and chocolates with a higher percentage (10%). The average import duty in chocolate for the United States was 11.6 percent in 2017 (OEC World, 2021). Highest tariffs are charged on chocolate coming in from African countries (13.4%), and neighboring Canada facing 13.4 percent tariffs.

Many of these tariffs do not apply to developing countries: If part of the GPS, a properly filled out form A (also called a 'certificate of origin'), will permit the export of cocoa beans, products and even finished chocolate duty-free. In the United States, import of finished chocolate has been reduced from 15 percent to zero percent for the above-mentioned FTA countries. The

United States is also reducing import tariffs on dairy for these countries to zero percent by 2025 – interesting for milk chocolate import (USDA, 2021). The EU still charges hefty sugar and milk import tariffs to protect its sugar (beet) and dairy farmers. For example, the tariff on sugar into the EU (even if in chocolate) is EUR 419 per ton, so a 100g dark chocolate bar with 70 percent cocoa content would increase in cost by EUR 0.12 by crossing the EU-border because of the 30 percent sugar. The import duty for raw sugar is only EUR 98 per ton if imported from a ‘CXL’ country, which includes Australia, Brazil, Cuba and India, but only for sugar destined to be refined into white sugar. Least Developed Countries (LDC) and African, Caribbean and Pacific (ACP) countries trading under ‘Everything but Arms’ (EBA) have unrestricted, tariff-free imports of raw sugar into the EU (and therefore also in industrial or finished chocolate) (Eastick, 2019).

Export taxes in producing countries would in theory increase the FOB price, but as prices are so linked to world market prices, more often the effect is a lower farmgate price. Countries such as Peru, Brazil, Ecuador and Cameroon have little or no tax on cocoa exports. Ghana and Côte d’Ivoire, on the other hand, use a fixed farmgate price mechanism that implicitly taxes all cocoa beans heavily and is immensely important to cover the state budget. In 2020, government levies were 44.2 percent of the FOB price (Ghana), 45.1 percent (Côte d’Ivoire), compared to 18.6 percent (Rest Of World), which includes liberalized economies where the tax on the FOB value is low (e.g. Sierra Leone at 2.5%). Côte d’Ivoire also has an additional export tax of 14.6 percent and a registration fee of 0.94 percent on raw cocoa beans, Ghana does not (Boysen et al., 2021) at least partially. Poverty, in turn, is considered to be the root of further sustainability issues. To raise the value share and price accruing to their farmers by leveraging their collective market power, the two biggest cocoa producing countries Côte d’Ivoire and Ghana jointly announced in 2019 the cocoa Living Income Differential (LID). Nigeria has a complex fiscal system that also results in high taxes. Lower farmgate prices often cause smuggling of cocoa beans to countries with a higher farmgate price.

### Price Determining Factor: Crises

Political upheaval or health and environmental crises in large producing countries may affect the world market price. For example, before the First World War, there was a fall in prices as the result of a drastic increase in production and low consumption in Europe and America as the world went through the Great Depression and the Second World War (Gilbert, 2016). Forest fires in West Africa led to a price explosion in the mid-1970s (in combination with drought). The large decline in production during 1965/66 was the result of a military coup d’état in Ghana (and the subsequent expulsion of foreigners), while the recent price increases in 2002 and 2010 were related to civil unrest in Côte d’Ivoire. Infectious disease outbreaks (AIDS, malaria, Ebola, Covid-19) also disrupt prices. For instance, the Covid-19 outbreak first caused panic buying in early 2020, increasing the price of cocoa. Later, lockdowns and fear-based cutting down on luxury items like chocolate drove down the price. French and Belgian artisanal chocolate makers, for instance, were not able to open their shops during the important 2020 Easter season (Ferro, 2020).

# Global Price Trends

## Historic Price Development of Cocoa Beans in the Last 50 Years

Since 1960, the world cocoa price has increased fivefold in terms of U.S. dollars but remained broadly stable when adjusted for inflation. As the figure below shows, nominal cocoa prices (in USD per kg) increased by an average of 5.8 percent per year during the period 1960–2015 – a fivefold increase of the price over the whole period. In real terms (i.e., adjusted for inflation), cocoa prices increased by 130 percent since 1993 but remained mostly constant when taken over the whole period 1960–2015. In 2015, the real cocoa price was nearly at the same level as in 1960. A slight diminution can be observed in the average trend of real cocoa prices when looking from 1960 (Figure 53). If looking at the price in the beginning of the 1990s, a 250 percent increase is observed.

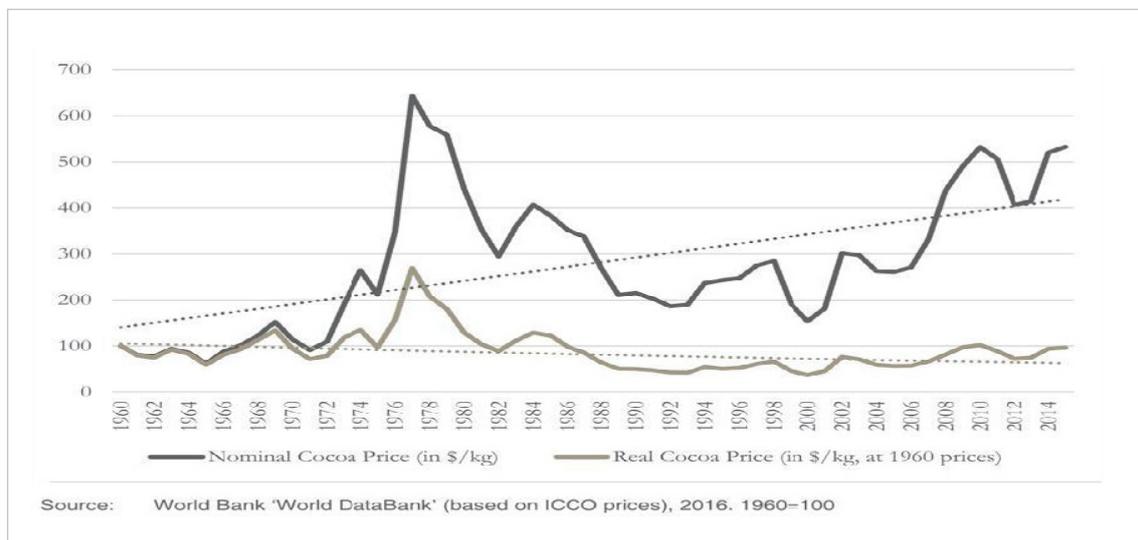


Figure 53. Nominal and real prices of cocoa 1960 to 2014. Source: Bymolt, Laven, & Tyszler, 2018

## Cocoa Prices Short-Term Outlook (2021–2022)

From July to September of 2021 markets quickly gained GBP 200, probably due to investors going into commodities as general scarcity in the market is observed: oil, gas, wood, plastics, transport and food commodities all went up while cocoa—the eternal ‘contrarian’—was still low. Cocoa prices are now catching up, partly because of a recovering economy – market segments such as food and beverage, airports and cooking schools are back in business. This could also be due to the nervousness of investors (and their computer algorithms) about the real estate bubble potentially bursting in China. The London future market went in a matter of months from 130,000 metric tons short to 150,000 metric tons long. However, the rising futures market is expected to taper off at the end of the year amidst reports of good rains in the West African cocoa zone, which reduces the chance of a large deficit of the new crop, which in West Africa starts after October 1 (GCB Cocoa, 2021). It is expected for prices to bottom out in the fourth quarter of 2021 and to rise steadily in 2022 as demand picks up. According to The Economist, the full-year average price is likely to come in at USD 2,256 per ton next year, slightly lower than in 2021. Based on these price

assumptions, the USD 400 per ton “living income differential” (LID) that has been added to the market price in forward sales contracts in Côte d’Ivoire and Ghana is not expected to remain in place for the duration of the forecast period. (The Economist, 2021). For an analysis of the LID, please refer to the Living Income chapter.

## Regional Differences in Cocoa Prices

Regional supply and demand dynamics can cause considerable price disparities. This is because cocoa is scarcer in one region than the other. Particularly if there is demand for a certain type of cocoa, whether because of its taste profile or because of its proximity to markets, scarcity will drive up the price. As an example, cocoa production in Central America is low compared to other producing countries worldwide. The collapse of Central America’s production began in the early 80s and was caused by a mix of diseases (mainly Moniliasis), low international cocoa prices, poor yields, and government programs with weak scientific support. These aspects were followed by hurricane Mitch leaving plantations in disarray in the late 1990s, mainly in Honduras (CBI, 2018b). This created scarcity of cocoa in the region. Due to the large regional demand, particularly from Mexico and El Salvador (for its confectionery industry), the cocoa price in Central America is relatively high – even unfermented cocoa beans can be sold locally by farmers at prices far over the world market price.

Scarcity and high local prices in Central America have made it challenging for quality oriented FBOs and exporters to export, even though the cocoa of that region has good flavor characteristics. Farmers are not inclined to do proper fermentation and drying if they can earn as much selling poor quality beans to local middlemen. This situation will only change if production reaches higher levels and farmers must improve their quality to sell it all (CBI, 2018b). Similar situations occur in Colombia, Brazil and Sierra Leone, where due to scarcity and competition the local price is higher than an FOB export price. See also case studies on Colombia and Brazil in the Local Market Surplus Alternatives chapter.

Food safety or other regulations may limit a particular type of cocoa bean to a particular kind of market. For instance, the EU has strengthened its regulation on cadmium in cocoa and derived products, which has an effect mainly on Latin American suppliers of high-quality cocoa beans. In addition, there is not a clear institutional strategy to tackle the issue at a regional level. In most countries, the infrastructure for analysis is also non-existent, and laboratories are not able to perform cadmium content tests (CBI, 2018b). This would limit the sales of these cocoa beans to the EU, and in absence of these (perhaps pricewise more attractive) markets would fall prey to lower (local) prices for local processing. An example of that is Colombia, where most of its cocoa beans are being purchased by two large local chocolate manufacturers paying relatively low prices for the beans in comparison to the potential European market, even though the cocoa is of very good quality, as shown by Casa Luker.

## Volatility and Elasticity

### Price Volatility in Cocoa Compared to Other Commodities

Cocoa production is relatively stable compared to other commodities (such as minerals or cryptocurrency) because of the cocoa production cycle of approximately 25 years and because there are not many substitutes for cocoa. Even in a crisis, so-called ‘soft commodities’ (coffee,

sugar and cocoa) continue to be consumed, whereas volatility of hard commodities such as precious metals is a lot more severe. Cocoa production’s volatility has averaged about 7.5 percent per year (positive or negative) over the period 1960–2015 (with 17 seasons when the annual change in production was > 10%). There were even volatility peaks as high as 26 percent in 1984 and 23 percent in 1995 (Oomes et al., 2016). The world price of cocoa is not more volatile than other world commodity prices. As Figure 54 shows, the real price of cocoa is not more volatile than the real prices of coffee, rubber, sugar, palm oil and tea (Oomes et al., 2016).

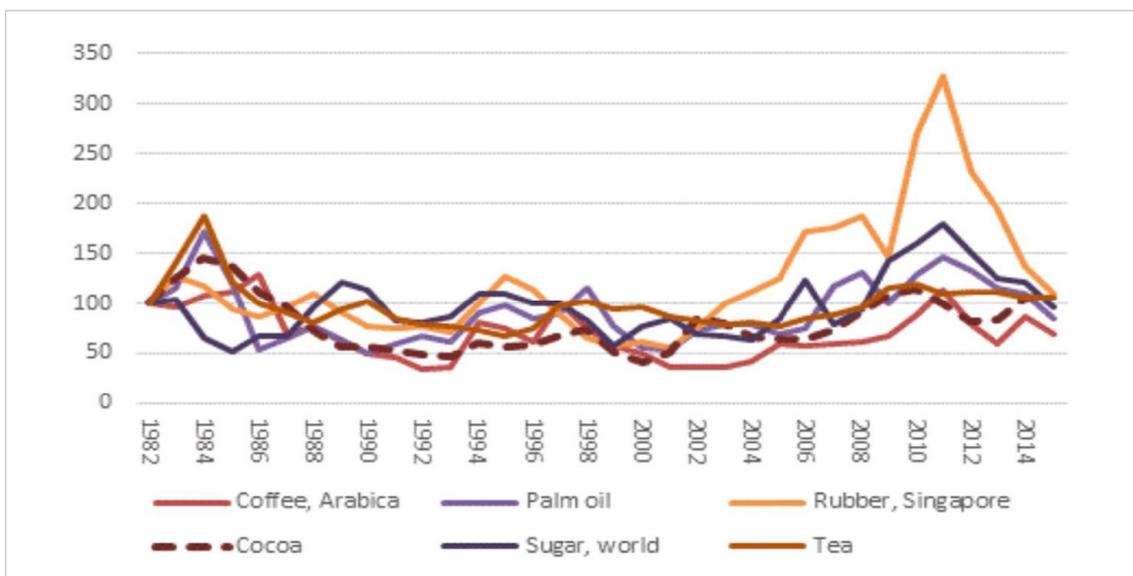


Figure 54. Price volatility of different commodities. Source: Oomes et al., 2016

## Policies that Can Address Cocoa Price Volatility

Various unsuccessful methods have been tried to stabilize the cocoa price in the past: planned economies, cocoa stock management, national cocoa marketing boards, and international cocoa agreements. These experiments caused inefficiencies, led to market failures, and were not likely to win wide support (Tothmihaly, 2018). Treating the consequences of high cocoa price volatility necessitates stabilization of the cocoa farmers’ income. However, farmers in cocoa-producing countries do not have access to effective saving tools and safety nets. Tothmihaly suggests that farmers could use hedging instruments like futures, forward and long-term contracts, options, and price swaps to manage cocoa price risks, but the threshold of opening an account is too high for FBOs. It is also a challenge to fully grasp these complex mechanisms, which are not without risk if used improperly, explains an industry insider (Anonymous, personal communication, July 2021). One possible solution for income stabilization might be the encouragement of crop diversification (Oomes et al., 2016; Tothmihaly, 2018).

The demand for cocoa is clearly less volatile than the supply of cocoa. Oomes et al. show that the average annual change of demand (positive or negative) has historically been four percent (compared to 7.5% for supply). There was only one season during which the annual change was higher than 10 percent (compared to 17 seasons for supply). The demand for cocoa is also estimated to be inelastic in the short term. Gilbert (2016) estimates the price elasticity of cocoa demand at -0.088 in the very short term (zero to one year) and even less, at -0.029, in the ‘long term’ (one to four years) (Gilbert, 2016; Oomes et al., 2016).

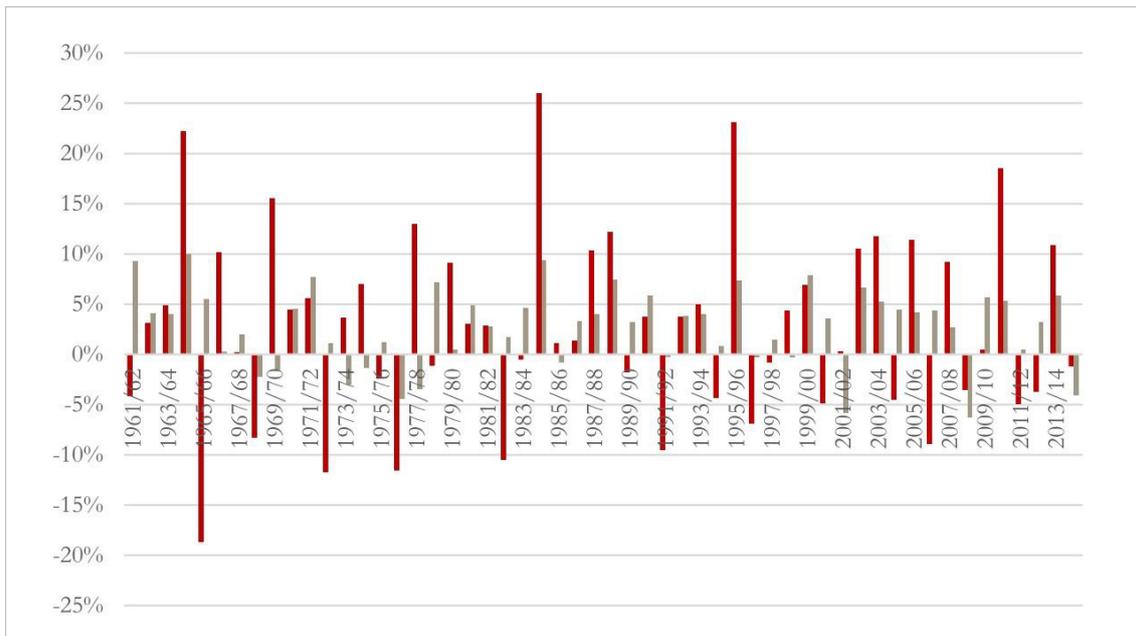


Figure 55. Supply is more volatile than demand. Source: Gilbert, 2016; Oomes et al., 2016

### Price Elasticity of Supply and Demand for Cocoa Products

A large volatility in the value of an agricultural commodity is linked to the inelasticity of its supply or demand. It has been found that the **supply** of cocoa is highly inelastic in the short term. As cocoa trees reach their productive age around three years after planting, their yields top out at around the seventh year, and decent cocoa yields can be harvested for an additional 20 years, it is a long-term crop. This long cycle produces an extremely inelastic cocoa supply (Dand, 2011; Ruf & Siswoputranto, 1995; Tothmihaly, 2018). However, that does not mean that prices do not fluctuate. Tothmihaly (2018) showed that the short- and long-run estimates are extremely price-inelastic (Tothmihaly, 2018). In a model of the cocoa market, Gilbert (2016) estimates the short-term price elasticity of cocoa production to be 0.078, which is extremely low. The reason for this low short-run inelasticity of supply is that, when farmers plant new trees due to high prices, it takes about four to five years for new plantings to become productive.

Given that cocoa trees are a long-term investment, farmers will also not easily grub up trees when prices are temporarily low. Supply is more elastic in the long term. Gilbert estimates the long-term (four to 48 years) price elasticity of cocoa production to be 0.285, which is still somewhat inelastic but more elastic than the short-term price elasticity. Given that the average lifespan of a cocoa tree is four decades, farmers may still be hesitant to switch to another crop even in the long term, unless they are positive that the other crop will yield a higher income for them in the long run (See the Sustainability chapter for more on income diversification). The price elasticity of demand for chocolate as a retail product is not known. However, according to several chocolate manufacturers, consumer demand for chocolate is relatively price elastic, even in the short term, to the extent that chocolate competes with other snacks in a broader snack environment (Gilbert, 2016; Oomes et al., 2016).

The price elasticity of cocoa **demand** also falls into the extremely inelastic range: the short-

and long-run estimates are -0.06 and -0.34 respectively (Gilbert, 2016). The explanation of the relative inelastic demand for cocoa as a raw produce is that the demand of processors is determined by their processing capacity: it is very costly to have excess processing capacity. As a result, the pricing policy of processors is aimed to secure full use of existing processing capacity. A change in the demand of processors will be reflected in an adjustment of their processing capacity, which is a long-term development. The key factor is that processors cannot quickly change their demand for cocoa without making costly alterations to their production facilities. This may even involve disinvestment, as ADM’s decision to leave the cocoa market in 2014 indicates. Ultimately the demand for cocoa as raw produce is determined by the demand for chocolate as a retail product and hence by the price elasticity of the demand for chocolate. From an economic perspective, there are sufficient substitutes for chocolate as a retail product, which implies that consumers will switch to other snacks if the price for chocolate increases significantly in comparison to these substitutes (Oomes et al., 2016). This may be debatable, as some consumers will consider that there is no substitute for chocolate.

## Futures and Country Differentials

### The Future Exchange

The bulk world cocoa bean price is reflected at the two primary cocoa futures exchanges: at the York and at the [New York Mercantile Exchange \(NYMEX\), now part of the CME Group](#). Here, prices are listed for cocoa to be delivered in the months of March (H), May (K), July (N), September (U) or December (Z).

Prices to deliver in a certain month will fluctuate until the expiration of the contract. In the example below, fluctuations of cocoa to be delivered on Jul 15, 2021 can be seen.

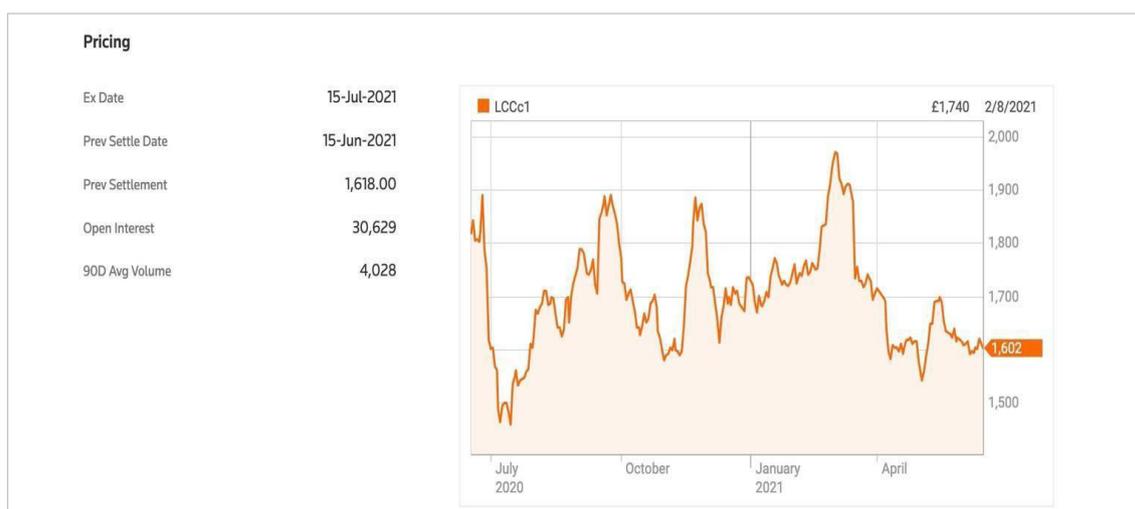


Figure 56. Prices of the London July 2021 ICE futures contract. Source: ICE

Delivery points for New York ICE-certified futures are at licensed warehouses in the Port of New York District, Delaware River Port District, Port of Hampton Roads, Port of Albany or Port of Baltimore. Delivery points for London ICE-certified futures are in an Exchange Nominated Warehouse in Amsterdam, Antwerp, Bremen, Hamburg, Liverpool, London, and Rotterdam.

Typically, a supplier and buyer agree at what time the price will be “fixed”. Buyers will typically allow the price to be fixed at the preferred time of the supplier, to secure delivery (the supplier must source the beans at a competitive price). Some buyers allow sellers to fix the price even after the expiration of the contract; this allows the supplier to benefit from an upward movement of the world market if the supplier is patient and can wait for payment. (It may also benefit the buyer, as the buyer can postpone payment, thus saving finance costs) (Anonymous, personal communication, July 2021).

In the above curve, it can be observed that a supplier would have been best fixing in September, December or May, benefiting from the peak prices. However, since it is not possible to, as one does not know what markets will do, it is better not to ‘speculate’ as a supplier and fix multiple contracts spread out over multiple months to reduce price risk of fixing all your cocoa at one time and price.

The two markets have different delivery quality criteria, and different types of cocoa command different premiums. Quality defects are penalized differently, as London uses FCC quality rules and New York those of the CMAA. Until 2017, London was at a premium to New York because quality and origin premiums were stricter. London then changed these rules and devalued their contract, resulting in lower trading prices as compared to New York. New York accepts any Asian and main African origins as ‘tenderable grade basis’s (the range of commodities that are allowable or specified in a commodities futures contract and are thus eligible for delivery). London accepts lower grade cocoa and accepts all African origins; this is also the reason New York trades at a higher price than London (Anonymous, personal communication, July 2021).

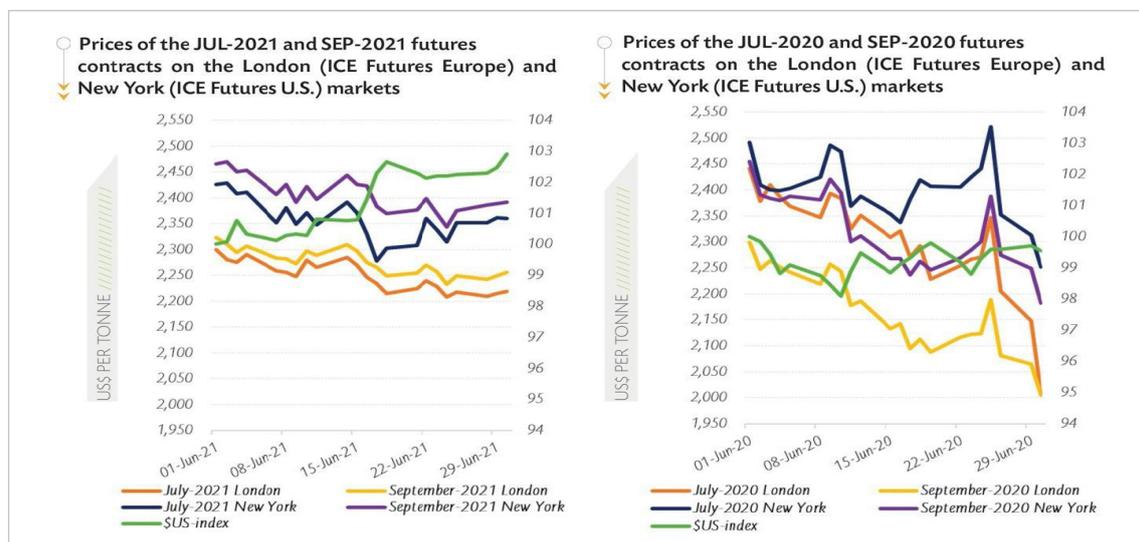


Figure 57. Prices of the Jul 2021 and Sept 2021 futures contracts on the London (ICE Futures Europe) and New York. Source: ICCO, 2021b

For the ICE London market, there are two delivery groups:

- Group 1 (deliverable at par), which includes beans from all African origins.
- Group 2 (deliverable at a GBP 50 per ton discount), includes all other regions.

For the ICE New York market there are three delivery groups:

- Group A (deliverable at a premium of USD 160 per ton), which includes beans from Ghana, Côte d'Ivoire, Nigeria, Sierra Leone and Togo.
- Group B (deliverable at a premium of USD 80 per ton), which includes Arriba (Ecuador), Cameroon, Colombia, New Guinea, Venezuela and several others.
- Group C (deliverable at par) includes Bolivia, Haiti, Indonesia-Sulawesi, Malaysia and all others (Intercontinental Exchange, 2021).

ICCO publishes a daily price for cocoa beans by calculating the average of the quotations of the nearest three active futures trading months on ICE Futures Europe (London) and ICE Futures U.S. (New York) at the time of London close.

### Publications of Prices of Futures Contracts

The movement/fluctuation of futures contracts can be seen 'live' on the websites of the [London ICE](#) website or in the [Financial Times](#), and for the U.S. future exchange on the [ICE New York](#) website. There are also the Monthly Cocoa Reports by [ICCO](#), which summarize and analyze activity of particular months.

### Origin Differentials

Origin (or country) differentials correct the world market price for an origin because of its particular quality (e.g., yield in terms of nibs and butter), reliability or surplus/deficit at a certain time in relation to the futures exchange price – it's the premium beans from an origin would get if tendered (offered) at that moment to the exchange. In Figure 58, the prices on the y-axis represent the extra value (differentials) that was offered by the market on top of the London and New York futures price for the four origins from October 2020 to October 2021.

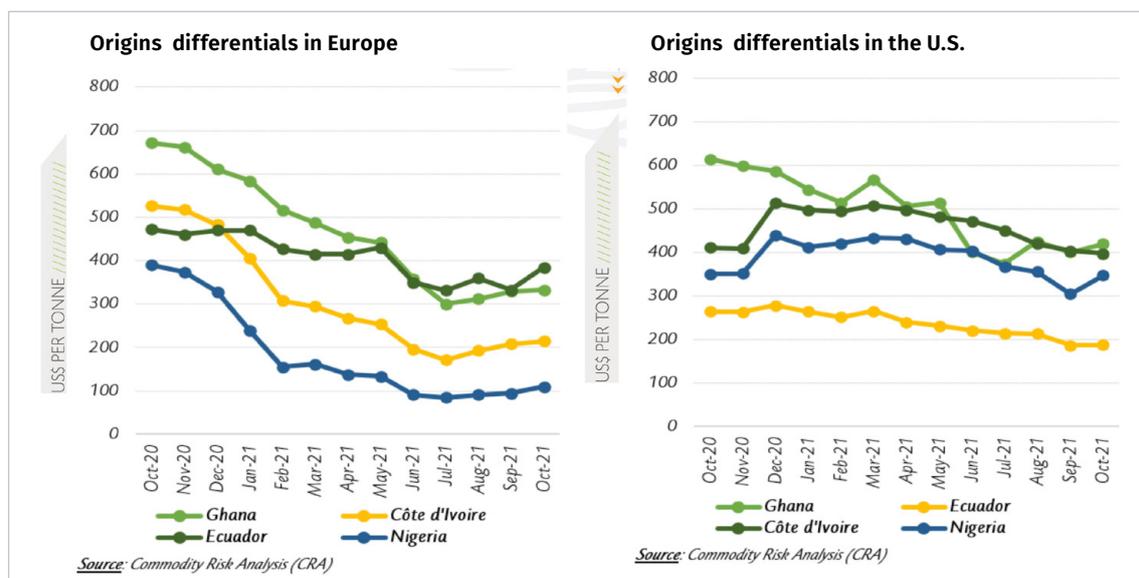


Figure 58: Comparison of country differentials. Source: ICCO, 2021

The consistent superior quality of Ghana, in particular, allows the country to receive a considerable price premium on the international market above the future exchange price. In the case of Ecuador, despite being the main producer of fine flavor cocoa in the world, a large proportion of its supply is of quite basic quality. Thus, Ecuador's differential is not that high – its CCN-51 clones traded at negative differentials in 2021. This is not the case with countries like Peru and the Dominican Republic that have adopted national strategies focused on quality and product differentiation and maintain a significant offering of specialty cocoa in relation to their total supply (Rios et al., 2017).

Country differentials are generally stable and are based on the quality and reliability of the supplying country, which does not change overnight. However, in instances of drastic policy changes, or in the case of oversupply, differentials can become very volatile. In 2020/21 both factors combined – an oversupply of beans from West Africa plus the introduction of the Living Income Differential (LID) of USD 400 per ton by Ghana and Côte d'Ivoire. To compensate for the LID and oversupply, the differential for the countries plummeted to arrive at near normal prices that could compete with other (non-LID) origins: Ghanaian cocoa dropped from USD 672 per ton recorded in October 2020 to USD 358 per ton in June 2021 (47% lower). For Ivorian cocoa beans the origin differential was slashed by 63 percent from USD 527 to USD 197 per ton. Nigeria followed its West African neighbors with a 77 percent reduction from USD 390 to USD 91 per ton. Ecuador's differential decreased by 26 percent from USD 472 to USD 350 per ton (ICCO, 2021b).

After the country differentials in Ghana and Côte d'Ivoire showed a huge spike in Q1 of 2020 due to the additional cocoa being bought due to supply chain risk concerns, COVID-19 in the end had little effect on the supply chain. This has left traders, processors and manufacturers with large stocks carried over from the FY 19/20 season in both beans and cocoa products (liquor, butter, powder). With the surplus in FY 20/21 season, Côte d'Ivoire and Ghana could not hold on to unsold cocoa for long – they had to operate within the going market prices to offload their crop. With the low and intermittent demand, major processors were able to buy at increasingly lower levels from supply chain operators that had heavy in-country operations in Côte d'Ivoire and Ghana. The trading community saw this and sold short their cocoa purchased with these differentials, quickly driving down further the differential; this left quite a few traders in distress. After real world chocolate production being extremely low through Q2 and Q3 of 2020, it recovered in 2021 and could result in a deficit later in the year, driving prices and possibly differentials up (Anonymous, personal communication, July 2021).

## Publication of Country Differentials

Unlike the future exchanges, for an outsider there is no real way of viewing what the various country differentials are at that moment; they are being determined in a live fashion by the major traders who are connected on a day-to-day basis to the market and know what the differentials are based on signals from their people on the ground who source the cocoa, from local exporters and from their competitors in the cocoa bean trade. ICCO publishes CRA-charts in their monthly reports.

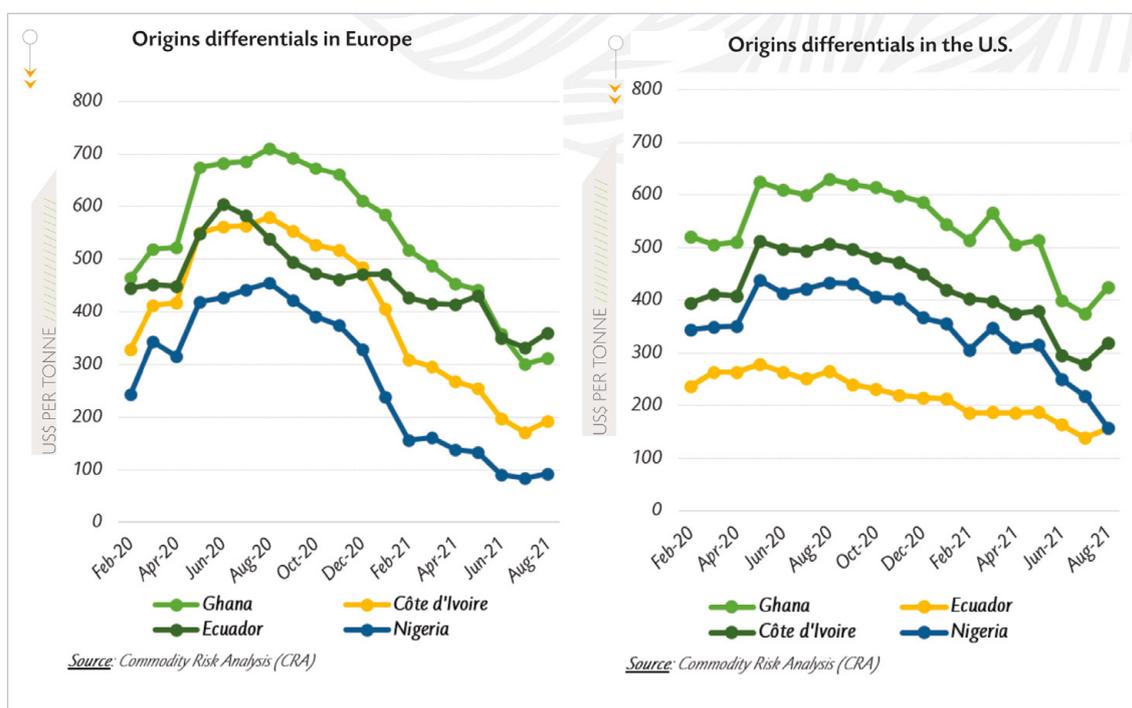


Figure 59. Source: Comparison of country differentials paid in Europe vs. the US, Feb 2020 - Aug 2021. Source: ICCO, 2021b

## Premiums (Certified Cocoa)

### Differentials (Premiums) for Certified Cocoa

For organic certified cocoa, the premium ranges between USD 200 to USD 300 per metric ton<sup>6</sup>. It is a matter of negotiation and is dependent on supply and demand. Fairtrade and Fairtrade-Organic cocoa have fixed minimum prices as follows (as of Oct. 1, 2019):

1. Fairtrade: FOB USD 2,400 + USD 240 Fairtrade premium per ton
2. Fairtrade-Organic: FOB USD 2,400 + USD 300 Organic differential + USD 240 Fairtrade premium per ton
3. UTZ/Rainforest around USD 80-100 per ton (Ferro et al., 2021b; Hütz-Adams & Schneeweiß, 2018; R. Nikkels, personal communication, July 2021).

The effect of standard-setting organizations must not be seen as limited to premiums and—in the case of Fairtrade—a minimum price. Fairtrade and UTZ will invest 73 percent and 57 percent of the premiums respectively in agricultural training, advising farmers, and organizational development, so this is money retained at the cooperative level and not disbursed in cash to farmers (Hütz-Adams & Schneeweiß, 2018). It is important to note that

<sup>6</sup> That does not mean that the farmer will receive this entire premium; in the case of a Ghanaian coop, it distributes 46 percent of the premium to members, the rest is needed for operating the company (Anonymous, personal communication, 2019). In the case of the Dominican Republic, farmers receive USD 70 to USD 150, depending on the FBO of which they are members (De La Rosa et al., 2021).

the premiums are only paid for the cocoa sold with the certification; about half of the cocoa certified is not sold with any certification (A. Fountain & Huetz-Adams, 2018).

The effect of standard-setting organizations must not be seen as limited to premiums and—in the case of Fairtrade—a minimum price. Fairtrade and UTZ will invest 73 percent and 57 percent of the premiums respectively in agricultural training, advising farmers, and organizational development, so this is money retained at the cooperative level and not disbursed in cash to farmers (Hütz-Adams & Schneeweiß, 2018).

## Differentials (Premiums) for Specialty Cocoa

Specialty cocoa prices are mostly independent of the international market price determined by the exchanges in London and New York. Traders and chocolate makers do not in general look at the world market price when sourcing exotic types of cocoas, such as prized Venezuelan, Colombian or Panamanian varieties (Toro, 2021). In most cases, the contracts are negotiated directly between the producer and the buyer, and are dependent on the bean quality, origin or uniqueness, and, in the specific case of chocolate, its reputation in the gourmet market. In the case of the origin of cocoa, for example, a cocoa that in addition to origin is good quality standard, and is certified (based on market demand), can be sold with premiums of more than USD 1,000 per ton over the conventional cocoa price (Rios et al., 2017).

When one ton of conventional cocoa has an average value of USD 3,100 to USD 3,200 per ton, certified specialty fine flavor cocoa from Latin America can range from USD 3,500 to USD 4,000 per ton (Rios et al., 2017). But it is possible that if this same cocoa were to be sold at a time of world market prices around USD 2,500, the agreed upon price would range from USD 3,000 to USD 3,500 (in other words, USD 500 lower). ICCO mentions, “Should you demonstrate that your beans have a distinct organoleptic quality, you could argue that the premium is higher, and claim USD +200 or +300 above market price.” (M. Arrion, personal communication, July 2021). As specialty cocoa depends on the relationship between buyer and seller, both parties will typically work out something that is accepted to be fair for both sides.

## Farmgate Prices

### Definition

The farmgate price is the price paid to farmers. It is roughly the FOB (Free on Board) export price minus the local taxes and export, transport, processing, and administration costs. It would also exclude any savings a cooperative might build up before paying its farmers.

### Farmgate Price Related to Country Differentials

A positive country differential is not directly related to a relatively high farmgate price. For instance, due to the large margin the COCOBOD charges for farmer training, quality control, and its national budget, Ghana farmers receive a lower farmgate price than farmers in liberalized cocoa economies, where the government does not tax as much for quality control, farmer training, and export administration. The difference between the FOB and farmgate price is about USD 800 per ton in Côte d’Ivoire (Veldhuyzen, 2019), while that in Sierra Leone is as low as USD 200 per ton (Anonymous, personal communication, July 2021). The large

difference between farmgate and FOB price in Ghana and Côte d'Ivoire clearly has to do with the fact that the relevance of cocoa production for the economy of these countries is also large – taxes amounting to over 40 percent of the export price are important revenue for the governments. In Cameroon, the relevance of cocoa is lower and in Nigeria income from oil is much more significant, despite the fact that both countries have a huge number of farmers and their families depending on cocoa income. In Brazil, Peru, Ecuador and Indonesia cocoa is not a central crop for the economy, although important in some regions.

### Farmgate Price Related to World Market Prices

Farmgate prices appear to show a lagged response to changes in the price of cocoa futures. The table below reports the results of a study by ICCO (2013), which developed an econometric model to simulate a structural increase of the price of cocoa futures and the effect on farmgate prices for five cocoa-producing countries.

**Table 15. Farmgate prices show a lagged response to changes in the price of cocoa futures**

|                      | Amount of the price increase* | Time lag** |          |          |          |
|----------------------|-------------------------------|------------|----------|----------|----------|
|                      |                               | 25%        | 50%      | 75%      | 95%      |
| <b>Cameroon</b>      | £ 98.5                        | 5 days     | 14 days  | 30 days  | 73 days  |
| <b>Côte d'Ivoire</b> | £ 44.4                        | 41 days    | 100 days | 199 days | 404 days |
| <b>Nigeria</b>       | £ 81.4                        | 8 days     | 15 days  | 28 days  | 59 days  |
| <b>Brazil</b>        | \$ 84.1                       | < 0 days   | 2 days   | 11 days  | 35 days  |
| <b>Indonesia</b>     | \$ 98.6                       | 4 days     | 12 days  | 26 days  | 61 days  |

Source: ICCO (2013)  
 \* Note: Increase of the long-run Equilibrium Price at farm-gate after a permanent, overnight price shock of 100 (£ or \$) per tonne on the (London or New York) cocoa futures market.  
 \*\* Note: Time required by the farm-gate price to register X% of the total increase due to an overnight permanent price shock on the futures market (i.e. 100% indicates that the long-run equilibrium has been restored)

Source: (Oomes et al., 2016; ICCO 2013)

It illustrates that farmgate prices increase by at least 80 percent of the increase in the futures prices (in most countries except Côte d'Ivoire). A longer time lag in the price adjustment process points to a lack of competition among cocoa traders. Gayi & Tsowou (2016) found that the transmission of a price shock from another market is not symmetric; a price increase is passed on less than a price decrease. Farmer awareness of world market prices and their empowerment to negotiate would force buyers to pass on price increases just as fast. ICCO mentions economic inefficiencies when a country's system of export licenses becomes a barrier to entry in domestic cocoa marketing. This limits the competition among domestic cocoa buying agencies and thereby reduces the speed of transmission of the price shock (Oomes et al., 2016).

### Farmgate Prices in Regulated and Liberalized Cocoa Economies

In Ghana, the entire cocoa sector is regulated by the state-controlled Cocoa Marketing Board (COCOBOD) trying to mitigate world market price fluctuations. A subdivision, the Cocoa Marketing Company (CMC), sells an estimated 70 percent of the crop to buyers either directly or via the stock exchanges before harvesting begins. This provides an approximate estimate

of how much of a farmgate price can be paid to farmers (Hütz-Adams & Schneeweiß, 2018). While in Ghana there is ultimately one buyer (the state), in Côte d'Ivoire the Conseil Café Cacao (CCC) has a regulatory function - it sets the farmer price and decides when to sell and at what price to the international and internal markets. It does so in a bidding process but steps out when dealing with the sales contract. Both governments regulate the quality, prices and coordinate the marketing (Laird, 2021). See section on "Examples of price and purchasing policies" for a more detailed description of COCOBOD and CCC.

The structural reforms in the cocoa sector that started in the early 1990s led to the privatization of the internal marketing in West Africa (FAO & BASIC, 2020). Most West African countries (e.g., Nigeria in 1986, Liberia, Cameroon, Togo) and all Asian (e.g., Indonesia) and Latin American countries currently have liberalized economies, where the government plays a much smaller role than in Ghana and Côte d'Ivoire. While in liberalized economies governments may provide some quality, export, and marketing guidance, including quality inspections at the port, the suppliers are overall responsible to find the market, negotiate with buyers and control their quality. Export taxes tend also to be a lot less in liberalized economies than those in regulated economies.

The increase in farmgate price in both Ghana and Côte d'Ivoire in FY 2020/21 had to do with the implementation of the LID. Ghana maintained the increased price for 2021/22, but Côte d'Ivoire did not. This is also a result of regulated economies; it is suspected that the Ghanaian government cannot reduce the price to more realistic levels as it would harm them politically (Anonymous, personal communication, July 2021). In Côte d'Ivoire, on the other hand, the elections took place recently, so the government might feel freer to turn back to a lower farmgate price. This lower farmgate price in Côte d'Ivoire is logical for the government, especially as the LID premium was offset almost entirely by reduced the country differentials buyers are willing to pay (See section about the LID).

Oomes et al. (2016) refer to a study by Gayi & Tsowou (2016) suggesting that transmission from world cocoa prices to producer prices has generally increased with trade liberalization in cocoa-producing countries. Fixed prices in the regulated markets of Ghana and Côte d'Ivoire will respond to changes in the world market with a lag, which depends on the timing of price reviews in the regulatory system, this works on a yearly cycle (from October 1 to September 30). This means that the lag will have a maximum duration of a year after which the regulated price is likely to have adapted to changes in the world price for cocoa.

In Côte d'Ivoire, the difference between the ICCO daily (or FOB) and farmgate price was reported to be near USD 0.80 per kg in 2019 (Veldhuyzen, 2019). In contrast, in liberalized-economy countries like Colombia and Guatemala the local farmgate price will often be higher than this ICCO daily price. Due to scarcity the price may even be higher than any FOB price offered by U.S. or EU importers, resulting in local sales for the domestic or regional market. For instance, a Fairtrade-organic exporter in a West African country with a liberalized cocoa sector reports spending only USD 0.10 per kg on operational costs (including QC, bagging, transport, scanning, taxes, warehousing, staff/agents). After paying just 2.5 percent government export taxes (USD 0.075 per kg), farmers can be paid a relatively high farmgate price (if compared to neighboring countries) of USD 2.50, plus a USD 0.05 commission for the subagent of the coop that fetches the beans from farmers, and USD 0.12 for the coop for their own quality check, bagging, transport and warehousing. Thus, costs to the port are USD 2.80 per kg. If the social premium of USD 240 per metric ton is included, the FOB price would need to be a minimum of USD 3.04 and farmers

would be getting USD 2.50 (cash farmgate price) + USD 0.24 per kg (FT-premium, dispensed partly in cash, partly in community projects) = USD 2.74, which would represent 90 percent of the FOB price and 114 percent of the ICCO world market price (similar to what FTO farmers get in Ecuador). However, because of fierce competition for cocoa beans during the end of the cocoa harvest, the farmgate price may increase further, and even exceed any FOB price. (Anonymous, personal communication, July 2021).

Besides influencing (typically higher) farmgate prices, the diversification of products is also related to the liberalized or regulated nature of a country's cocoa sector. Governmental programs in Ghana and Côte d'Ivoire have promoted 'highly productive' clonal varieties that may erode the genetic gene pool of older varieties, which generally have better taste profiles and could be used for the development of fine flavor cocoa. CODAPEC, a subsidiary of Ghana COCOBOD distributes free or subsidized hybrid cocoa seedlings and pods and provides 'free' mass spraying. This explains why 'hybrid' cocoa varieties are much more frequently planted in Ghana (Bymolt, Laven, & Tyzler, 2018). In Ecuador, the fact that the cocoa sector is liberalized leaves room for greater potential of differentiation of cocoa production but is associated with quite a polarized producer base between the farmers who can achieve it and others that cannot (FAO & BASIC, 2020).

In regulated economies there is much more distribution of inputs. In Ghana, a high proportion of cocoa households use fertilizer and fungicide. Both Ghana and Côte d'Ivoire have high rates of pesticide use. Ghanaian households apply pesticides and fungicides more times per year than Ivorian households. The difference in input use with Ghana can be attributed to the fact that most Ivorian households do not receive inputs for free through government programs or other sources (Bymolt, Laven, & Tyzler, 2018). In surrounding countries, pesticides and inorganic fertilizer are not easily accessible. If it is distributed by the government, farmers typically re-sell it to the input-demanding (illegal) cultivation of marijuana (Anonymous, personal communication, 2021). These pesticide-poor countries lend themselves well for (regenerative) organic agriculture and corresponding markets.

## Farmgate Prices for Conventional Cocoa

In 2018, the lowest producer price was that paid to the Ivorian farmer, followed by Ghana (FAO & BASIC, 2020). With the implementation of the LID, Ghana and Côte d'Ivoire hoped to make a big step in improving farmgate prices, but due to market dynamics, promised farmgate prices were not able to be sustained: in April 2021 Côte d'Ivoire's government dropped the farmgate price to USD 1.35 per kg from USD 1.80 per kg announced during the main crop (ICCO, 2021a). Despite the failure of the LID to structurally provide more farmer income (see section on an analysis of the LID), Ghana and Côte d'Ivoire are still looking actively to improve farmgate prices. In a July 2021 meeting in Accra, it was agreed that the two countries would be paying farmers a guaranteed minimum price of 70 percent of their envisioned floor price of USD 2,600 per ton. Farmers would also be entitled to bonus payment when the achieved average FOB price would be between USD 2,600 and USD 2,900 (or between USD 2,700 and USD 3,000 CIF) at the end of the cocoa season, to be deposited into two accounts for each country in Accra (Ghana Talks Business, 2021). Looking at various countries' farmgate prices throughout the years, the following can be observed<sup>7</sup>:

<sup>7</sup> The information is based on various sources from the respective countries, but no wide survey was conducted.

- For the period 2000 to 2015, Ghanaian producers received an average of 57 percent of the ICCO daily price (Oomes et al., 2016; Veldhuyzen, 2019). In FY 2019/20 the farmgate price in Ghana was GHS 515 for a 62.5 kg bag of beans, which was increased for FY 2020/21 to GHS 660, which in FY 2021/22 is being maintained. That works out to be 61 percent of the daily ICCO price for FY 2019/20, 76 percent in FY 2020/21 and (an estimated) 73 percent in FY 2021/22 (Own calculation, 2021).
- Ivorian farmers received an average of 51 percent of the ICCO daily price between 2000 and 2015 (Oomes et al., 2016; Veldhuyzen, 2019). In Côte d'Ivoire, in FY 2020/21 the farmgate price was set at CFA 1,000 (USD 1.80) representing 73 percent of the ICCO daily price. For FY 2021/22 it has been announced that the farmgate price will be reduced to CFA 825, representing 61 percent of the ICCO daily price.
- By contrast, in a country with a liberalized economy like the Dominican Republic, farmers have consistently received 85 percent of the ICCO daily price for the past five years (De La Rosa et al., 2021), a dramatic improvement from the 57 percent it used to be before 2009 (Batista, 2009).
- Ecuador, which also has a liberalized economy, also demonstrates structurally higher farmgate prices. The country has seen diminishing farmgate prices over the past years, which has been attributed to physical quality aspects, to the mixing in of the CCN-51 clone with the Arriba Nacional variety, but also due to the fact that Ecuador has increased its production to 380,000 metric tons – a simple case of how high supply decreases prices (Cabello, 2021).

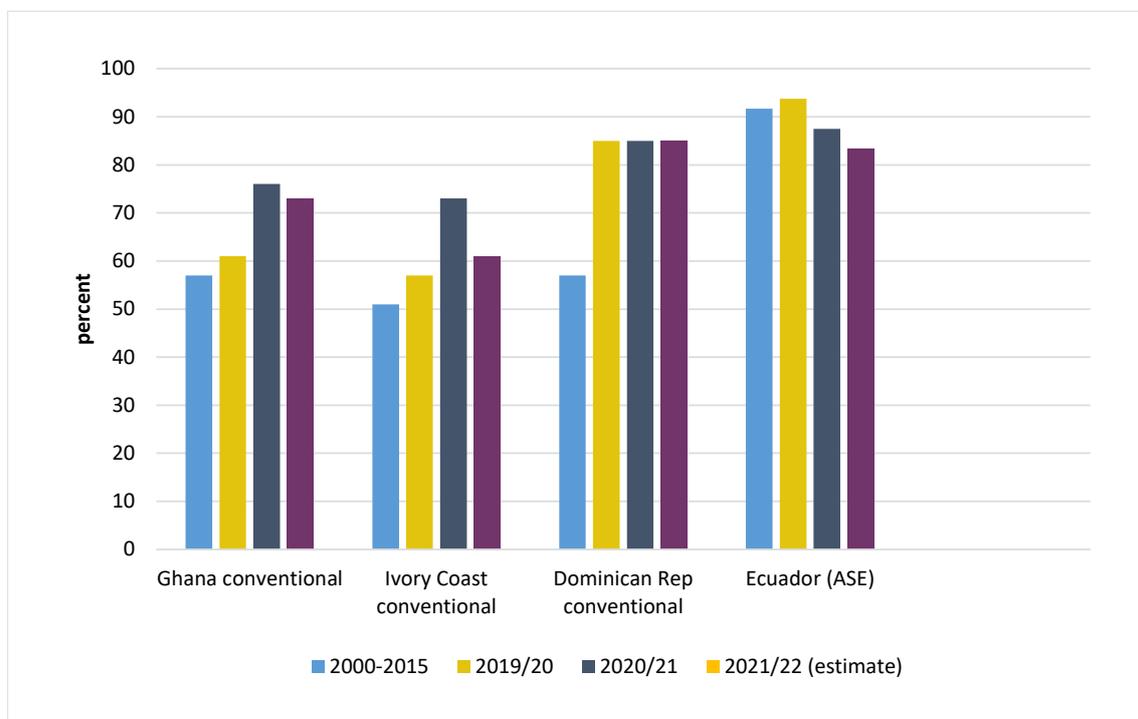


Figure 60. Farmgate prices for conventional cocoa in various countries, expressed as percentage of the world market price at that time. Note: Blue for the Dominican Republic is not 2000–2015 but prices for before 2009. Source: Own elaboration

## Farmgate Prices for Certified and Specialty Cocoa

For (double) certified or specialty cocoa, the price a farmer receives is usually more than the world market (ICCO) price.

- In Ghana, an FTO-certified coop receives the government stipulated farmgate price and FTO premiums, which amounted to USD 0.39 per kg, of which USD 0.18 per kg was disbursed to farmers. Including this second bonus payment, farmers received not 76 percent but 92 percent of the ICCO price (Anonymous, personal communication, July 2021).
- In Guatemala, an FTO-certified exporter reports paying farmers between USD 3.5 and USD 4.0 per kg for delivery of wet beans, where export prices range between USD 5 and USD 7 per kg; the farmer gets a range of 57 to 70 percent of the FOB price but related to the average ICCO-published daily price the range is 146 to 167 percent (Delgado, 2021).
- In Costa Rica, a trader and processor of Rainforest-certified beans buys at USD 2.75 and sells for USD 3.5; the farmer gets 78 percent of the FOB price and 114 percent of the ICCO price. In the same country, conventional beans are bought at world market prices. Cocoa is delivered by farmers as wet beans (Costa Rican exporters, 2021).
- In Ecuador, FTO-certified union UNOCACE also buys wet beans. The price of USD 2.75 per kg represents 115 percent of the world market price. This still excludes the FT-premium of USD 0.24 per kg and processing cost of USD 0.22 per kg paid to cooperatives (Cabello, 2021). In the same country, specialty chocolatier To'ak Chocolate reportedly pays between USD 5.29 to USD 13.23 per kg to farmers for second and grand cru beans, which amounts to 220 percent and 550 percent of the world market price, respectively (Toth, 2021).
- In Nicaragua, conventional dry cocoa is sold by non-associated farmers for USD 1.98 per kg, while cooperatives buy wet beans for USD 1.80 if UTZ and for USD 2.60 if FTO-certified. Specialty beans are purchased at 10 to 15 percent above world market prices, with a very select few farmers receiving a 25 percent bonus for special genetic qualities.

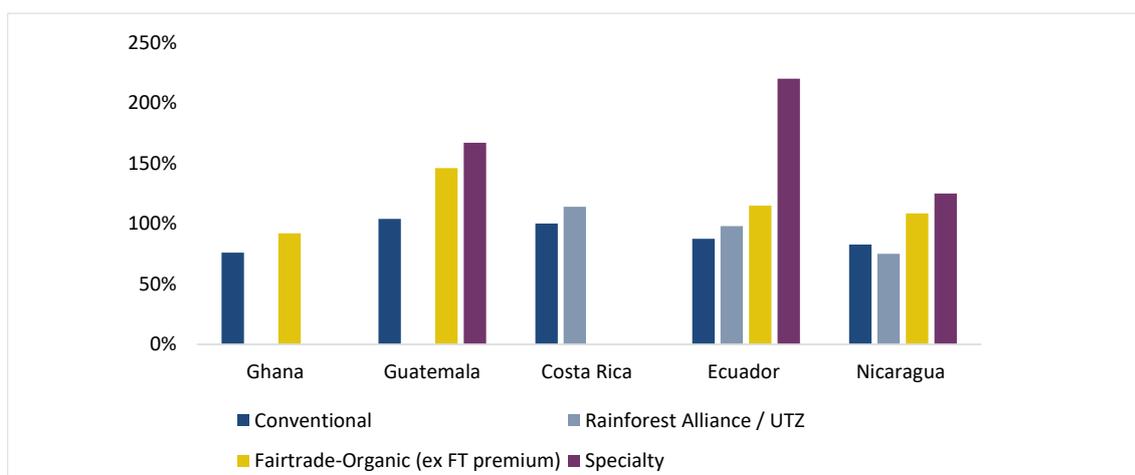


Figure 61. Farmgate prices for conventional, certified and specialty cocoa in various countries, expressed as percentage of average the world market price 2021. \*Except for Costa Rica, the prices for the conventional cocoa relate to farmer-processed cocoa. Source: Own elaboration, 2021

It is important to note that not all value can be captured by the farmgate price. For example, Guatemalan cooperative Alianza, part of FEDECOVERA, buys slightly above local levels but “pays” through many services, such as technical training, legal assistance for farmers in case of conflicts, and diversified income (all spice, cardamom). As a result, the communities have much more social cohesion than in other parts of Central America: the youth are much less likely to migrate to the United States and problems related to narcotics in the area have become less (Delgado, 2021).

## How to Increase the Farmgate Price

Oomes et al. (2016) mention that in countries with *regulated* cocoa sectors, it is possible to raise farmgate prices by improving the transparency, efficiency, and effectiveness of the regulated system, e.g., ensuring that farmers receive the regulated farmgate price, that weights are used correctly, etc. More importantly, governments should increase transparency about the way regulated prices and cocoa taxes are determined, and about the spending of these cocoa tax revenues. There is also room to improve the quality of cocoa beans, and therefore potentially the price paid for these beans, through more effective public investments and improved quality standards. In countries with *liberalized* cocoa sectors, it is possible to raise farmgate prices through increasing cocoa farmers’ bargaining power and opportunities to earn alternative income options, which in turn requires better access to market information, training, infrastructure, and finance. In Indonesia having more realistic alternatives means that farmers can opt out of cocoa, which is possibly one of the reasons why cocoa prices in Indonesia are higher (Oomes et al., 2016).

For both regulated and liberalized cocoa economies, supply management has been suggested to prevent falling prey to oversupply if farmgate prices increase. Europe and the United States have used quota systems for their agricultural systems over the past decades. A 2017 working paper by the Voice Network suggests installing a buffer stock fund, quotas, the introduction of an OPEC-like collaboration between the major cocoa producing nations, and the physical limitation of cocoa supplies through alternative uses of stockpiles. Voice Network envisions “effective supply control within the individual countries, as well as on a global level, involving mechanisms for (re)allocating individual production rights, monitoring quality and production methods, overcoming rent seeking, corruption, workable mechanisms for monitoring national production and trade, (re)allocating production rights between countries, and overcoming free rider problems” (A. C. Fountain & Hütz-Adams, 2017).

Another mechanism to keep cocoa prices high would be by limiting land, initially by placing forests off-limits. International monitoring systems, in tandem with collaborative regulation between producer and consumer countries could result in the double effect of halting deforestation and increasing cocoa prices, as land becomes more valuable. Challenges will be to further develop formal land property rights, and not view the cocoa sector in isolation from the rest of the agricultural sector (Boysen et al., 2021) at least partially. Poverty, in turn, is considered to be the root of further sustainability issues. To raise the value share and price accruing to their farmers by leveraging their collective market power, the two biggest cocoa producing countries Côte d’Ivoire and Ghana jointly announced in 2019 the cocoa Living Income Differential (LID).

## Farmgate Price Versus Productivity

While farmgate price is an important factor to reduce farmer poverty, it is not the solution to the problem: a farmer with low yield, little arable land and few options to diversify his income will remain poor even with a very high farmgate price for his cocoa. With regulated cocoa economies and yield, while part of government cocoa revenue is reinvested in the sector and in general public goods, this has not (yet) resulted in significantly higher productivity for cocoa farmers in these countries (Oomes et al., 2016). There is a perceived lack of transparency in decision-making, and the efficiency of the allocated public reinvestments (e.g., input distribution) has been questioned in regulated economies. Additionally, there is a lack of evidence that the relatively high tax on producers applied by the marketing boards of Ghana and Côte d'Ivoire has led to significantly higher productivity as a result of government programs. Any productivity improvements are not sufficient to offset the lower prices farmers receive, even with companies providing further support to some farmers (Bymolt, Laven, & Tyzler, 2018).

## Price Dynamics for Cocoa Products

### Origin

Origin will determine price because origins that have large-scale cocoa production are able to operate in larger volumes at lower values, while origins that have smaller scale production tend to focus on higher value product segments, such as certified and specialty cocoa beans, at lower volumes. Most of the global cocoa products are geared towards non-origin and non-quality oriented confectionery market channels. The bulk blends have been designed to meet the customer's need in terms of taste, food safety standards, and sustainability-certification, as well as 'value', the price is important with the candy-producing customers of the large processors. Processors will translate that towards the sourcing of their beans. Olam mentions Côte d'Ivoire is a popular origin for major processors due to this: as the largest cocoa producer, this country always has a surplus and therefore a lower price (than better flavored Ghanaian, Dominican or Peruvian beans, for instance). At the other end of the spectrum there is 'specialty cocoa'. Beans traded for specialty chocolate makers need stories, either from one farmer or from a small group of farmers. Here, specific 'identity preserved' profiles are sought in countries that have communities with traceability and stories. This type of cocoa may be subject to a particular processing protocol, developed between the customer and producer (Anonymous, personal communication, July 2021).

### Food Safety

Bean quality is becoming more important, so this also determines price. Major companies are increasingly looking at mycotoxins, free fatty acid (FFA) content, cadmium and pesticide residue for a country to be an origin of interest. Together these specifications create possibilities for bean blends in a wide variety of products at manufacturer level. According to a major processor, traders look at value in different ways, mostly following general trends in the market in terms of value and avoiding any arbitrage (in internationally recognized dispute bodies FCC and CMAA). Traders need to re-sell their beans, whereas processors can 'grind away' any bad beans occasionally delivered. For bulk bean business, residue levels are looked at differently than certified or specialty beans. Beans from Cameroon, for instance, have a

reputation for being low quality as these are usually dried on wood fires (to be processed quickly because of the domestic insecurity) (Anonymous, personal communication, July 2021). In other West African countries diesel-driven mechanical dryers are used, especially in the rainy season, when farmers have not been able to dry their beans sufficiently in the sun. Both wood and diesel based drying create cancerogenic mineral oil saturated and aromatic hydrocarbons ([MOSH and MOAH](#)) (Matissek, 2017). It also creates off-tastes (smokey). The mineral oils from the beans contaminate bags that—when reused—will contaminate even clean cocoa beans. In Liberia and Sierra Leone, a Dutch-based grinder sourced poor-quality beans that are mechanically dried in the port and include many (moist) trafficked Ivorian beans, containing glyphosate (Anonymous, personal communication, July 2021). The industry can dilute these in a way that the final product will not exceed legislated minimum residue levels (MRL) (Anonymous, personal communication, July 2021).

## Mass Balance

Large processors will often apply Mass Balance to their operations to be price efficient. Mass Balance is the practice of certain certifications requiring companies to ensure that the (processed) volume sold as certified relates to the volume sourced as certified. For example, if a chocolate manufacturer makes a certain number of chocolate bars (all with the same formula) and needs 200 metric tons of cocoa to produce them, and if the manufacturer wants to market half of the bars with a Fairtrade logo, then the company will need to purchase 100 metric tons of Fairtrade-certified cocoa. Under 'Mass Balance', this may be mixed with 100 metric tons of conventional cocoa to produce all the bars – an important efficiency issue for larger manufacturers. Fairtrade explains that Mass Balance helps farmers: “If the chocolate industry has to keep the Fairtrade cocoa beans and their cocoa ingredients separate in the processing steps, processing becomes inefficient and complex, and costs increase significantly. This makes the chocolate more expensive without benefiting cocoa farmers” (Fairtrade Nederland, 2021).

Mass Balance is a practice in Fairtrade, but also in the new ISO34101 sustainable cocoa-standard, which requires certified companies to ensure that the volume sold as certified must be equivalent to the amount of volume sourced as certified (considering weight loss during processing). Mass Balance is only applicable to a few Fairtrade products: cocoa, cane sugar, juice and tea, cotton, and gold (FLOCERT, 2021b). Single site Mass Balance (SSMB) requires that all Fairtrade inputs must be delivered to and processed at the same site where the Fairtrade output is processed. Group Mass Balance (GMB) allows that Fairtrade inputs do not need to be delivered to the same site the Fairtrade output is processed. GMB is only allowed in cocoa and cane sugar (FLOCERT, 2021b).

## Price Determination for Butter and Powder

A processor needs to process all its beans into cocoa products, and will process depending on the market demand, which in turn dictates prices. From this demand, certain ratios become clear regarding a preference for butter or powder – if the market needs a lot of butter, the industry will have an oversupply of powder (left over after pressing). For example, during the COVID-19 lockdown period, home baking became important. For this segment cocoa powder is needed, but its price increased in this period. According to a major processor interviewed, the high powder price in 2020 allowed processors to survive during the pandemic (Anonymous,

personal communication, July 2021).

The industry relies on ratios to determine the price for butter and powder. The *technical ratio* determines how much butter and powder can be made from a cocoa bean: after adjusting for weight loss during roasting and winnowing, just short of 2.5 tons of beans gives you one ton of butter. Liquor yields approximately 50 percent butter and 50 percent cocoa solids (later ground into powder). The *commercial ratios* indicate what the market is willing to pay:

- Commercial butter ratio: What the market is willing to pay for butter versus the bean price. The butter ratio in Q3 of 2021 was 2.15, considered low (Anonymous, personal communication, July 2021).
- Commercial powder ratio will be the opposite: a high butter price offsets a resulting low powder price and vice versa. That is why it's best to use a combined ratio:
- Combined butter and powder ratio:  $(\text{Price of butter} + \text{price of powder}) / (\text{price of cocoa bean})$ . If the price of butter and powder combined (or the ratio) is high enough, a processor will decide to grind – if not, the company will find more profitable ways to deal with the beans (either trade, or liquor production). Nowadays, processors feel that only at a ratio of 3.2 or higher it becomes profitable to press.

In Figure 62, the inverse nature of butter and powder prices can be seen. Expectations of increasing demand for cocoa powder caused price spikes, while the dip observed in butter prices in July of 2021 was in line with the cocoa market expecting supply excess at that time. Expecting a surplus results in a price decline for cocoa beans and subsequently prices of cocoa butter: prices of beans and butter are positively correlated (ICCO, 2021f).

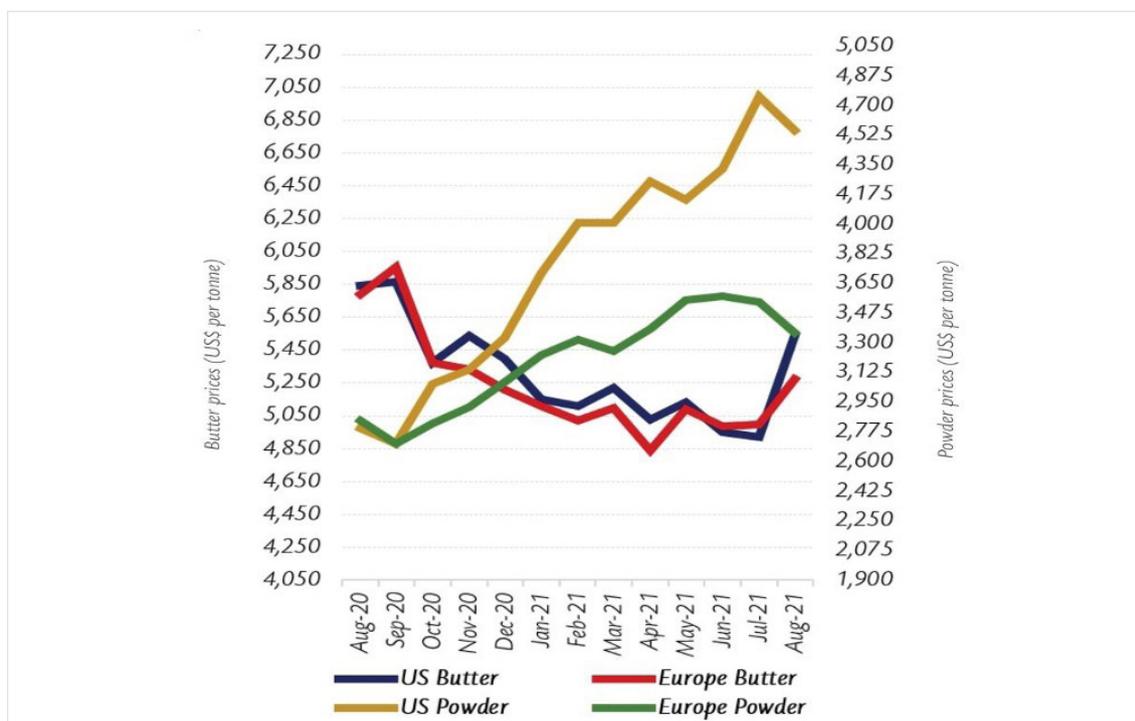


Figure 62. Price of cocoa derivatives 2020–2021. Source: ICCO, 2021b

Due to the low ratio in recent years, there is a trend away from confectioneries to do their own pressing. They are also slowly moving away from grinding (making liquor), as there is no margin in it. Olam, Barry and ECOM then pick up the slack and can scale up grinding and pressing to stay competitive, vis-à-vis one another. Barry Callebaut works differently for pricing towards customers; unlike Cargill and Olam, who are bean to product, Barry is bean to chocolate – it makes finished products for private label and for its own brands. It uses a Cost+ pricing mechanism: at the beginning of a season, they agree with supermarkets on prices, and will on the other side agree on fixed inputs, such as published liquor and butter ratios and powder prices and plug that into their costing model (Olam, personal communication, July 2021). An exception to divesting from grind and press is fair trade and organic commodity trader Pronatec, which is establishing a cocoa processing facility in Switzerland, to be operational in 2022 (Pronatec, 2021). Also, in Sierra Leone, Capitol Trading Company (CTC) established a factory for cocoa liquor in 2021, with plans for pressing equipment.

### Price Related to Risk Management for Processors

The way prices for cocoa products such as bulk liquor butter and powder are determined depends on the competition between the large processors and their ability to manage multiple risks in order to end up with some positive margin, including, amongst others:

- Market risk (demand)
- Logistic risks (freight rates, port congestion)
- Ratio risks
- Quality deterioration risks (humidity, mold, infestation)
- Crop risk
- Price risk

Each company mitigates these various risks independently and must manage the risks such that all risks combined give the processor some profit. Large processors stay in the business because they feel they are good at managing and offsetting the risks and shift to those products that will provide prospects for profit (Olam, 2021). Those products may range from liquor in temperature regulated vats or in solid formats, from cocoa powder with a particular fat content, flavor or color, natural or alkalized, or from deodorized butter to specialty fats. Olam International explained that processors cannot charge any premium or offer any discount, simply because the large manufacturers (Hershey, Nestlé, Mars, etc.) will then buy from another processor. “Sometimes there are long periods of negative margins. Many, like ADM, did not survive this – these sell their cocoa processing facilities” (Olam, 2021). For a discussion on the legitimacy to follow the lowest market prices, please see chapter on Sustainability – Living Income.

In price risk management, traders, processors and large manufacturers will hedge their physical purchases in the futures exchange, as prices of these purchases are usually not fixed until sometime in the future (see section on Price-determining Factors – Hedging and Speculation).

Processors also indicate in interviews that key aspects for mitigating risk are scaling up for efficiencies, diversification of the product portfolio, and looking at premiumization – a higher price for differentiated products, such as certified products, or products under a managed sustainability program. Another example of premiumization is becoming active in specialty products, such as Olam International’s 20 Degrees Cacao, which trades small quantities of high-quality cocoa beans with a story for specialty chocolate makers.

## Price Related to Risk Management for FBOs

Upstream, farmer-based organizations (FBOs) also have risk management to deal with, such as:

- Crop risk (weather, disease, pests)
- Farmer loyalty risk
- Financial risk (working capital)
- Price risk (price negotiation)
- Market risk (demand, market access)
- Quality deterioration risks (humidity, mold, infestation) – particularly when the contract states that quality check is at port of destination
- Food safety regulation risk (Cadmium, MRL’s, MOAH, MOSH)

The balancing of these risks for FBOs involve finding the right buyer(s), getting farmers to deliver the cocoa on time at the right quality and—especially for starting FBOs—finding the working capital. With a relatively small volume of beans, FBOs are exposed to a lot of these factors and often do not have much financial or human resource buffers to cushion setbacks. Farmers, cooperatives and local exporters often do not protect themselves against the risks of volatile prices. A common mistake is fixing prices against the futures market with a buyer at the wrong moment. Fixing too early (and not having the cocoa) will create problems if the futures price goes up (the coop or exporter cannot source the cocoa at competitive prices), but also fixing late if the futures price goes down (the coop or exporter will have bought the cocoa at a relatively high price but must sell low). Traders mention in interviews that this happens regularly, but most cooperatives and exporters do not hedge. To set up an account with a futures exchange is very costly, in addition to the complexity one needs to understand thoroughly before this tool can be of use. Spreading out the price-fixing of contracts over various months of the season may mitigate the financial (volatility) risk. Also, it is good practice to have at least half the container of cocoa sourced from farmers before fixing any price: if the price then goes up further, buying expensive cocoa will be limited to less than half a container.

## Price Dynamics in Relation to ‘Living Income’

Originally developed by Richard and Martha Anker in 2017, the definition of ‘living income’ is the net annual income required for a family in a particular place to afford a decent standard of living for all members of that family. Elements of a decent standard of living include food, water, housing,

education, healthcare, transport, clothing, and other essential needs including provision for unexpected events (Grillo, 2018; Living Income, 2021). Fairtrade and Veldhuyzen (2019) researched what a living income should be in the cocoa sector for a family and what that would mean in terms of farmgate price. Their “Living Income Reference Price” (LIRP) was defined as:

$$(Yearly\ costs\ of\ living - production\ food\ on\ farm) + (average\ hectares\ under\ cultivation \times cost/ha)$$

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$$average\ productive\ hectares \times average\ production\ of\ cocoa$$

Living Income Reference Price Côte d'Ivoire =  $\frac{(7271 - 1745) + (5.3 \times 418)}{4.4 \times 800} = 2.20$  US\$/kg

Their research established USD 7,271 per annum income to be a decent living wage for a family. In Côte d'Ivoire, 2019, there was a differential of nearly USD 800 between farmgate and free on board (FOB) prices, as per regulated price breakdown in Côte d'Ivoire. Hence, a minimum FOB price would have to be USD 3,000 per ton to result in a farmer price that equals the Living Income Reference Price (USD 2,200 per ton). The Fairtrade Minimum Price increase in October 2019 from USD 2,000 to USD 2,400 per ton therefore closes 40 percent of the price gap.

In 2020, Ghana and Côte d'Ivoire borrowed the name and unilaterally implemented a 'Living Income Differential' (LID), that they determined would be USD 400 over the 'normal' FOB price. However, even as Ghana and Côte d'Ivoire are major producers, these differentials came under pressure almost instantly. These two countries in particular are forced to sell large volumes in a market that can easily go to other origins for its supply. Côte d'Ivoire and Ghana cannot store and finance large quantities of cocoa beans in their ports and need to sell in order not to accumulate unsold stock. Therefore, the LID premium was offset by means of diminished country differentials, enhanced by a season of oversupply (Anonymous, personal communication, 2021). As mentioned above, in section 3.5.3 Origin differentials, Ghanaian differentials dropped 47 percent and Ivorian differentials by 63 percent (ICCO, 2021b). See more on the LIRP and LID in the Sustainability section.

## Market Concentration

### Market Concentration in the Cocoa Sector

Over the past few decades, market share in the cocoa value chain has been concentrated into a limited number of large companies (as has been happening in other commodities, such as coffee), led by the market power of traders and chocolate manufacturers and increasing number of mergers, and vertical and horizontal integration (Ingram et al., 2018). Gilbert (2016) and Gayi & Tsowou (2016) mention that during the last two decades many cocoa traders were squeezed out of the market. They had to fight with high operating costs which big transnational companies were able to manage more easily. Some of them gave up while others diversified into grinding and into the production of industrial chocolate. (Hütz-Adams et al., 2016). Traders and grinders Barry Callebaut, Cargill, Olam, Ecom, Sucden, Touton, CEMOI, Cococonnect, and

Blommer (Fuji Oil) account for 60 percent to 80 percent of global cocoa processing. The six largest chocolate manufacturers (Mondelēz International, Nestlé, Mars, Hershey's, Ferrero, Lindt & Sprüngli) transform 40 percent of chocolate products worldwide (Ingram et al., 2018). Most chocolate products are sold in supermarkets and concentration processes also exist there. In Germany four corporate groups (Rewe, Edeka, Schwarz and Aldi) control around 67 percent of the German food trade (Hütz-Adams & Schneeweiß, 2018).

## Market Concentration's Impact on Price Formation

It is apparent that in the determination of market prices in a liberal world economy, farmers' production costs for cocoa and attaining a living income play no role. (Hütz-Adams et al., 2016). Elder & Dauvergne (2015), McMichael (2013) conclude that large corporate actors reap the lion's share of value generated, while smallholders remain disenfranchised (Rueda et al., 2018). The question is how much of this can be attributed to market concentration, if there is such concentration at all. Naylor & Falcon (2010) and Rueda & Lambin (2014) do find such correlation: "(I)ntegration of production and distribution, and the liberalization of many agricultural markets around the world, have made farmers more vulnerable to the volatility of international prices" (Naylor & Falcon, 2010; Rueda & Lambin, 2014).

However, a 2016 study by SEO Amsterdam Economics, commissioned by the Ministry of Foreign Affairs of The Netherlands, found that market concentration among chocolate manufacturers and cocoa processors is not the key cause of low prices and poverty. The study, conducted after the Dutch parliament requested insight into how market concentration in cocoa might negatively affect farmers' lives, concluded that the levels of market concentration have increased in some cases, driven by economies of scale, a larger scope (of activities and products), and agglomeration, but that these increases are 'moderate'. The researchers, including cocoa researcher Dr. Anna Laven, Senior consultant from the Dutch Royal Tropical Institute (KIT), found no evidence that market concentration is excessive or that market power is being abused. "There is some evidence of vertical concentration, with strong links between cocoa processors and cocoa traders, but competition still appears to be sufficient, with profit margins generally reported to be low" (Oomes et al., 2016). The four largest firms in West Africa have a market share of approximately 50 percent and the eight largest firms approximately 70 percent of market share. Approximately half of all West African cocoa is bought by five multinational companies: Olam, Cargill, Barry Callebaut, Cemoi and Ecom. Looking at the global market, manufacturers and retailers do not automatically achieve high profits. As Hütz-Adams & Schneeweiß admit: "The massive price war over chocolate is squeezing the margins of many companies" (Hütz-Adams & Schneeweiß, 2018).

The SEO study finds an interesting correlation between market concentration and regulation: In West Africa, market concentration among cocoa traders is low in regulated countries, and higher in non-regulated countries (Oomes et al., 2016). As an example, in non-regulated countries like Liberia and Sierra Leone, Theobroma (ECOM) and Tradin Organic dominate the market. However, this could be the result of these countries being smaller origins, hence not too many (large) companies will operate there, in comparison to large origins like Ghana and Côte d'Ivoire.

## The Power of Farmers

Farmers in the cocoa sector have multiple options to sell their cocoa. Even if the farmer is a

member of a cooperative, he/she will often sell the cocoa to the highest bidder. It also occurs that farmers are members of multiple cooperatives. This opportunism is to be understood in the context of low general income. Nonetheless, it presents challenges for the cooperative board and staff. If a cooperative makes an export deal with a trader at a certain price, and the local price goes up (due to market fluctuations), the farmers will be unlikely to sell their beans to ‘their’ cooperative at the corresponding lower farmgate price; more likely they will sell to a company that did not fix their prices (too) early. The room to maneuver towards a higher price by the trader (to allow for the cooperative to source the cocoa from its farmers at competitive prices) is limited, as the trader has made their own commitments with clients (e.g., chocolate makers), who in turn have price-agreements with retail. Retail will not change its prices much, especially not upwards, in the constant battle for the consumer’s favor. For traders, hedging is a tool to mitigate this risk, but traders, processors and manufacturers depend on farmers and cooperatives to supply cocoa on time, at the correct quality, and at competitive prices. Farmers are also often seen by those that source from them as unreliable (Interviews with cooperative staff, exporters, July 2021). Buying companies, when making losses due to poor quality, delays or other problems resulting from irresponsible farmers will usually avoid a hard confrontation with the exporting cooperative (e.g., not take them to arbitration, not to reject the lot, not to demand a credit note) in the hopes that future shipments will be better. Often the low price paid to farmers has to compensate for the money that is not repaid by farmers to buying agents and exporters; money that “gets lost in the bush” (Anonymous, personal communication, July 2021).

## Price Structures for Cocoa Beans – Some Examples

### Price Structure for Different Kinds of Cocoa Beans

There are different price structures for each product segment covering: conventional, organic, Fairtrade-organic, Rainforest Alliance and Premium cocoa. Below a summary:

**Table 16. Summary of price structures for segments of cocoa beans**

| Type of Cocoa                  | Description   | Price structure  |
|--------------------------------|---|--|
| Bulk                           | Farmer processed (e.g., in baskets used in West Africa) or bulk centrally fermented (e.g., CCN-51 in Ecuador) or bulk centrally fermented (e.g., CCN-51 in Ecuador).  | London or New York ICE + or – country differential.  |
| Rainforest Alliance “Standard” | Farmer processed (e.g., in heaps or baskets used in West Africa) or bulk centrally fermented (e.g., CCN-51 in Ecuador) with RFA certification.  | London or New York ICE + or – country differential plus a differential of (on average) USD 100 per ton.                |
| Organic “Standard”             | Farmer processed (e.g., in baskets used in West Africa) or bulk centrally fermented (e.g., CCN-51 in Ecuador). Any presence of chemical residue detected on samples on arrival would lead to discounting the organic premium.             | London or New York ICE + or – country differential + approximately USD 300 per ton organic premium.                    |
| Organic “Premium”              | Also called “improved” organic. On farm harvesting (ripe pods), traceability to bag level, summaries by gender, farmer profiles). Any presence of chemical residue detected on samples on arrival would lead to discounting the premiums. | London, New York ICE + or – country differential + approximately USD 300 organic + USD 100 to 300 premium for quality. |

|                   |   |  |
|-------------------|---|--|
| Fairtrade-Organic | Double certified beans. Farmer processed (e.g., in baskets used in West Africa). Any presence of chemical residue detected on samples on arrival would lead to discounting the organic premium. | Minimum FTO price (USD 2,700 per ton) plus a Fairtrade premium of USD 240 per ton. In addition, extra premiums are possible, e.g., depending on quality.   |
| Specialty         | High quality beans (zero defects) for organic, hand-sorted, centrally fermented, solar dried, good sensory profile (often criollo or trinitario varieties) and a good story.                    | Prices would range from USD 3,000 to USD 6,000 per ton, although there are cocoa beans of exceptional quality, origin and uniqueness sold at very low volumes that fetch higher prices (Ferro et al., 2021). |
| Specialty Organic | High quality beans (zero defects) hand-sorted, centrally fermented, solar dried, good sensory profile and a good story, plus organic certification.   | Prices would range from USD 3,000 to USD 6,000 per ton, although there are cocoa beans of exceptional quality, origin and uniqueness sold at very low volumes that fetch higher prices (Ferro et al., 2021). |

Source: Own elaboration, 2021

## Payment Conditions for Cocoa Beans

The payment conditions for beans are important, as it will determine whether a cooperative or exporter can source beans in time. When relating the price-agreement to the (fluctuating) futures market, the time of ‘fixing’ the price is important, as well as who is stipulated in the contract to fix (the seller or buyer). Below a summary of options:

**Table 17. Summary of common payment conditions and benefits to buyers**

| Common payment conditions in the cocoa sector  | Benefit   |
|--|---|
| Flat price, buyer prefinances 50%. This typically is only the case when there is sufficient trust. This can work only work if the price is high enough for the supplier to buy beans with farmers at competitive prices. | No need to look at the world market price (futures market).                                   |
| Unfixed until such time that buyer or supplier wants to fix it to the current NY or U.S. market price, plus agreed-upon differentials.   | An upward market will also provide a higher farmgate price to be competitive in buying beans. |
| 75% CAD (Cash Against Documents) and leave 25 % “open” or “floating” until supplier wants to get paid.   | If patient, the supplier can benefit from movement up on futures market.                      |
| 95% fixed CAD and 5% upon arrival (quality check at destination).  | More money before the container arrives. Can only work with a proven track record on quality. |
| Applies to all of the above; Use of ‘social lenders’ such as Triodos, Alterfin, Root Capital or Rabobank (trade finance).  | Obtain prefinance of a contract for up to 70%.  |

Source: (Own elaboration, 2021)

## Purchasing Policies of Some Known Companies

**Table 18. Summary of common payment conditions of known companies**

| Company            | Cocoa type | Mechanisms   | Prices and premiums (2015/16/17)   |
|--------------------|------------|--|--|
| Tony's Chocolonely | Bulk       | Market price + Fairtrade premium + Premium to close the Living Income gap. | Ghana: government price + USD 375<br>Côte d'Ivoire: government price + USD 600   |
| Theo               | Premium    | Fixed price.   | USD 3,500 fixed price  |
| Ritter Sport       | Premium    | Variable price + minimum price + fixed premium.                            | Nicaragua: NY market (min price at USD 2,000)<br>+ USD 300 quality premium<br>+ USD 200 certification<br>+ USD 100 infrastructure bonus. |
| Taza               | Premium    | Market price + minimum price + negotiated premium with a minimum value.    | NY market price (min price USD 2,300 +<br>>USD 500 premium.  |
| Zotter Chocolate   | Premium    | Market price + minimum price + negotiated premium with a minimum value.    | Between USD 3,000 and USD 4,500 per ton and use a trader for logistic services for an additional USD 1,000 per ton.                      |

Source: Own elaboration based on Aidenvironment & Sustainable Food Lab, 2018

## Purchasing Contract

### CMAA, FCC and ISO Rules

A contract will list, among others: the buyer, supplier, quality parameters of the cocoa, shipment conditions and of course the price. Regarding contract terms, [CMAA rules](#) come into play for North America and [FCC rules](#) for Europe (and much of the rest of the world). In West Africa, there is wide use of the [ISO 2451 norm](#), however, it's the FCC rules that will apply when shipping out to Europe (Africa's main destination). Unfortunately, ISO and FCC/CMAA standards are not aligned, creating possible confusion for the origin seller. FCC and CMAA are 'commodity trade organizations' for cocoa, not to be confused with domestic trade bodies like GEPEX (Côte d'Ivoire), ANECACAO (Ecuador), LINACEA (Liberia), PMB (Sierra Leone), etc. Nor are they to be confused with international bodies such as ICCO, WCF, ICI, CAOBISCO, Cocoa Association of Asia, etc. The purpose of the FCC and CMAA is the following:

- They provide international cocoa contracts not just for beans but also cocoa products, with clear definitions and procedures.
- They offer arbitration and appeal service for dispute resolution.
- They provide standards for cocoa beans and products, including quality definitions and methodologies for quality assessment.
- They share best practice in logistics – rules and guidelines that regulate weighing,

sampling, shipping lines, superintending, warehousing, infestation.

- They provide training and education.
- They are also involved in issues such as child labor, traceability, natural resources or conflict issues and collaborate between stakeholders (Laird, personal communication, July 2021).

The most important differences between the three standards are listed in the table below.

**Table 19. Main differences between FCC, ISO2451 and CMAA rules**

| FCC Quality Rules vs ISO/ CMAA                                 |                             |        |                  |        |
|--|-----------------------------|--------|------------------|--------|
| FCC  | GF                          |        | FF               |        |
|  |                             | Defect |                  | Defect |
| Mould  | 5                           | } 5    | 10               | } 10   |
| Insect-damaged   | 5                           |        | 10               |        |
| Slaty  | 5                           |        | 10               |        |
| <i>Plus sievings, flats, CRM, Foreign Matter</i>               |                             |        |                  |        |
| ISO 2451   | Grade One                   |        | Grade Two        |        |
| Mould  | 3                           |        | 4                |        |
| Slaty  | 3                           |        | 8                |        |
| Other defect*  | 3                           |        | 6                |        |
| <i>*= insect-damaged, flats, germinated. No mention of FM.</i> |                             |        |                  |        |
| CMAA   | <i>(Based on FDA Specs)</i> |        |                  |        |
| Mould  | 4 or                        |        | But not more     |        |
| Insect-damaged   | 4                           |        | than 6% combined |        |
| Slaty  | N/A                         |        |                  |        |
| <i>limits of flats, foreign matter, CRM etc not specified</i>  |                             |        |                  |        |

Source: (Laird, 2021)

As seen in the table, there are slight differences between the standards and the terminology is different: FCC speaks of Good Fermented (GF) and Fair Fermented (FF), whereas ISO speaks of Grade One and Two. The North American CMAA does not specify any grades. With the FCC rules you can combine either mold or insect-damaged beans to result in a sum-up of five defects maximum, whereas ISO allows for three of each max. An exporter used to the ISO standard must be careful when dealing with a contract that stipulates GF under FCC-rules; if the exporter manages to produce Grade one cocoa with 3 percent moldy and 3 percent insect damaged beans, his cocoa will not qualify as GF, as this mandates a maximum of only 5 percent of combined mold and insect-damaged beans. This would mean that the exporter would fall into the (less paying) Fair Fermented category (up to 10% mold and insect damaged beans) (CAOBISCO et al., 2015; Laird, 2021).

A basic rule that many processors use is the 100-100-5-5 rule: 100 beans per 100 grams (this

is harder to achieve in the beginning of the harvest season, when beans are small and flat), five defects (the sum-up of mold- and insect-infested beans) and five slaty beans per 100 grams (Laird, 2021; Anonymous, personal communication, July 2021).

## Items in a Contract

In addition to quality requirements, a contract will have the following items in it (CAOBISCO et al., 2015; Laird, personal communication, July 2021).

- Buyer and seller name and address
- Whether the contract is according to FCC- or CMAA-rules
- Date
- Description of beans (origin, crop), quantity
- Good or Fair Fermented (can also be Fair Average Quality – FAQ)
- Quality measured on departure or on arrival
- Certification (if any)
- Price (including currency)
- Incoterms (FOB, CIF, etc.). If FOB, who books the freight – seller or buyer
- Packaging
- Payment terms (e.g., what C.A.D. type; FCC allows for three)
- Weight (net shipping, net shipped or net landed weight – beans lose weight during transport)
- Sampling and weighing protocol (e.g., will there be quality control at origin, or at destination)
- Insurance
- Arbitrage and appeal (quality- and non-quality-related matters)
- Special conditions: e.g., FFA, Force majeure, specific quality criteria, etc.
- Cocoa bean infestation (responsibility to fumigate at destination)

## Contracts for Organic Cocoa

If exporting as organic, any pesticide issue or any quality issue on arrival will prevent the

buyer from using the beans as organic. In that case, the buyer will need to downgrade the beans to conventional and not pay the USD 300 per ton for the organic premium. Also, in case beans on arrival do not reflect the quality specs agreed, the buyer will claim any quality premium agreed upon. Some buyers nowadays stipulate that the residue test will be done in the cocoa butter (where residues accumulate), forcing the supplier to wait up to three months to receive the organic premium. Below is an example of what might be seen in a contract regarding the quality, shipping and payment terms for centrally fermented organic cocoa beans.

- Bean count – Max 100 ('standard beans' according to FCC)
- Slaty – Max 5% (for 'good fermented' according to FCC)
- Moisture – Max 7% (FCC permits 'absolute max' of 8%)
- Sievings (anything sieved through a screen with 0.5 cm holes) – Max 1.5% (FCC permits 1.5% max)
- Foreign matter (stones, husk, placenta, etc. with no commercial value) – Max 0.755% (FCC permits 0.75% max)
- Flat beans – Max 1.5% (FCC permits 1.5% max)
- Cocoa Related Matter or CRM (clusters, broken beans and associated fragments and pieces of shell which do not pass through the sieve) – Max 3.5% (FCC permits 3.5% max)
- Free Fatty Acid or FFA – Max 1.5% (FFA content of 1.75% is the legal limit for cocoa butter within the EU)
- Off-taste on Liquor – No off-taste (No Moldy, No earthy, No hammy, No Smoky)
- Cadmium <0.2ppm (the EU sets limits in a final chocolate product of 0.8ppm in dark and 0.3ppm for milk chocolate)
- Price: Level LDN Z21 (fixation buyer option) + USD 300 organic premium + USD 100 quality premium (here the specifications would be listed). LDN = London, Z21 = December 2021.
- FOB "Port", Net Landed Weight, surveyor at port during stuffing
- Quality will be measured on arrival. Quality measured on arrival is leading; any analysis done before shipment is only informative and should help limit the issues on arrival.
- In case there is infestation on arrival, cost of fumigation (CO<sub>2</sub> Chamber) is on the seller.
- Payment: 95% CAD of London price, rest on arrival.

Figure 63. Example of a contract for 'better than average' organic bean at minimum FCC-standard quality. Source: Anonymous exporter, personal communication, July 2021

## Arbitration – Discounts and Allowances

When there is a contract and a supplier does not deliver the correct quantity, it is considered a "default". A large processor mentions that small delays in shipment can be accepted and are understandable when justified and indicated in advance. A default is not a positive outcome in a contract and will inhibit the procurement of loans (for working capital) with banks.

When quality specifications are not met, and a cocoa lot goes to arbitration, the FCC or CMAA arbitrators may award an 'allowance' to the buyer (who must be a member of these trade associations). At the London and New York ICE Futures markets, the grading systems are loosely based on those of the FCC and CMAA (definitions of defects, method of counting bean size, etc.) but the futures markets have their own ways of calculating penalties for sub-grade cocoa. Below, for example, the penalties for exceeding a bean count stipulated in a New York futures contract (ICE Futures US, 2013).

| Discount for excess Bean Count above standard |                 |                 |
|---|-----------------|-----------------|
| Total Discount                                |                 |                 |
| For 1 <sup>st</sup> 25 beans or part there of | \$ 2.00 per ton | \$ 2.00 per ton |
| For 2 <sup>nd</sup> 25 beans or part there of | 4.00 per ton    | 6.00 per ton    |
| For 3 <sup>rd</sup> 25 beans or part there of | 6.00 per ton    | 12.00 per ton   |
| For 4 <sup>th</sup> 25 beans or part there of | 8.00 per ton    | 20.00 per ton   |
| For 5 <sup>th</sup> 25 beans or part there of | 10.00 per ton   | 30.00 per ton   |
| For 6 <sup>th</sup> 25 beans or part there of | 12.00 per ton   | 42.00 per ton   |
| For 7 <sup>th</sup> 25 beans or part there of | 14.00 per ton   | 56.00 per ton   |
| For 8 <sup>th</sup> 25 beans or part there of | 16.00 per ton   | 72.00 per ton   |

Figure 64. New York ICE futures discounts for exceeding bean count

Figure 65 shows the allowances on the London ICE futures market for defective beans (defined by the FCC as the sum of insect-damaged and moldy beans). At 5 percent defects, there is no allowance, but if the seller shipped beans that arrive at 6 percent defects, there would be a negative allowance for the seller of GBP -8 per ton for cocoa fixed in the price range of GBP 1,800 and 2,199. London ICE awards premiums for cocoa that is better than average, which the FCC does not do (ICE Futures Europe, 2017).

| ALLOWANCES FOR DEFECTIVE BEANS |                           |      |        |        |        |        |        |        |        |        |        |
|--------------------------------|---------------------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| SCALE                          | A                         | B    | C      | D      | E      | F      | G      | H      | I      | J      | K      |
| Upper range                    | £599                      | £999 | £1,399 | £1,799 | £2,199 | £2,599 | £2,999 | £3,399 | £3,799 | £4,199 | £4,599 |
| Lower range                    | £0                        | £600 | £1,000 | £1,400 | £1,800 | £2,200 | £2,600 | £3,000 | £3,400 | £3,800 | £4,200 |
| %                              | POUNDS STERLING PER TONNE |      |        |        |        |        |        |        |        |        |        |
| 0                              | 2                         | 7    | 10     | 13     | 17     | 20     | 23     | 26     | 29     | 32     | 35     |
| 1                              | 2                         | 7    | 10     | 13     | 17     | 20     | 23     | 26     | 29     | 32     | 35     |
| 2                              | 2                         | 7    | 10     | 13     | 17     | 20     | 23     | 26     | 29     | 32     | 35     |
| 3                              | 2                         | 7    | 10     | 13     | 17     | 20     | 23     | 26     | 29     | 32     | 35     |
| 4                              | 1                         | 3    | 5      | 7      | 8      | 10     | 12     | 14     | 16     | 18     | 20     |
| 5                              | 0                         | 0    | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| 6                              | -1                        | -3   | -5     | -7     | -8     | -10    | -12    | -14    | -16    | -18    | -20    |
| 7                              | -2                        | -7   | -10    | -13    | -17    | -20    | -23    | -26    | -29    | -32    | -35    |
| 8                              | -4                        | -10  | -15    | -20    | -25    | -30    | -35    | -40    | -45    | -50    | -55    |
| 9                              | -5                        | -13  | -20    | -27    | -33    | -40    | -47    | -54    | -61    | -68    | -75    |
| 10                             | -6                        | -17  | -25    | -33    | -42    | -50    | -58    | -66    | -74    | -82    | -90    |
| 11                             | -7                        | -20  | -30    | -40    | -50    | -60    | -70    | -80    | -90    | -100   | -110   |
| 12                             | -9                        | -23  | -35    | -47    | -58    | -70    | -82    | -94    | -106   | -118   | -130   |
| 13                             | -10                       | -27  | -40    | -53    | -67    | -80    | -93    | -106   | -119   | -132   | -145   |
| 14                             | -11                       | -30  | -45    | -60    | -75    | -90    | -105   | -120   | -135   | -150   | -165   |
| 15                             | -12                       | -33  | -50    | -67    | -83    | -100   | -117   | -134   | -151   | -168   | -185   |

Figure 65: Example of allowances for defective beans at the London futures market, based on the FCC standard. Source: ICE

Other penalties stipulated in the futures markets concern, among others, slaty beans, residue and foreign matter, FFA-content, bean clusters, and a complete default on a contract. Occasionally these rules are changed. London is slated to change its rules in December of 2021. London and New York have different ways of assessing quality and penalties: London starts with a benchmark of 100 beans/100g, five defects and five slaty and all African cocoas are tenderable at par. So, Cameroon, for example, has the same value as Ghana. All cocoas

other than African are discounted by GBP 50 per metric ton (including South American and Caribbean fine grades). In New York, the basis cocoa tends to be Sulawesi and Brazilian Para, and awards premiums to the base price for other origins: a USD 80 per ton premium for some cocoa, and USD 160 per ton for CDI, Ghana, Nigeria, Togo and Sierra Leone Main Crop (Laird, personal communication, July 2021; ICE Futures Europe, 2017; ICE Futures US, 2013).

## Price Structures – Some Examples

### Cost Distribution of a Final Chocolate Product

The share of cocoa in the sales price of products made from the cocoa has decreased steadily over the last few decades. In the French market, the cocoa share of the price of the average chocolate bar was still 23 percent between 1960 to 1970, while in the period from 2000 to 2011 it was on average only 10 percent (Hütz-Adams & Schneeweiß, 2018). There may be various explanations for this:

- Increased costs in personnel, store rental and marketing now take up a higher proportion of the final chocolate bar price.
- A higher average price in the 1960s and 1970s, when for a large part of this period the (real) cocoa price was very high, even reaching above USD 8,000 per ton in the mid-1970s.
- The proportion of consumption of dark (high cocoa content) and milk (low cocoa content) chocolate bars; while the more traditional chocolate consuming markets (Europe, United States) have shown a trend towards more dark chocolate bars, this might be offset by the increase in (milk) chocolate consuming emerging economies (Latin America, Asia).

| Bar of chocolate 100 g weight, price EUR 0.89                    |                | Retail price share       |         |
|--|----------------|--------------------------|---------|
| Cost per kilogram raw cocoa (FOB)                                | EUR 1.75       | Gross income for farmers | 6.60 %  |
| Cocoa mass per kilogram of raw cocoa                             | 800 g          | Domestic transport       | 0.50 %  |
| Share of cocoa mass in milk chocolate                            | 30 %           | Tax/marketing authority  | 4.20 %  |
| Number of chocolate bars from 800 gram cocoa mass                | 26.7 bars      | International transport  | 0.30 %  |
| Cost of raw cocoa per chocolate bar                              | 6.6 cent       | Costs at port of arrival | 1.10 %  |
| Price share in one chocolate bar                                 | 7.4 %          | International traders    | 0.20 %  |
| <b>Share of costs after cocoa price changes in Côte d'Ivoire</b> |                | Processors & grinders    | 7.60 %  |
| Previous farm gate price:<br>1.78 EUR/kg (10/2016 to 3/2017)     | 6.7 cent/7.5 % | Manufacturers            | 35.20 % |
| New farm gate price:<br>1.07 EUR/kg (from 4/2017)                | 4 cent/4.5 %   | Retail & tax             | 44.20 % |

Source: Fountain/HützAdams 2015: 39

Figure 66. Breakdown of cost of a milk chocolate bar, cocoa content 30%. Source: average, June 2017; Hütz-Adams & Schneeweiß, 2018

Figure 66 shows that a farmer received 6.6 percent of a milk chocolate bar's value in 2017. FAO & BASIC (2020) revealed a similar percentage for a milk chocolate bar in 2020 (7.3% of the bar's value for the farmer). For a dark chocolate bar, the farmer has a share of 11.3 percent. On average 70 percent of the total value and 90 percent of the total margins generated from

cocoa farmers to final consumers are absorbed by the two last actors in the chain: brands and retailers. The high percentage taken up by downstream actors makes sense, given the cost of transformation, packaging, logistics, but particularly the high costs in consuming countries of marketing, personnel, and shop rental space. Figure 67 shows that the cost with manufacturers (37%) and retailers (another 37%, including VAT), represents 74 percent of the value of a dark chocolate bar. Upstream, 11.3 percent of the total value goes to farmers and 7.3 percent to collection and export (FAO & BASIC, 2020). Interviews with sector experts validate that the main costs for a (medium to small) chocolate maker is personnel and that the raw material cost is not very impactful to the final price.

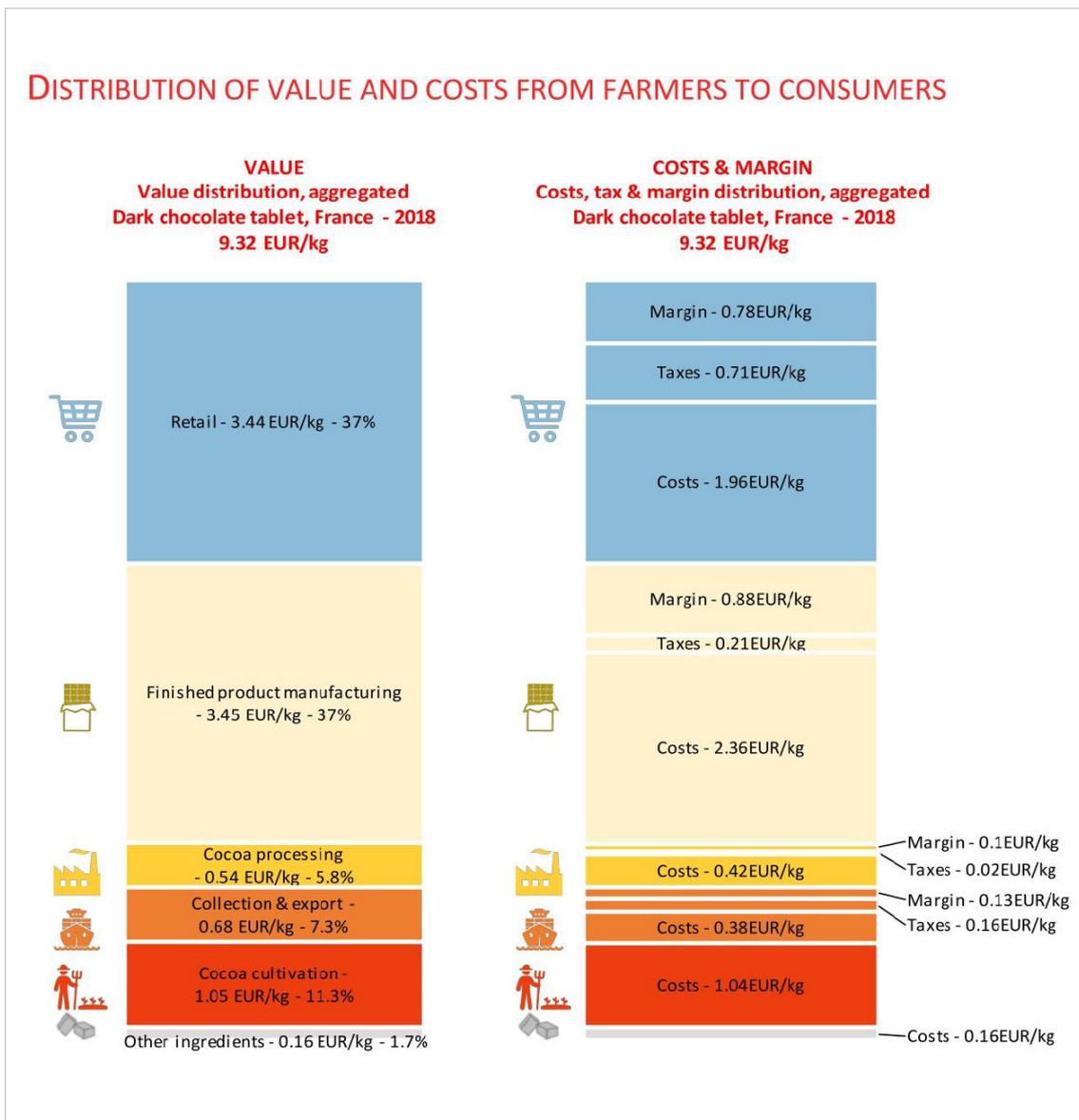


Figure 67. Distribution of value, costs and margins of plain dark chocolate bars in 2018. Source: FAO & BASIC, 2020

The research also shows that the three main factors linked to “downstream” actors (retailers and brands) have a significant impact on this distribution of value and costs:

- the type of brand (A-brand versus private label),
- the product segment (basic, cooking, premium), and
- the product's performance (best-sellers versus low-rotation products).

At the other end of the chain, the value and costs associated with “upstream” stages (from cocoa cultivation to exporting) are much more stable and have a limited impact, if any, on the distribution of value and costs from cocoa farmers to end consumers, whether it is:

- the country of origin (even when highlighted on the packaging of the finished good),
- the percentage of cocoa in the final product (for the same marketing mix),
- the country of first processing. (FAO & BASIC, 2020).

This makes sense, given that final consumer price is driven mostly by the scale, marketing, branding, and positioning of the final product.

Catherine Bonjean and Jean-François Brun of Auvergne University, France, are cited by the Voice Network to show that since the mid-1980's, transmission of price fluctuations in cocoa has been asymmetric; retail prices rise much more quickly when the price for cocoa goes up, than the rate they drop when cocoa prices go down. This means that with falling prices of cocoa beans, chocolate manufacturers see an increase of their profit margins (A. C. Fountain & Hütz-Adams, 2017). In Figure 68 below, it can be observed that the average consumer price of plain dark chocolate bars went up in France by about 10 percent between 2014 and 2018, while the farmgate and export price remained almost the same (FAO & BASIC, 2020). It is not shown on what the extra 10 percent was spent. Given that prices stayed the same for cocoa beans and processing, it is unlikely that companies increased their sales price to make more profit, thus risking slowing down rotation. Much more likely is the explanation that personnel, rental of commercial space or packaging material costs went up. It can also be a result of the premiumization of chocolate, leading to more expensive marketing and packaging. Finding the exact reason for the increase of the bars is beyond the scope of this study.



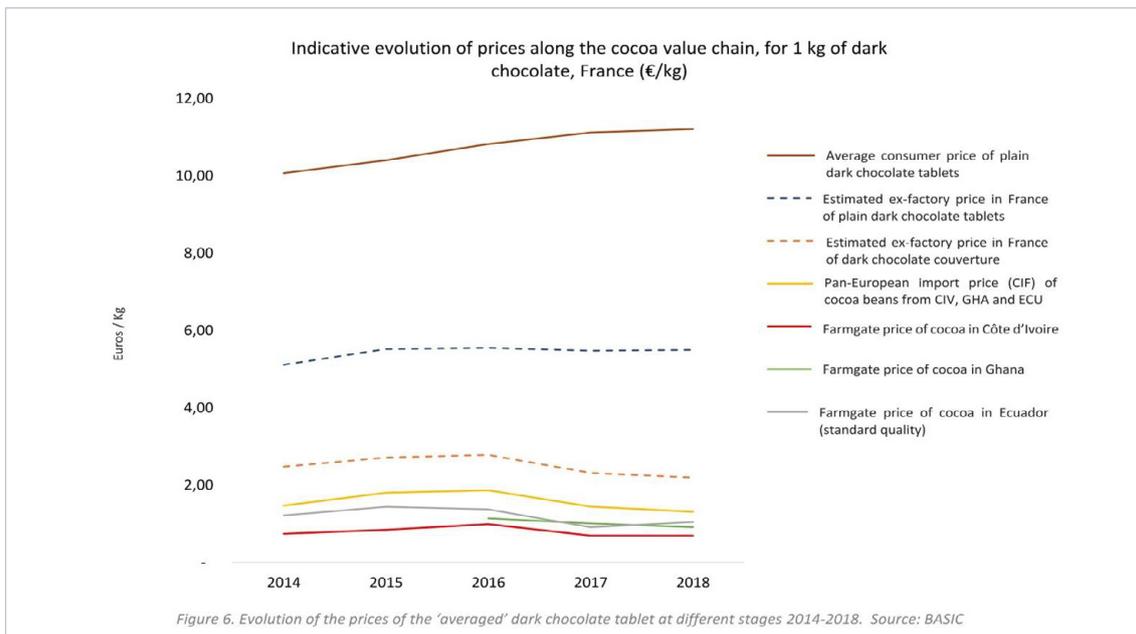


Figure 68. Evolution of the prices of the 'averaged' dark chocolate tablet at different stages, 2014–18. Source: FAO & BASIC, 2020

The difference between consumer prices and prices for commodities, such as cocoa, is due to several reasons, according to FAO & BASIC (2020). Firstly, the complexity of the cocoa/chocolate chain which is associated with a high level of industrialization and large economies of scale at the processing stage. This has democratized the consumption of chocolate thanks to the (relatively) low price level achieved at the consumer level, but which hampers the capacity of cocoa farmers and producer countries to get recognition and value for their specificities (terroir, flavors, etc.). Secondly, because of the marketing and advertisement made by major brands, consumers consider that the percentage of cocoa is what matters most and defines the quality of chocolate tablets sold by retailers (especially in the premium segment) and not the terroir or the work of farmers (FAO & BASIC, 2020).

### The Effects of Certification Systems on Value and Costs Distribution

The share of value accruing to retailers and national brands are quite similar between conventional and certified tablets, and the share of value accruing to all other actors only varies moderately (for example between 10.2 percent and 11.6 percent for FTO-certified dark 'Premium tablets', compared to 8.2 percent for conventional tablets). Whatever the certification analyzed, the overall value distribution from raw material to end consumption has not profoundly changed, except in certain cases where multiple certification schemes are attained (in particular the combination of organic and fair trade). Significant changes can be observed at the level of cocoa farmers in the case of organic certification especially when combined with fair trade (for example, in the case of dark 'Premium' chocolate tablets, farmers reached an estimated EUR 2.7 per kg which is 87 percent more than in the case of non-certified tablets) (FAO & BASIC, 2020).

### The Justification of a Higher Price for a Certified Product

Organic certification, especially in combination with Fairtrade, is associated with a higher

valuation of the work of farmers and of the terroir of cocoa, but only concerns a minority of cocoa farmers who can enter these demanding certification systems and manage to effectively sell their cocoa as certified. The UTZ/Rainforest certification and the Fairtrade certification, when they are not combined with organic, appear to serve mainly as “licenses to operate” in the eyes of many brands and retailers willing to demonstrate their conformity with social and environmental criteria, but have difficulties in most cases to translate these commitments into higher prices to consumers when these certifications are not combined with organic (FAO & BASIC, 2020).

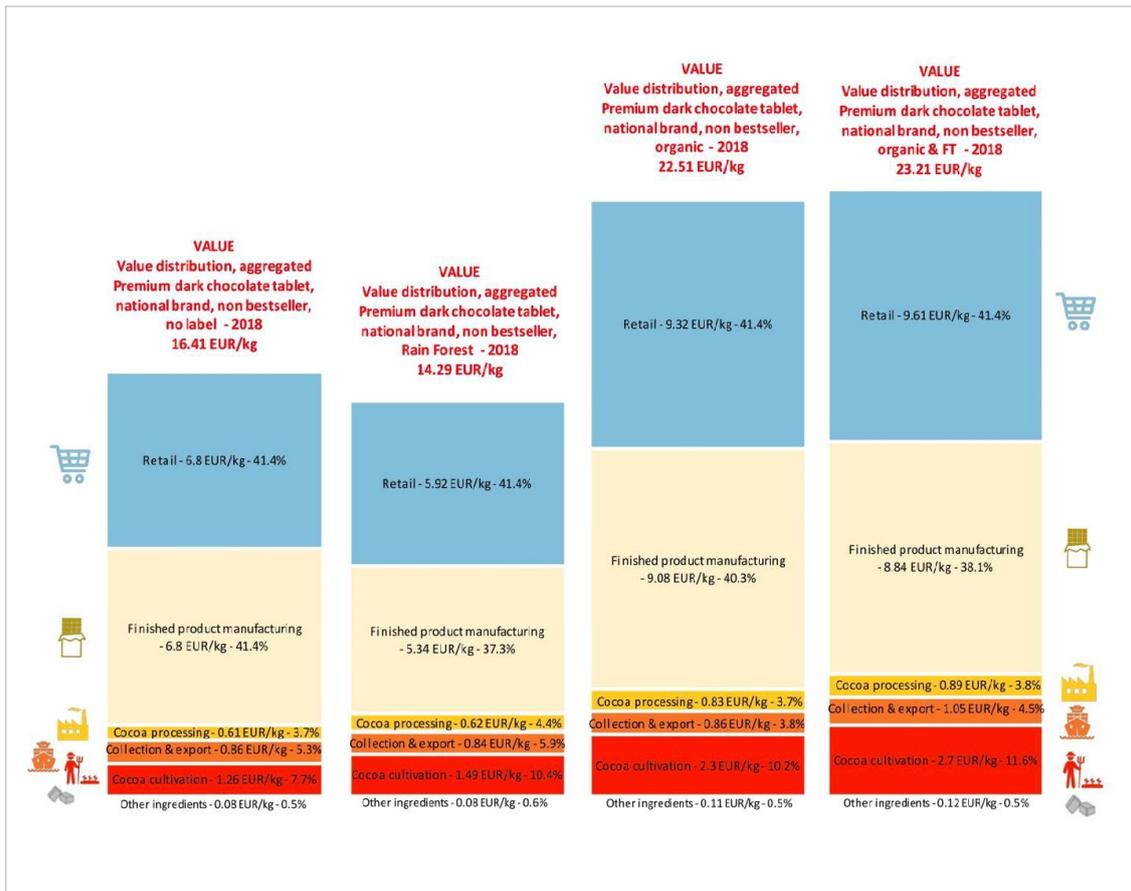


Figure 69. Distribution of value, for certified ‘premium’ plain dark chocolate tablets in 2018. Source: FAO & BASIC, 2020

### Export Cost Comparison in Various Countries

The share of value associated with collection, transport, warehousing, and exports is similar among various countries, from EUR 0.48 per kg in Ecuador (unsorted cocoa) to EUR 0.63 per kg in Côte d’Ivoire. The main difference is associated with taxes which range from EUR 0.06 per kg in Ecuador up to EUR 0.29 per kg in Côte d’Ivoire. The case of Ghana must be analyzed separately as it is the only country, which has maintained a public monopoly on export and trading of cocoa beans through the COCOBOD. Therefore, the State derives revenues not only from the taxes levied but also from the margins (i.e., profits) generated by the public Cocoa Marketing Company (as a result, the tax share in Ghana cannot be compared with the other producing countries) (FAO & BASIC, 2020).

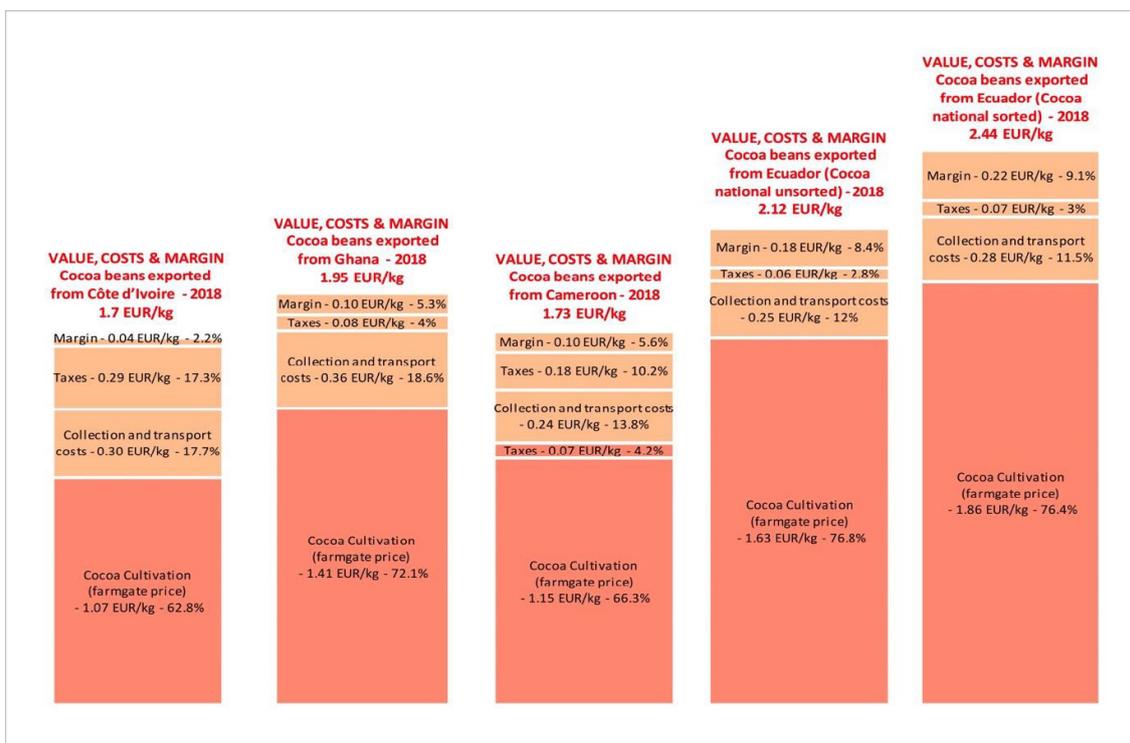


Figure 70. Breakdown of FOB value in Côte d'Ivoire, Ghana, Cameroon and Ecuador in 2018. Source: FAO & BASIC, 2020

## Influencing Factors in Value and Cost Distribution for Farmers

Research by the Food and Agricultural Organization shows that, within producing countries, the main differences in value and costs distribution stem from three principal factors:

1. The type of regulation and State's involvement in the sector.
2. The type of cocoa varieties, especially the ones offering finer flavors and/or higher yields, and the type of associated agricultural practices.
3. The evolution of cocoa world prices (FAO & BASIC, 2020).

### The Influence on Cost Distribution of the State's Involvement in the Sector

Case studies of Côte d'Ivoire and Ghana show that stronger regulation systems enable more stable prices for producers, particularly in times of negative price shocks. But these are also the countries where the farmer receives a lower share of export value. There is a greater financial 'cushion' in the governments' relatively high levies to stabilize prices, in comparison to liberalized economies such as Ecuador. Farmgate prices may fluctuate more in these liberalized economies, also because in the case of Ecuador there is greater potential of differentiation of cocoa production between Standard, Arriba Nacional and CCN51 cocoa. Liberalized economies of Ecuador and Cameroon are, however, associated with a polarized producer base between the farmers who can achieve differentiation and certification and all the others (FAO & BASIC, 2020).

## The Influence on the Cost Distribution of the Type of Cocoa Varieties and Agricultural Practices

A report by FAO & BASIC (2020) indicates that high(er) quality and high(er) yield varieties are produced by small to mid-size (industrialized) plantations and organized small-holder farmers benefiting from private and public support leading to better income and overall benefits. On the contrary, non-organized smallholder farmers remain for a large part below the poverty line.

## The Influence on the Cost Distribution of the Type of Agricultural Practices, the Evolution of Cocoa World Prices

The third factor influencing the value and cost distribution within producing countries according to the report issued by the FAO & BASIC (2020) is the evolution of cocoa world market prices. Public data showed that the cocoa farmgate price has followed similar trends as the LIFFE-ICE cocoa price, which then gets conveyed later in the value chain. It was noticed that the combined share of value for retailers and brands increased in 2014–2016 at the end of the value chain because of a price surge downstream, thus transmitting it to consumers.

## Price and Purchasing Policies in Different Countries

This section lists several purchasing policies developed in selected cocoa producing countries. It navigates through the different government policies towards the sector including taxes, fees, and internal quality requirements. It also identifies differences and the critical factors, which play a role in purchasing policies.



### Ghana – Price and Purchasing Policy

Ghana withstood the push for deregulation (and the abolishment of its COCOBOD) during the 1990s, in the context of international financiers promoting structural adjustment programs (SAPs) (Grumiller et al., 2018). The Producer Price Review Committee (PPRC), chaired by the Ministry of Finance and Economic Planning and includes COCOBOD, Bank of Ghana, representatives of farmers, licensed buying companies (LBCs), and hauliers, fixes producer prices annually at the start of the cocoa harvesting season in October. These prices are expected to be maintained for a period of one year. Fixed producer prices mean there is no room for farmers to negotiate prices or for prices to be differentiated based on quality. However, premium payments for certified cocoa are possible. Fixed prices can be advantageous for Ghanaian cocoa farmers when the world market price is falling during the season. On the other hand, in a bullish market, Ghanaian cocoa farmers do not benefit from price increases within a season (Bymolt, Laven, & Tyzler, 2018).

The process of price determination consists of two steps:

1. Forecasting of the revenues and costs and deliberations of the PPRC. First, COCOBOD projects total revenue and industry costs for the season. Based on these provisions, the PPRC decides on the producer prices for farmers and shares of other stakeholders (LBCs, hauliers, COCOBOD and GoG) for a coming year. A fraction of the price retained by COCOBOD is used to cover its administrative and operating expenses and to reinvest

in the cocoa value chain in the form of research, extension provision, input supply subsidies, etc.

2. The approved producer price was subsequently announced by the Minister of Finance to commence the opening of the new crop season.

As the producer prices in Ghana are fixed once per year based on the average price achieved through forward sales of the upcoming cocoa harvest but the physical export largely occurs later, the link between their current year's farmgate prices and last year's international price is stronger than with the current year's price. Thus, in the regressions for these regions, the international price is included with a one-year lag (Boysen et al., 2021).

For the 2017/2018 season, the producer price was set at 75 percent of net FOB price. The remaining 25 percent of the net FOB value is used for cost items such as a buyers' margin, crop finance, hauliers cost, storage and shipping, disinfection and grading, inspection, and government/COCOBOD revenue (Bymolt, Laven, & Tyszler, 2018). In 2020, estimates of these levies applied to the FOB export price (also called "FOB price levies") amounted to 44.2 percent for Ghana, (compared to 18.6% for ROW) (Boysen et al., 2021).

The use of a 'net' FOB price is somewhat controversial because it implies that certain costs are deducted before allocating a share of the price to the producer. To arrive at the net FOB price, the PPRC first deducts an amount from the gross FOB for disease and pest control, fertilizer application (hi-tech), operational input costs, and rehabilitation (nurseries and seedlings). Some have argued that some service provision (e.g., fertilizer procurement and distribution) would be better managed by the private sector, as there are frequent complaints that inputs do not reach farmers on time or are vulnerable to corruption or patronage. A small amount of the gross FOB price is also deducted for a scholarship fund and child education support (Bymolt, Laven, & Tyszler, 2018).

## Côte d'Ivoire – Price and Purchasing Policy

Côte d'Ivoire deregulated in the 1990s and then re-regulated under the CCC. Since the latest reforms in 2011, the producer price has been fixed by the government. The annual producer price is fixed through a PVAM (Program of Anticipated Sales) at around 60 percent of the value at which the CCC can make its forward sales. As in Ghana, fixed producer prices mean farmers cannot negotiate prices and prices are differentiated based on quality, although premium payments for certified cocoa are possible. In theory, fixed annual prices are a guarantee to producers, regardless of market movements within the year. To ensure the stabilization of the farmgate price for cocoa farmers, a reserve fund has been set up by CCC to protect against possible reductions in cocoa prices in the future (Bymolt, Laven, & Tyszler, 2018).

Ivorian cocoa farmers receive some of the lowest prices in the world. Between 2000–2001 and 2014–2015, Ivorian farmers received an average of 51 percent of the ICCO daily price, although this has improved slightly to 55 percent since reforms in 2011. This reflects a highly effective government tax on producers, for which farmers do not receive comparable services as Ghanaian producers do from COCOBOD. How taxes from cocoa are being used and how that translates into benefits for farmers is not transparently reported (Bymolt, Laven, & Tyszler, 2018).

Côte d'Ivoire, like Ghana, forward-sells much of its crop. On the 1 October (cocoa 'new year'), when the new crop calendar starts, CCC tries to have sold 60–70 percent of its crop from then for one year forward. This practice, in combination with failure to hedge against future prices caused tremendous problems in 2016: Many national traders who bought the forward contracts prior to the 2016 fall in prices did not hedge (or presell) their cocoa. When the world market price fell sharply, local traders declined to buy the cocoa from producers at the fixed price and defaulted on their contracts with the government. The stabilization fund was not large enough to maintain the guaranteed producer price, as some had previously predicted. The Ivorian government responded by lowering the producer price by 36 percent, angering producers. This naturally raised many questions about the sustainability and functioning of such an institutional arrangement for price regulation (Bymolt, Laven, & Tyszler, 2018). Also in 2021 Côte d'Ivoire's government had to drop the (main crop) farmgate price to CFA 825 (USD 1.46) per kg, from CFA 1,000 (USD 1.80) per kg in 2020, after failing to sustain LID premiums.

In 2020, levies were 45.1 percent of FOB prices in Côte d'Ivoire, and the country levies an additional export tax of 14.6 percent and a registration fee of 0.94 percent on raw cocoa beans, but for processed cocoa products this tax rate decreases as processing increases, which encourages domestic processing (Boysen et al., 2021). This means that both national and international companies have been enticed to establish processing plants in the country. The supply is large enough to benefit from economies of scale and there is the transport benefit of carrying compact cocoa mass, being devoid of shells, foreign matter and defects having been sorted out (flats, clusters).



### Ecuador – Price and Purchasing Policy

According to the National Institute of Statistics and Censuses (INEC), the Ecuadorian cocoa sector represents 5 percent of the national economically active population (EAP) and 15 percent of the rural EAP. In Ecuador, three national bodies support the cocoa sector: The Association of Producers of Fine and Aroma Cacao (APROCAFA), which is also associated with promoting the 'Colección Castro Naranjal' (CCN-51) variety and with the advancement of the "High Tech Cacao Culture". The National Institute of Agricultural Research (INIAP) does scientific research and transfers knowledge and technology in agricultural production. The (membership based) Association of National Cocoa Exporters (ANECACAO) analyses market trends, provides technical assistance and looks after the interest of exporters (ANECACAO, 2021; Hütz-Adams et al., 2016). Due to its smallholder dominance the Ecuadorian government under Rafael Correa defined cocoa as one of the strategic products for economic development with special regard to small-scale farmers, rural development and poverty reduction. Key implementing entities of the 2012 "National Project for the Reactivation of Fine Aroma Cocoa" program are the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) and the Ministry of Foreign Trade. The project had a goal to renovate 284,000 ha and newly establish 70,000 ha, replacing less profitable crops, old pastures or fallow land (Hütz-Adams et al., 2016).

In 2006 the "Instituto Ecuatoriano de Normalización" (INEN) developed a classification for cocoa bean qualities. The INEN 176 classification of its (FFC) Arriba Nacional and CCN51 varieties was one of the first sophisticated producer country classification schemes in the cocoa sector worldwide (see table below), categorizing beans based on bean count,

fermentation and defects such as moldy and slaty beans. Ecuador also developed a norm for chocolate: The INEN 621 norm specifies formulations, microbiological and (metal) contaminant parameters that chocolatiers should consider.

**Table 22. Quality requirements of processed cocoa beans in Ecuador**

| REQUISITOS   | UNIDAD                                    | ARRIBA    |         |         |         |         | CCN51   |
|--|---|-----------|---------|---------|---------|---------|---------|
|  |   | A.S.S.P.S | A.S.S.S | A.S.S   | A.S.N.  | A.S.E.  |         |
| Cien granos pesan  | g   | 135-140   | 130-135 | 120-125 | 110-115 | 105-110 | 135-140 |
| Buena fermentación (mín.)  | %   | 75        | 65      | 60      | 44      | 26      | ***65   |
| Ligera fermentación* (mín.)  | %   | 10        | 10      | 5       | 10      | 27      | 11      |
| Violeta (máx.)   | %   | 10        | 15      | 21      | 25      | 25      | 18      |
| Pizarroso (pastoso) (máx)  | %   | 4         | 9       | 12      | 18      | 18      | 5       |
| Moho (máx.)  | %   | 1         | 1       | 2       | 3       | 4       | 1       |
| TOTALES ( análisis sobre 100 pepas)                                | %   | 100       | 100     | 100     | 100     | 100     | 100     |
| Defectuosos ( análisis sobre 500 gramos) (máx).                    | %   | 0         | 0       | 1       | 3       | **4     | 1       |
| TOTAL FERMENTADO (mín.)  | %   | 85        | 75      | 65      | 54      | 53      | 76      |
| A.S.S.P.S  | Arriba Superior Summer Plantación selecta |           |         |         |         |         |         |
| A.S.S.S  | Arriba Superior Summer Selecto            |           |         |         |         |         |         |
| A.S.S.   | Arriba Superior Selecto                   |           |         |         |         |         |         |
| A.S.N.   | Arriba Superior Navidad                   |           |         |         |         |         |         |
| A.S.E.   | Arriba superior Época                     |           |         |         |         |         |         |
| * Coloración marrón violeta  |   |           |         |         |         |         |         |
| ** Se permite la presencia de granza solamente para el tipo A.S.E. |   |           |         |         |         |         |         |
| *** La coloración varía de marrón a violeta                        |   |           |         |         |         |         |         |

Source: (INEN, 2006)

Additional norms developed are INEN 175 (cut test) and INEN 177 (preparing samples) (ANECACAO, 2021; INEN, 2006, 2010). The norms are published on the ANECACAO website, as well as the Agrocalidad form (by the Ministry of Agriculture) which needs to be filled out when exporting. Besides a nominal fee that needs to be paid for this department to inspect and approve the export, there are no export taxes for cocoa beans, cocoa derivatives or chocolate.

Ecuador has a high share of Fine (and) Flavor Cocoa (FFC), which accounts for roughly 64 percent of the national cocoa production. However, this FCC (the Arriba Nacional variety) generally has lower yields than the lower quality CCN51 variety. FFC is often produced by small-scale farmers. Most of them are highly dependent on the around 1,000 intermediaries, who often do not separate the different varieties. The mixing qualities and inadequate fermentation of the different varieties has decreased confidence in the quality of Ecuadorian cocoa and has also influenced prices (Hütz-Adams et al., 2016). While the lowest quality category of conventional Arriba Nacional (the Arriba Superior Época or ASE) was bought from farmers at world market price minus USD 150–200 per ton in the first decade of this century, more recently the farmgate price has come down to world market price minus USD 250–300. In

2021, the discount was as much as USD 400. For the better Arriba Superior Selecto (ASS) quality cocoa the discount has been less (USD 40 in 2020), the second to highest category, the Arriba Superior Summer Selecto (ASSS) is no longer sold. In 2021, CCN51 was bought at a discount of USD 100–150 (Cabello, 2021). Considering the small difference in price between the fine flavor Arriba Nacional and the more productive CCN51, many farmers over the last decades have decided to favor the full-sun CCN51 variety over old agroforestry plantations (Cabello, 2021; Márquez de la Plata, 2014).

A challenge for Ecuador (but also in Peru) is that laboratory analyses in consuming countries looking for maximum residue levels are becoming increasingly precise. This means that more traces are showing up in organic-certified cocoa beans, mostly due to cross-contamination from chemicals used on rice or banana fields (Berger, 2021; Cabello, 2021).

Where direct relations between farmer and manufacturer exist, such as with some foreign enterprises or smaller private initiatives for premium chocolate (Hoja Verde, Pacari, Kallari, etc.), price premiums for farmers can be significant (up to 30%–40%). This is also because within these trade relations high quality cocoa is usually linked to other quality standards and certifications, both organic and/or fair trade (Hütz-Adams et al., 2016). For instance, a Union of Cooperatives, UNOCACE, that has supplied beans for Kaoka, Chocolats Halba, and Ananda Chocolate, among others, pays producers USD 2,756 per ton for organic cocoa and USD 2,535 per ton for conventional cocoa in organic transition, plus USD 220 for post-harvest activities to the FBOs. FOB prices for the UNOCACE range from USD 3,000 for conventional beans and USD 3,850 to 4,100 for FTO cocoa, including the Fairtrade premium of USD 240 per ton (Cabello, 2021).



### Dominican Republic – Price and Purchasing Policy

The Dominican Republic holds a strong regional position as the second largest cocoa bean exporter in Latin America and the Caribbean, accounting for 15 percent of total exports from the region – second behind Ecuador, which accounted for 66 percent of total exports, in terms of value.

A national law in the Dominican Republic (Regulation 2296 on Classification and Export Procedure of Cocoa Beans) established a classification for cocoa bean qualities: Sanchez and Hispaniola. Within each classification further grading is determined following the regulation established by the country.

Generally speaking, Sanchez cocoa is known as unfermented cocoa beans named after the port of Sanchez from where it was originally exported. These cocoa beans fetch lower prices in the global market due to the lack of fermentation. Hispaniola cocoa, the other type of classification in the country, on the other hand, is well-fermented and dried cocoa beans.

Due to the inadequate fermentation processes, Sanchez cocoa falls within the bulk segment, for which the United States has historically been the largest importer. The preference for Sanchez cocoa in this export market is price-oriented, as these cocoa beans are cheaper than fermented cocoa and will primarily be used to manufacture cocoa butter or confectionary chocolate products.

In contrast, all cocoa Hispaniola exported in the Dominican Republic falls within the Premium segment and, depending on the story and marketing strategy, can even reach the specialty and ultra-premium channels.

Fermentation increased local value through the implementation of additional post-harvesting processes, leading to an increase of the share of fermented cocoa beans in total exports in the last decade (De La Rosa et al, 2021).

A study conducted by De La Rosa et al in 2021, indicated that producers in the Dominican Republic have high bargaining power when it comes to selecting sales channels, however, this bargaining power reduces when setting prices for their produce.

In the decade 2000–2010, Dominican producers sold their cocoa at an average 57 percent of the price in international markets (Batista, 2009; Bymolt, et al., 2018). Historically, there have been no incentives for the Dominican cocoa producer to improve the quality of their product to benefit from selling with a price premium, since the main export market for Dominican cocoa was the United States. Primarily focusing on the trade of Sanchez cocoa, price and scale were prioritized over quality (Siegel & Alwang, 2004).

This situation began to change and an increase in the value of Dominican cocoa became evident due to quality improvements (Batista, 2009) propelled by the German cooperation (through GTZ, currently GIZ) in 1985, which served as a long-term vision and strategy for the positioning of Dominican cocoa internationally – particularly in Europe, which is the largest consuming market for the country’s high-quality (Hispaniola) and certified cocoa (Sector expert, personal communication, July 2021).

Nowadays, the producer receives between 80–85 percent of the value of the international market for his cocoa. In just 10 years export prices for Dominican cocoa went from being sold at a discount to being sold at a premium, in relation to the average price of future contracts on the NY Stock Exchange (Companies and sector experts, personal communication, July 2021).

Premiums are added on top of this price depending on the certification and the FBO they sell their produce to. The Fairtrade premium goes to the FBO, not directly to the producer and the producer is a beneficiary of the system. It has been noticed that different FBOs have diverse mechanisms to distribute premiums and profits corresponding to Fairtrade premiums.

USDA Organic and EU organic have an equivalent arrangement. During interviews with sector experts in the Dominican Republic it was noticed that the organic premium paid to producers ranges between USD 70 – 105 per ton.

A small share of producers cater to the Premium segment (Specialty and Ultra-premium), receiving higher prices per kg for their cocoa. This is due to segment prices not being directly connected to the world market prices.

Producers select marketing channels depending on their specific needs. They can sell to intermediaries, associations, cooperatives or directly to exporters.

Personal communication with sector experts (July 2021) indicated that, on occasions, if

producers choose a longer chain involving intermediaries, the farmgate price received could be even lower ranging between 75–80 percent of the world market price.

The increase in cocoa prices, at export level (FOB) is driven by the implementation of quality standards. During the 2019–2020 cocoa year, Sanchez cocoa had the lowest average price per ton compared to Cacao Hispaniola Organic, which reached the highest average export price at USD 3,104.73 per ton. This evident increase in value on both types of Hispaniola cocoa (19%) has represented a surge in the total value for the sector (Reference average world market price for 2019–2020 was USD 2,370 per ton) (De La Rosa et al, 2021).

For every cocoa product exported from the Dominican Republic a fee of DOP 0.75 per kg (USD 10 per metric ton) should be paid by the exporter to the National Commission of Cocoa (Comisión Nacional de Cacao). The function of this Commission is to formulate the cocoa policy of the Dominican Republic, as well as collaborate with the Cocoa Department of the Ministry of Agriculture, in the promotion and rehabilitation of cocoa plantations and in the improvement of product quality.

### Sierra Leone – Price and Purchasing Policy

 In the past, the Sierra Leone Produce Marketing Board, now the Sierra Leone Produce Marketing Company (SLPMC), had a monopoly on cocoa marketing and controlled both domestic purchases and exports. Structural reforms in the sector that began in early 2008 led to the creation of the Commodity Monitoring and Marketing Unit, now the Produce Monitoring Board (PMB), as well as the privatization and liberalization of cocoa marketing. Since then, Sierra Leone's cocoa value chain has a partially liberalized marketing structure that combines elements of privatization with a strong government presence. Today, private companies are licensed to buy cocoa beans from farmers and to export. While SLPMC still purchases and exports cocoa, most of it is traded by these private exporters. PMB does still regulate the cocoa value chain, which includes exports and quality control.

PMB is also the secretariat of a multi-stakeholder platform, the Sierra Leone Cocoa Coffee Cashew Platform (SLCCCP), which meets regularly and has steering committees dealing with various issues pertaining to the three products. Members of the platform include governmental institutions, universities and research centers, the private sector and NGOs such as Solidaridad and Welt Hunger Hilfe.

The Ministry of Agriculture and Forestry has developed a National Cocoa Value Chain Policy. Some activities are funded by the EU's project called Boosting Agriculture and Food Security (BAFS), largely conducted by NGOs and government institutions. The policies underlying the activities include laying out (quite general) goals relating to Production (Improved Cocoa Planting Material, Farm Management Practice, Agricultural Diversification, Pest & Disease Management, Climate-smart Agriculture, Land Access), Research, Value Addition and Processing, Trade and Commercialization, Quality Control and Certification, Price and Market Information, Trade Regulations, Infrastructure of Cocoa Production, Sector Organizations (FBO, Cocoa Commodity Associations), Cross-cutting Issues (Women and Youth, Security; Didan Sankoh, personal communication, July 2021).

The liberalized nature of the sector in Sierra Leone results in low government taxation in

comparison with Ghana and Côte d'Ivoire: 2.5 percent for PMB's quality check at port, this is followed by phytosanitary checks and certification done by the Ministry of Agriculture for USD 66.67 per container. The graded and packed cocoa is then transported to the port and before the export, the Sierra Leone Standards Bureau (SLSB) checks standards, such as moisture content, mold, salmonella, and level of substandard beans for USD 200 per shipment. The Sierra Leone Chamber of Commerce, Industry and Agriculture provides certificates of origin for USD 66.67 per shipment. The evacuation form is free of charge. Exporters are requesting a reduction of paperwork, which takes up considerable time at the port. PMB is now arranging for containers to be loaded upcountry as well (e.g., in Kenema), which is convenient for smaller exporters, as these do not have a warehouse in Freetown (SLCCCP meeting, Kenema, Oct. 2021).

Because of the low governmental tax, the farmgate is a much higher percentage of the FOB export price than in the regulated countries. While this is good for farmers, the Sierra Leone government lacks funding for extensive training in quality production and governance support for cooperatives. Due to the large price difference between Ivorian and Sierra Leonean farmgate prices, some cross-border traffic has been seen in the 2020 and 2021 season, using Guinea as a conduit.

Exporters buy from agents and their sub-agents, who are mostly former employees of the exporters, but who are familiar with the cocoa farming districts. Exporters may use coop leaders to certify groups of farmers and facilitate the aggregation of cocoa beans.

There is a national law prohibiting the transport of cocoa with a moisture content higher than 8 percent, this is a governmental effort to halt cross-border traffic and to discourage farmers who have bought relatively wet beans from using mechanical drying in the port, which results in poor quality beans. There are also laws at chiefdom level about the time communities may harvest pods – this to prevent theft and to ensure that farmers do not harvest prematurely, which affects the quality and size of the beans and therefore their income.

Sierra Leone's PMB has lately seen various initiatives of centrally processed beans (box fermentation, solar dryers). These initiatives could make the country stand out in cocoa quality, if properly supported, but will also require a cultural change among farmers to move from basket fermentation towards box fermentation, handling in wet beans. This would ensure a higher degree of homogeneity of processing. Heap fermentation is also being learned, as well as identifying old varieties in the country to prepare for selling to the fine flavor market. A National Organizing Committee (NOC) for the Cocoa of Excellence Awards in Paris was recently established, with guidance by the Centre of Promotion for Imports from developing countries (CBI), including training on liquor tasting. In 2019, a Sierra Leonean farmer won 'best of 50 samples' at CoEx.

# TRENDS, MARKET DRIVERS AND CONSTRAINTS

This chapter describes the market trends observed in the literature and interviews conducted for this study.

The main trends identified are:

1. Cocoa Production Reaching New Records
2. Sustainability Becomes Mainstream
3. Expansion of Multinationals
4. Change of Consumer's Behavior
5. Health and Wellness as Driver for Chocolate Consumption
6. Growth of Specialty Chocolate

For each trend, drivers and constraints for growth of the cocoa and chocolate market are discussed and analyzed.

## Global Trends

### Cocoa Production Reaching New Records

As seen in Figure 2 (page 17), global production of cocoa has increased by 372 percent between 1961 and 2019. The top 10 producing countries have each grown their production, except for Ghana, down by 5 percent between 2016 and 2020 (FAOSTAT, 2021). For the next harvest, a new record level of 5,141 million metric tons is expected, up 8 percent compared to the previous



Photo: Ahmed Jallanzo, courtesy of CBI

year (4,760 million; “ICCO,” 2021).

Also, global grindings are on the rise. Year-on-year growth is particularly large in the Americas (7% growth), with Europe leading by 36 percent of the total grindings (4,860 million metric tons: idem). This is the result of an upturn in economic activity after a declining demand in 2020 caused by lockdowns during the pandemic. For the next harvest a surplus of 230,000 metric tons is expected, but, at the same time, a deficit is predicted of approximately 153,000 metric tons for 2021–22. Therefore, the production and grinding volumes are more or less staying in equilibrium (GCB, 2021). The reason for next year’s deficit is poor flower setting of the new crop in Ghana, related to heavy rains. Should the rainfall turn out less than expected, the deficit may be reduced to 100,000 – 30,000 metric tons (idem). Weather patterns La Niña and El Niño affect all producing countries, but the impact affects each region differently, with some experiencing heavy rainfall and others extreme droughts. The third year of La Niña has now begun, although it impacted other agricultural crops last year, cocoa was relatively unaffected.

As 76 percent of all cocoa comes from a small region (West Africa) that is highly susceptible to weather patterns and political turmoil, constant monitoring of events is required to predict the movement of prices. Smuggling must also be taken into consideration. It is believed as much as 75,000 – 150,000 metric tons is smuggled into Ghana, where prices are higher, a volume equivalent to the entire production of Peru (Anonymous, personal communication, July 2021).

During the beginning of the pandemic, a drop in prices was observed due to reduced demand. In the bulk sector, the pandemic led to a decrease in grindings. In the specialty chocolate market, producers of specialty cocoa and buyers saw an instant decrease in sales of chocolate (Martin & Lopez, 2020).

Currently, the demand for chocolate is growing again, particularly from emerging economies where income per capita is rising, for example in China, Mexico, India, and Turkey (Voora et al., 2019a).

The forecasted annual growth of confectionery in Asia-Pacific is 8.13 percent from 2018–2025 (Euromonitor, 2020).

#### Summary of key insights

- Global production has reached new records. Despite the rise in cocoa grindings after the decline related to COVID-19’s lockdown period, an oversupply of beans is anticipated for the coming harvest. For the 2021–22 harvest a deficit is expected, due to heavy rains in West Africa, impacting the flowering of plants. Besides weather events, potential new lockdowns in Europe and the United States pose a big risk to the sector.
- The demand for chocolate is growing again. The biggest growth comes from emerging economies, where general household spends are rising.

## Sustainability Becomes Mainstream

Whether sustainability in the cocoa industry impacts the market is debatable. Endorsement of sustainability policies by companies does not guarantee an increase in chocolate

consumption, however, if chocolate is continually associated with human rights abuses and deforestation, consumers may steer away from it, or even boycott chocolate companies, driving down demand. Making chocolate sustainable is becoming a prerequisite for all food companies to enter the market.

A large number of sustainability initiatives, from small direct trade initiatives to large-scale third party and corporate certifications, have entered the world of cocoa. These sustainability efforts have now become symbolic of the sector. Ever since large manufacturers have promised to put more effort towards a more sustainable sector by 2025 or 2030, the volume of certified beans has grown exponentially, making certified cocoa more the norm rather than the exception. According to the World Cocoa Foundation, approximately 22 percent of globally traded cocoa was certified in 2018 (Nieburg, 2018). Controversially, a large volume of the certified cocoa is not sold as such. For example, Rainforest Alliance, only sells 46 percent as certified and for UTZ the percentage is 71 percent (GROW Liberia, 2020). This 'oversupply of certified beans' shows that there is more certified cocoa available than the market requires. Now that traceability, up to farmer level, needs to be acquired, it is in the interest of buyers to "get as close as possible to the farmer" (Anonymous, personal communication, July 2021). For grinding companies and traders, this means they will buy more directly from producers and FBOs and become less dependent on local exporters and trading companies.

With sustainability initiatives accelerating, the issues of slavery, the worst forms of child labor, and the issue of living income, are high on the agenda of all multinationals. In addition, the environmental impact of cocoa production and climate change are gaining prominence in the sustainability debate. As data shows that the area suitable for growing cocoa is decreasing, the industry and several governments launched the Cocoa and Forest Initiative (CFI) (Budiansky et al., 2021). Carbon offsetting is a relatively new topic and companies such as Cargill plan to invest in regenerative agricultural practices on 10 million acres in North America by 2030 (Klein, 2021).

Retailers are continuously innovating to meet the demand of their consumers and basing their decisions for product assortment on certification schemes. For example, supermarket PLUS in the Netherlands is only accepting chocolate that is Fairtrade certified, and this also goes for Albert Heijn, who recently entered into a partnership with Barry Callebaut and Tony's Chocolonely to start sourcing Fairtrade cocoa. COOP in Switzerland and Waitrose in the UK have also announced to have 100 percent certified chocolates on their shelves (CBI, 2020c).

There is pressure by consumers, civil society, and within the industry, to change and improve the bulk cocoa sector. Sustainably produced cocoa is expected to grow faster, which is partly caused by the rapid proliferation of voluntary sustainability standards. Recently, the European Commission has proposed a guideline on Due Diligence legislation for the EU, covering all sustainability issues in all sectors with focus on the worst forms of child labor and deforestation. With the implementation of this legislation, companies will be held liable for human rights related matters taking place in their supply chains. If a violation is found, the company must deal with it in a reasonable period, to avoid risks of prosecution. The endorsement of the due diligence law will become effective by 2022. In the United States there are no mandatory due diligence laws in place yet, but shipments and products can be banned from entering the country if any links to forced labor are found.

Another sustainability-driver may come from (large) chocolate manufacturers and processors who are starting their own certification programs. The rationale behind these privately led certification programs is that companies want to have more control over their value chain and clarity on their traceability. Or, as one interviewee highlighted that it is required “to have more insights on how the certification premiums are being spent in the communities” (Anonymous, personal communication, August 2021). Olam has implemented its own Supply Code, and 35 percent of the one million metric tons is being sourced via its sustainability programs. Traceability is monitored via AtSource, a tool that provides advanced insights on the supply chain, including polygon mapping of farms, a footprint calculator, and stories from producers (Anonymous, personal communication, July 2021).

**Summary of key insights:**

- Growth of sustainability in the cocoa sector is propelled by large chocolate manufacturers increasing their sourcing demands for certified cocoa beans. About 22 percent of cocoa is certified, although a portion of this is not sold as such.
- Companies are looking for more traceability, up to the farm level. It may change supply chains as these (large) companies will want to become less dependent on local exporters and trading companies and work directly with FBOs and farmers. Increasingly, they are starting their own certification programs to have more control over the value chain and insights on traceability and spending of premiums.
- Retailers are following the demands of consumers and base their product assortment on certification schemes.
- The volume of certified cocoa is growing faster than conventional cocoa, and may be explained by the growing proliferation of (voluntary) sustainability standards and pending Due Diligence legislation in Europe.

## Expansion of Multinationals

As discussed in the previous chapter, multinationals are expanding their influence along the value supply chain in mainstream cocoa and chocolate, as well as venturing into the premium segment. Through acquisitions and mergers, major processors and manufacturers expand on their product portfolio and market participation while lowering their production costs by creating scale efficiency. Competition is the main driving force behind these developments. To provide some examples, Cargill acquired Belgian chocolate company Smet in 2019. Malaysian-owned Guan Chong Cocoa acquired Schokinag Holding GmbH as part of the company’s strategy to get a stronger foothold in the European confectionery space. Mondelez, Barry Callebaut, Cargill and OLAM operate as a cocoa processor and exporter in the country of origin and as importer and manufacturer in Europe (CBI, 2020a). Does vertical integration and market concentration grow, or constrain growth of the sector? According to Oomes (2016) there is no evidence that concentration has an artificial impact on the prices of cocoa below the level that equalizes the supply and the demand (Oomes, Tieben, Biesenbeek, et al.), however more research could be done to assess the present situation.

Figure 13 (page 31) shows a 116 percent increase in grindings between 2003–2020 in Africa, a 13 percent growth in the Americas and 102 percent growth on the Asian continent. Generally speaking, in countries where production is around 150,000 metric tons or higher, large processing companies established themselves more permanently (Anonymous, personal communication, July 2021). Besides the increase in margins, multinationals can benefit from local tax benefits, as well as profit from European import duties, exemptions on cocoa beans and semi-finished products from Côte d’Ivoire, Ghana, Cameroon, Ecuador, Indonesia, Nigeria

and Brazil (Anonymous, personal communication, Oct. 2021).

Buying from FBOs and producers directly is another way to increase sourcing efficiency (and increase margins) upstream. A big incentive for in-country operations is to be in control of sustainability issues (Mitra, 2021). In the countries these companies' source from, they will set up CLMRS's and GPS or polygon mapping of farms to protect themselves against child labor or deforestation claims. For small and medium-sized players it is becoming more difficult to enter the market, as their working capital and monitoring capability is lower.

Margins can increase when a shift is made on the demand side, when cocoa products will obtain a higher price and thereby generate more value. This is already happening, whereas before the major companies were in the business of 'bulk' or 'bulk certified', they are now also venturing out into premium products. Barry Callebaut sells products of origin, such as couverture and butter, to high-quality chocolatiers, and in 2020 Olam launched its specialty branch Twenty Degrees Cacao to source and sell premium and fine flavor cocoa beans, showing their shift to the premium segment where higher margins can be achieved, not only for the grinders but also for the FBOs, although the volumes are significantly smaller.

**Summary of key insights:**

- Multinationals are taking up more space along the cocoa supply chain in mainstream markets. Mergers and acquisitions are becoming more frequent, creating opportunities for these companies to expand on their product portfolio and market participation while lowering their production costs by creating scale efficiency. As these events are driven largely by competition, this tends to lower the prices of products.
- Multinationals are building a more direct supply chain, which is another way to create more efficiency (and increase margins) upstream, and it also allows them to be in control of any potential sustainability issue.

## Changing Consumer's Behavior

Chocolate is considered a treat to most consumers, enjoyed several times a week, but the preferences, consumption and shopping habits vary widely amongst regions and age categories (National Confectioners Association, 2021).<sup>8</sup> Over the last years, sustainability has gained importance as one of the principal reasons for purchasing chocolate. A study performed by Unilever shows that 33 percent of consumers have sustainability in mind when making a purchasing decision (Gore-Langton, 2017). According to the National Confectioners Association (NCA) this further gained importance between 2018 and 2021. In their study, conducted amongst 1,506 consumers, they found that five or six out of every 10 consumers in the United States care about how their food is produced. Most significance is placed on fair labor practices, sustainable sourcing of ingredients and transparency of production processes (National Confectioners Association, 2021). This is especially the case for the younger generation, the 'Millennials' (ages 25 to 40), who have overtaken the 'Boomers' (ages 57 to 75) as the majority spenders on chocolate products (idem).

<sup>8</sup>The National Confectioners Association (NCA) is the leading trade organization for the confectionary industry in the United States. In 2021 they, in partnership with 210analytics, published the report 'Sweet Insights; Getting to Know Chocolate Consumers 2021', which provides insights in the attitudes and behaviors of consumers in the United States. Contributions were made by the Fine Chocolate Industry Association (FCIA) and Barry Callebaut. An online survey was conducted among a national sample of 1,506 consumers in the United States, with ages ranging from 18 to 75 years.

There is a wide range of chocolate products available in different price and quality segments, and consumers buy from different segments, depending on their mood and availability of the products. Most consumers buy mainstream chocolate (83%), followed by premium chocolate (67%) and fine chocolate (29%). From the latter, only 5 percent mentioned this is their typical choice for chocolate, indicating that this group is not very loyal to only the fine chocolate segment. Consumers who buy this type of chocolate indicate that a superior taste and a higher satisfaction are the main reasons for purchasing this chocolate, or to give as a present (idem). In the United States, milk chocolate is preferred over dark chocolate, but the latter gains popularity with the age of the consumer. Dark chocolates between 71 and 75 percent cocoa content have the widest audience amongst dark chocolate consumers. Dark chocolate is also the most popular chocolate type in the premium segment, as well as in specific countries such as China and Japan. A study conducted by Brown et al. (2020) in the United States also found that consumers buy cross-segments depending on the occasion, and less on costs or other factors. When purchasing premium chocolate, product segmentation, price, availability, and packaging are the elements driving consumer's preference.

Other consumer insights from interviews conducted by Dr. Kristy Leissle in the Northwest Chocolate Festival in 2014, revealed that consumers in the fine segment (artisan chocolate in her article) buy to 'settle on a moral conflict between enjoying middle-class luxury like chocolate and buying from an exploitative value chain' (idem).

Chocolate manufacturers increasingly focus on storytelling to emphasize the taste, quality, uniqueness, and the companies' sustainability efforts appealing to the consumers interest in a product's story. This is linked to the growing importance of where the cocoa comes from, a criterion that has gained significance and grown from 16 percent in 2018 to 25 percent in 2021. The preferred areas for cocoa sourcing are Central America and Africa (National Confectioners Association, 2021). A chocolate manufacturer from Ecuador mentioned: "Asian consumers want to know the history of the cocoa and specific projects, while American and European consumers require to have a certification" (Anonymous, personal communication, Sept. 2021). A trader stated the following about the different buyer requirements in Europe: "Swiss buyers are more interested in certification, Italians care more about the origin and less about certification. French buyers, in general, have high demands when it comes to flavor and Dutch buyers request for average quality and low prices" (Anonymous, personal communication, Aug. 2021). These requirements reflect, in general, the consumer demands of these specific countries.

The pandemic has accelerated the already existing trend towards a more digital world and online shopping. Although most chocolate is still purchased in supermarkets, or other retailers such as convenience stores, online sales for chocolate have grown from 25 percent in 2018 to 40 percent in 2021 (National Confectioners Association, 2021). Consumers who purchase chocolate online are motivated by convenience and look for appealing or comforting products, such as chocolate. The rise in online chocolate sales was noted in several interviews with bean-to-bar chocolate makers. Investing in e-commerce offers opportunities for chocolate manufacturers to ship products directly to consumers.

Further research amongst a broad scope of consumers, and different product segments, is required to understand if correlations can be drawn, as well as the spatial differences between regions in consuming markets.

**Summary of key insights:**

- There is a shift in the sustainability mindset of consumers. Traceability, transparency, and sustainability are becoming increasingly important drivers for purchasing a chocolate product.
- There are differences between countries, regions and the age of consumers, with the younger generations placing more emphasis on sustainability efforts of the companies whose products they buy.
- In the United States, mood for chocolate is the leading driver, more than brand or price.
- Chocolate manufacturers increasingly focus on brand storytelling to highlight the quality, taste, uniqueness, and sustainability efforts. Mentioning the cocoa origin on packaging is a good way to fulfill the needs of consumers to know more about the story of the product.
- One post pandemic effect is that chocolate is more often bought via online channels.

## Health and Wellness as a Driver of Chocolate Consumption

As data analysis in the report showed, an average annual growth rate of 4.5 percent is expected for products containing cocoa, like chocolate. Leading the list in the regional demand for chocolate are Europe and the United States, followed by Asia. Several chocolate makers during interviews commented on the popularity of their specialty bars in China, particularly chocolate with high cocoa content. For example, one chocolate maker said “In China, our most popular bar is 90 percent or higher. A chocolate with high percentage of cocoa solids is not only healthier, but it also feels luxurious. There is a psychological element to it as it makes people feel classy.” (J. Zotter, personal communication, Aug. 2021). Chocolate sales in China increased to USD 11.3 billion in 2018, up from USD 2.7 billion in 2014, driven by demand from the growing urban population (CNBC News, n.d.; Marketing To China, 2021). Although chocolate consumption in Asia is still relatively low (in China 60 grams per capita per year is consumed and in India 35 grams), the potential for growth in a region where 2.5 billion people live is enormous.

Besides the sustainability driver, the growth of the sector can also be explained from a medicinal and nutraceutical point of view. Research shows that cocoa beans have a positive impact on the brain and body. The beans have exceptionally high concentrations of flavonoids, linked to improving cholesterol levels and decreasing memory loss. Consumption of high amounts of cocoa is believed to reduce the risk of heart disease and strokes, and it has anti-inflammatory properties (Ludovici et al., 2017). Cocoa contains caffeine and theobromine, both stimulants that provide energy and ‘a good mood’ but could also have adverse effects when consumed in large quantities. Cocoa nibs are high in fibers, protein and have fats (butter) that increase the levels of serotonin and dopamine in the brain.<sup>9</sup> Consuming chocolates with high cocoa content are most beneficial from a functional perspective. As consumers are looking more at the health benefits when making purchasing decisions, it is evident chocolates with high cocoa percentage, or low sugar content, are among the fastest growing segments (Euromonitor, 2012). Not only are they seen as healthier, but also better in terms of quality. Dark chocolate sales are expected to increase by a CAGR of 5.3 percent globally between 2021–2026 (IMARC, 2021).

More sugars are being replaced by alternatives such as syrups, dried fruits, or cocoa pulp. In

<sup>9</sup> 100 grams of cocoa nibs contains manganese (27% of Recommended Daily Intake, RDI), iron (16%), magnesium (16%) and copper (25%) (USDA US Department of Agriculture, n.d.).

2019, Nestlé launched its new chocolate made entirely from the cocoa fruit in Japan. Also, Lindt, Valrhona, Nestlé and Barry Callebaut have launched chocolates using the sweet and natural cocoa pulp, instead of refined sugar. Other innovations in milk chocolate, are the replacement of non-dairy products such as vegan oat milk, dairy-free coconut milk, or soymilk powder.

The use of cocoa pulp as the main ingredient does not particularly drive chocolate consumption up, but it does increase the value that can be attained from the cocoa fruit as the main ingredient in a finished product. There are not many examples of companies offering cocoa pulp currently, since the product was only approved under the Novel Food regulation in 2020:

- Importers of fruit pulps that are introducing cocoa in their product portfolio, are for example Tropextrakt (Germany) and Dirafrost (Netherlands).
- Some finished product start-ups/brands such as Kumasi Drinks and Pacha de Cacao (Netherlands), and Koa (Switzerland) are introducing cocoa juice fruit drinks to niche markets.

The pandemic has accelerated the growth of organic chocolate and other organic products, such as tea and coffee (de Lange, 2021). Retailers specializing in selling organic food products grew faster than other retailers during the crisis (Askew, 2020). Organic products are more expensive than conventional products, depending on the category, the difference could range between 22 and 58 percent higher. In the case of coffee, organic products were 100 percent higher in price compared to conventional ones in 2004. This gap was bridged in 2010 and narrowed to 45 percent (Askew, 2020).

The higher price for organic ingredients also trickles down to the farmer (FAO & BASIC, 2020). For a double-certified (Organic + Fairtrade) dark premium chocolate bar, producers received an estimated EUR 2.7 per kg, which is 87 percent higher than in the case of non-certified bars (idem). The global organic chocolate market is expected to grow by 6.8 percent CAGR from 2021 to 2028, with majority revenues coming from Europe (42%) in 2020, particularly France and Belgium (Grand View Research, 2021). Although most revenue comes from organic milk chocolate—59 percent of organic chocolate sales—the fastest growing category is dark organic chocolate, increasing by 7.1 percent CAGR between 2021 to 2028 (idem).

The shifting awareness of consumers towards health and wellness provides opportunities for chocolate companies to move away from chocolate competition purely based on price, but to differentiate on product type, the types of ingredients used, and—importantly—branding. Unroasted, raw chocolate, vegan and fine flavor chocolates are also becoming more popular, and although the group is still small, consumers are willing to pay more for these products (lonova, n.d.).

**Summary of key insights:**

- Cocoa beans have a positive effect on the mind and body. They contain fibers, protein, and have fats (butter) that increase the levels of serotonin and dopamine in the brain. Caffeine and theobromine are stimulants that provide energy.

- Dark chocolate is gaining popularity worldwide. Also, chocolate in which sugar and dairy is being replaced grows as a result of consumer interest in health, sustainability and ethics, which ties into the broader consumer lifestyle trend towards healthier living.
- The shifting awareness of consumers towards health and wellness, spurred by the pandemic, provides opportunities for chocolate companies to move away from chocolate competition purely based on price, but to differentiate on product type, the types of ingredients used, and branding.

## Growth of Specialty Chocolate

Specialty chocolate makers purchase cocoa beans at a price premium. Prices of cocoa are not always connected to commodity prices but established through negotiations between the buyer and seller directly. Specialty beans are often sourced by bean-to-bar makers or specialty bean traders who control every step of the production process; ‘from sourcing the cocoa beans to the creation of the chocolate bar’ (Ferro et al., 2021). More emphasis is placed on the origins, genetics, environment, and handling of the cocoa beans at farm level. Bean to bar makers usually work in a personal and direct trade relationship with producers, often in tandem partnership with an importer or broker. The storytelling is an important factor for both the producers and chocolate makers to sell their higher-priced products.

It is not possible to estimate the exact size of the specialty market as most companies do not share their sourcing data publicly or may not know the yearly volume they consume in their business (C. Martin, personal communication, Oct. 15, 2021). Official import data does not provide a distinction of the specialty segment since all cocoa beans are imported under the same HS code.

According to numbers presented by ICCO (2015), 230,000 metric tons of cocoa beans worldwide can be considered specialty and 12,000 metric tons are ultra-premium. Although data are impossible to verify, these estimations may have been on the high side and may be reassessed in this study considering several elements. According to the recent findings of FCCI, there are over 1,000 craft chocolate makers globally, a doubling in size compared to the study conducted in 2017 (C. Martin, personal communication, Oct. 15, 2021). Combined, these chocolate makers have a cocoa demand that ranges between 8,000 – 10,000 metric tons yearly (Ferro et al., 2021). But the entire specialty cocoa market is larger, as it also includes the demand from larger chocolate manufacturers that also source specialty cocoa, for example to blend it with other cocoa bean qualities. Despite being impossible to provide an exact number of the volume and size of the specialty market, a rough estimate indicates a volume ranging between 100,000 and 200,000 metric tons (Ferro et al., 2021). Therefore, the specialty cocoa sector, at best, constitutes nearly 4 percent of the global production of 5,141 million metric tons. Note that this is a segment which has been heavily impacted by the pandemic, as most chocolate makers sell their chocolates for higher prices in specialized retailers, not in large supermarkets (Martin & Lopez, 2020). The group of specialty cocoa producers globally is small, approximately 200 worldwide. It is estimated that 50 percent are producers working under contract farming, in systems using centralized fermentation, 35 percent are private estates or haciendas, and a smaller percentage, 15 percent, comes directly from FBOs (C. Martin, personal communication, Oct. 15, 2021).

The industry is increasingly using terms such as ‘craft’, ‘single origin’ and ‘specialty’ that were

originally exclusive to the specialty segment. Larger companies are also integrating premium chocolate companies into their corporate groups, illustrated by the acquisition of Belgian decoration chocolate maker Smet by Cargill (CBI, 2020), or the acquisition of Green & Blacks by first Cadbury, then taken over by Kraft, in turn bought by Mondelez. On one hand, this could give a new impulse for growth to the specialty market, making 'fine chocolate' more widely available to the public and for lower prices due to efficiency and scale offered by larger industry actors. However, the original concepts of quality, storytelling, authenticity and the direct connection to the producer offered by the small-scale, local 'craft' chocolate market cannot be replicated by larger scale companies.

The merging of the larger industry into the specialty segment is a phenomenon that has been previously observed in the coffee sector, where low-quality 'single origin' coffee ranges were being introduced under large retail brands, competing with the original high quality (more expensive) brands. As a result, it can be misleading for the consumers to understand the quality differences. As well as a point of frustration by bean-to-bar chocolate makers who face high production costs and low marketing budgets, while aiming to build up this niche category.

**Summary of key insights:**

- The specialty chocolate segment is growing.
- There is no exact data available on the size of this market, but it is expected that there are more than 1,000 craft chocolate makers globally, consuming a total demand of between 8,000 – 10,000 metric tons yearly.
- The entire specialty cocoa market is larger because it includes the demand of large chocolate manufacturers. In total, the specialty cocoa sector is expected to take up a volume ranging between 100,000 and 200,000 metric tons a year. This is a small percentage (nearly 4%) of global production. Most is being produced by a relatively small group of producers, consisting mainly of producers working under contract farming, or private estates or haciendas.



Photo: Ahmed Jallanzo, courtesy of CBI

## Drivers and Constraints per Market Trend

The following chapter provides deeper insights on the six trends identified as well as how they are allowing or constraining growth of the cocoa sector.

**Table 23. Drivers and constraints per market trend**

|                                       | How does it grow the market?   | How does it constrain the market?   |
|---------------------------------------|--|---|
| Cocoa Production Reaching New Records | <p>Governments can play a large role in the sector, as recently shown by the introduction of the LID in Côte d'Ivoire and Ghana, steered at increasing farmers' income. Not much data is available about the financial impact that the price increase had for producers, but the prospects of heightened prices have likely incentivized producers to grow more cocoa, given the forecasts for the next harvest. The governments faced ample pressure and multinationals started to source elsewhere or buy less from Côte d'Ivoire and Ghana (Leissle, 2021). The introduction of the LID coincided with the sudden drop in demand due to the pandemic. Consequently, farmgate prices fell and the governments abandoned the LID.</p> <p>In liberal markets, the influence of the government is usually lower, and there is less technical and financial support available for growth in these countries, but this is compensated by higher farmgate prices, as export costs are lower and producers, FBOs and exporters have more bargaining power.</p>  | <p>Political unrest, extreme weather patterns and global macro events all impact cocoa production. Although it is hard to predict the weather in the future, a model forecasting the impact of climate change in 2050, predicts that several main producing regions in West Africa will be heavily affected (Nigeria and East Côte d'Ivoire) (Ruf et al., 2015).</p> <p>Most producers have limited access to transport, financial services, market information or access to inputs, which stresses yields and quality of trees. In such situations, the bargaining power of producers is low. They are price takers rather than price makers. If cocoa prices stay low for a longer time, this will lead to producers leaving production. A lack of incentives stalls the participation of young producers, and the average age of farmers is already relatively high. Particularly in some regions in West Africa, there are few other options than growing cocoa. When opportunities for other income generating do exist, producers may leave production, which is happening in Indonesia and Malaysia (Oomes, Tieben, Biesenbeek, et al., 2016).</p>                                   |
| Sustainability Becomes Mainstream     | <p>Multinationals publicly committing to a fully sustainable supply chain by 2025 (or 2030) resulted in the growth of sustainability initiatives. Put together, the companies cover large amounts of cocoa with their private or third-party certification initiatives (Fountain, A. &amp; Huetz-Adams, 2018). Managed sustainability programs and (down the line) due diligence and/or deforestation legislation will limit the number of cases of child labor and expansion at forest frontiers.</p> <p>At the same time, consumers become more aware of the challenges in the supply chain due to journalism, documentaries and reports being published. This also reaches retailers, who increasingly source exclusively certified cocoa products in their stores. To consumers, the certification labels make it easier to quickly identify if sustainable practices have been considered. Manufacturers may opt for mass balance blends, mixing certified and non-certified cocoa to increase volumes of certified cocoa, but against lower production costs. Certification bodies have sharpened their audits and criteria to become more credible towards the discerning customer.</p> | <p>Increased prices also lead to a higher production. This, in combination with poor legislation on forest protection, allows expansion of arable land and leads to deforestation. Certification is usually paid by the cooperative and it is expensive, especially in the case of organic certification (D. Sukha, Aug. 26, 2021). Not all cocoa that is certified is sold as such. The 'oversupply of certified beans' is a heavy administrative load to companies (Anonymous, personal conversation, Oct. 2021) and will lead to a drop in prices of premiums, steering producers away from certification. In some markets, like Japan, certified cocoa has little significance, but substantial volumes are sourced from CSR or sustainability projects (S. King, personal communication, Aug. 2021). Some manufacturers started their own certification programs, resulting in more labels on chocolate products.</p> <p>As mentioned, most chocolate products in retail are certified. The multitude of labels appearing on the chocolate pack can cause 'label fatigue' with consumers, diluting the concept of certification and, consequently, losing confidence in the brand.</p> |

|                                    |   |   |
|------------------------------------|---|---|
| <p>Expansion Of Multinationals</p> | <p>Through acquisitions and mergers, vertical integration of supply chains is taking place. Grinding companies are building factories in origin countries to source locally, where they can settle on lower labor costs, tax benefits and zero (or low) import duties when shipping semi-finished products to Europe or the United States. This is a large advantage for local processing. When a multinational builds a local facility, it has an impact on local production and supply chain dynamics. For example, when Tradin Organic installed their facility in Sierra Leone, the volume of organic certified cocoa increased by 45 percent between 2018 – 2019 (GROW Liberia, 2020). The expansion of multinationals drives the sector, as efficiency of scale can be reached which lowers production costs, enabling cheaper products to arrive on the market.</p> <p>Large grinding companies have high financial liquidity and the technical capability to hedge and protect themselves against price fluctuations on the futures market. This makes them more resilient to market disturbances and allows for a steady flow of economically priced chocolate products. An advantage to chocolate manufacturers, who need to be able to count on consistent and timely delivery of the cocoa products. Margins on butter, liquor and chocolate are less than on cocoa powder. Powder is used mainly in biscuits, cakes and home-baking, the latter saw a rise during the pandemic (Anonymous, personal communication, July 2021).</p> | <p>The pandemic also revealed the sector’s dependency on shipping companies. The transport costs peaking (transport costs of USD 12,000 per container from Asia to Europe have been observed) in a price-sensitive market, is one of the biggest concerns to grinding companies. Transport costs from Latin America or Africa to Europe also grew, but less so, a competitive advantage of the trade of beans and derivatives coming from these countries.</p> <p>The high concentration and competitiveness, especially in the bulk sector, makes it challenging for small and medium-sized companies (traders and exporters) to compete, because their costs are high and their margins low. For calculating risks of trading on the futures market and absorbing extra costs, financial liquidity is needed. When the LID was introduced, for example, several trading companies struggled to stay afloat (Anonymous, personal communication, Oct. 2021). With the cocoa prices constantly moving and the large companies taking up more space, trading on the future markets is becoming riskier.</p> |
| <p>Changing Consumer Behavior</p>  | <p>Consumers are increasingly aware of the challenges in cocoa supply chains because of the attention that it gets in the media. Competition in the chocolate space is rife, and traceability, transparency and sustainability are becoming important drivers for consumers to choose one chocolate product over the other, especially to younger generations. This trend drives the cocoa sector towards implementing more sustainability efforts on the ground to improve their supply chains. Communicating the brand story and values, as well as offering information about the origin and farmers, appeals to consumers of trust and authenticity for the brand. It also offers opportunities for differentiation based on product quality and marketing and move away from competition based on price.</p> <p>COVID-19 did not influence chocolate consumption of mainstream chocolate much, but the craft segment witnessed difficulties as many specialty stores were closed during lockdowns. The pandemic changed consumers’ behavior, making them more susceptible to buy sustainable products, such as organic chocolate. It also accelerated growth of e-commerce, and online chocolate sales.</p>  | <p>Retailers, manufacturers and certification bodies are sometimes accused of greenwashing their products with weak sustainability claims. For example, Dutch retailer Albert Heijn launched “Puur &amp; Eerlijk” (meaning: “pure &amp; honest”) in 2009 but abandoned it after criticism in 2015. These types of scandals may damage the reputation of a brand, and consumers could go back to buying conventional chocolate.</p> <p>Chocolate is seen as a luxury product, not a necessity. This is one explanation why during COVID-19, the price of coffee was maintained while cocoa decreased. In countries where the income per capita is low, consumers may prefer to spend their income on products that are necessary, especially in times of crisis like COVID-19.</p>   |

|                                   |   |  |
|-----------------------------------|---|--|
| <p><b>Health And Wellness</b></p> | <p>The general consumer trends for healthier lifestyles, provides opportunities for differentiation of chocolate products based on quality, story and other factors. Adding natural ingredients to chocolate products, such as dried fruits, or nuts, can be an alternative to sugar. The same goes for cocoa pulp, which is a recent addition used to sweeten chocolate products or sold as beverages by companies such as Koa and Pacha de Cacao. Raw chocolate—processed at low temperatures (under 50 degrees Celsius) to retain flavonoids and antioxidants—has attracted health-conscious consumers. A greater demand is for sugar-free chocolate bars, sometimes sweetened with stevia, coconut or palm sugar, and chocolate with a high cocoa percentage. In Asia, the consumption of chocolate is relatively small, but it is growing. Dark chocolates are not only seen as a healthier option, but also as ‘a way of life’. In several traditional consuming markets, a dark chocolate bar is cheaper than a milk chocolate bar (containing more sugar and milk) because of the Value Added Tax on these ingredients. For example, in France, a milk chocolate bar has 20 percent VAT, compared to a 5.5 percent on a plain dark bar. In the UK, a sugar tax is implemented, increasing the price of chocolate bars that contain more sugar (FAO &amp; BASIC, 2020).</p> <p>The pandemic increased demand for healthy and organic products (CBI, 2020b). Organic chocolate is perceived as healthier due to the lack of chemicals being used during production. The organic chocolate segment is growing 6.8 percent (Grand View research, 2021).</p> | <p>A group of health-conscious consumers may still perceive chocolate as generally unhealthy. Most chocolate contains high percentages of sugar and preservatives and has shaped its image as a ‘sinful delight’ over half a century. Health-conscious consumers may go for healthy snacks like granola or superfood bars with a date-base (‘no sugar added’), a smoothie or fruit (Anonymous, personal communication, July 2021). Also, texture innovations, producing a lighter mouthfeel, are gaining appeal with health-concerned snackers. Crunchy and crispy textures are increasingly preferred to the traditionally popular creaminess and melting consistency (associated with chocolate) that are now seen as less healthful (Cargill, 2021b).</p> |
|-----------------------------------|---|--|



Photo: Ahmed Jallanzo, courtesy of CBI

|   |   |   |
|---|---|---|
| <p><b>Growth Of Specialty Chocolate</b></p> | <p>The specialty market is growing, as the number of bean-to-bar makers has doubled in size from 2016 to now (C. Martin, personal communication, Oct. 15, 2021). Chocolate makers and producers of specialty cocoa have a direct relationship with the producers. It takes time to develop it but, once they have this type of relationship, there is loyalty (G. D'Alesandre, personal communication, Aug. 31, 2021). The chocolate maker will want to promote the story of the farmer and the origin, as it is one differentiating factor for the maker. The storytelling brings more awareness to consumers about cocoa and may help them to distinguish between different quality segments, as is happening with the wine and coffee specialty sectors. Note this is still a niche market and there is limited information available but based on estimations on this project the market for specialty cocoa takes up about 4 percent of the global production. It can be assumed that growth comes from multinationals that increasingly find ways to grow their influence in the specialty market (CBI, 2020b). This could give a new impulse, making 'fine chocolate' more widely available to the public but for more accessible prices. In retail, in traditional consuming markets, the blending of product segmentation is already visible, as retailers are offering a wide variety of single-origin chocolates. Examples include Dutch retailer Albert Heijn with their private label brand Delicata, selling chocolates from Uganda, Peru, Costa Rica and Tanzania.</p> <p>The pandemic took its toll on many bean-to-bar chocolate makers, but online sales increased, for some 20-30 percent, keeping makers going during financially strenuous times (J. Zotter, personal communication, Aug. 2021).</p> | <p>The supply chain for specialty cocoa is usually short. The first contact is often established on events, or via personal connections of other chocolate makers (J. Skeffington, personal communication, Sept. 2021). Note that there is a lot of good cocoa on the market, and the quality parameters are not clearly defined. Research by FCCI shows that there are only about 200 producers of specialty cocoa, a fraction of the estimated 5.5 million producers globally. Most specialty cocoa comes from contract farming and central fermentaries. Not much is bought via cooperatives (15%).</p> <p>The issue of cadmium is a real problem in some regions, mainly in parts of Ecuador and Peru, with many producers selling into the specialty market in Europe and the United States. These producers may have to look for other markets, for example in Asia. The legislation has a negative impact on cocoa producers in this region. Research is in progress aiming to understand the mitigation of cadmium. The difference from region — or one year to the next makes it difficult to provide conclusive results and produce regional remediation strategies. There is not a good support system in place yet to support the producers in these regions on how to manage the changes brought forward by the implementation of the cadmium regulations in Europe and some regions in the United States (California).</p> <p>The main drive comes from larger companies that source specialty beans, sometimes to mix it in blends. As prices are low, this brings down the perceived value of fine chocolate.</p> |
|---|---|---|



# SWOT ANALYSIS

SWOT analysis is an analytical instrument used to identify significant internal (i.e., strengths and weaknesses) and external (i.e., opportunities and threats) elements within a business. This section will present SWOT analysis for two types of cocoa producers: bulk cocoa producers and organic cocoa producers and craft chocolate makers.

## SWOT Analysis – Bulk Cocoa Producer

| STRENGTHS   | WEAKNESSES  |
|---|---|
| <ul style="list-style-type: none"> <li>• Farmers (in liberalized economies) make connections with a variety of buyers in order to increase their selling options.</li> <li>• Farmers may combine cocoa production with other economic activities.</li> <li>• Farmers will join forces to prune and harvest in each other’s farms (“la minga” in Latin America, “work gang” in West Africa) for efficiency.</li> </ul> | <ul style="list-style-type: none"> <li>• Lack of understanding of buyer’s quality requirements.</li> <li>• Outdated agricultural practices, including lack of knowledge of on-farm production of effective organic immune boosters to reduce pests and diseases.</li> <li>• Limited access to market information.</li> <li>• Limited access to credits.</li> <li>• Lack of training and technical assistance to increase productivity.</li> <li>• Low literacy levels and difficulty to access big markets are key weaknesses across cocoa farmers.</li> <li>• Lack of involvement of women in the decision-making process and cooperative management.</li> <li>• Lack of awareness regarding child labor and other sustainability issues.</li> </ul> |



Photo: Ahmed Jallanzo, courtesy of CBI

| OPPORTUNITIES  | THREATS   |
|--|---|
| <ul style="list-style-type: none"> <li>• Demand for cocoa has increased by nearly 400 percent in the last 60 years, driven by the confectionery as well as the cosmetic industry (Beg et al., 2017).</li> <li>• The industry is becoming more cost-efficient through mergers and acquisitions, which makes it possible for chocolate companies to develop and sell chocolate products at competitive prices. This stimulates consumption by middle-income families worldwide, which further drives the growth of the chocolate market and the cocoa sector.</li> <li>• Bulk cocoa is tenderable at exchange in London and in New York.</li> <li>• Bulk cocoa can be used for a wide variety of products, from confectionery to cosmetics.</li> <li>• Bulk cocoa farmers can easily sell the cocoa to anyone in the chain.</li> <li>• High yielding varieties with acceptable flavor have been developed, for instance at Ecuador’s INIAP (Anonymous, personal communication, July 2021).</li> <li>• The enabling environment for cocoa farmers is increasing its awareness about its living standards, including action by some companies on living income improvement, child labor, and deforestation monitoring.</li> <li>• Multinationals are making significant efforts to encourage farmers in developing countries to increase cocoa production. This is necessary to satisfy the growing global consumer demand for chocolate (Beg et al., 2017).</li> <li>• The whole cocoa fruit including husk, pulp, shell, and pod, can be used to produce different product types ranging from animal feed to cocoa butter, powder, soft drinks, chocolates, alcohol, jam, etc. (Beg et al., 2017).</li> <li>• Price of cocoa may increase as land will become more limited due to the surge in initiatives to halt deforestation.</li> </ul> | <ul style="list-style-type: none"> <li>• Poverty: Farmer’s children may have to help harvest, impeding education.</li> <li>• Old cocoa plantations with fungi and infestation, poor farm management, soil degradation, and increasing presence of pest and diseases (GISCO, 2021), leading to low yields. Trees that became infected will no longer be suitable for growing, hindering supply (Beg et al., 2017).</li> <li>• Low prices of cocoa (Diakite, 2020), combined with low yield and dependency on it as a cash-crop; the income of most cocoa farming families lies below the poverty line (GISCO, 2021).</li> <li>• Increased scrutiny regarding food safety requirements, including PAHs, cadmium, salmonella, etc.</li> <li>• Important gains in cocoa productivity have been achieved at the expense of negative environmental impact (Perez et al., 2020).</li> <li>• Cocoa farming is linked to deforestation due to the need for clearing of forests to plant cocoa trees (WWF, 2017).</li> <li>• Insufficient producing countries governmental support for strengthening of FBOs and cooperatives.</li> <li>• Climate change affects cocoa production: severe droughts, extreme temperatures as well as new pests and diseases may harm cocoa yields and quality</li> <li>• The biggest hurdle in cocoa supply from developing countries is poor agricultural practices causing erosion of soil (Beg et al., 2017).</li> <li>• The development of Cocoa Butter Equivalents (CBE) from other sources than cocoa e.g., palm oil, shea and mango kernels, is threatening to reduce the quantities of cocoa used in chocolates and other products. The EU approves up to 5 percent use of CBE in chocolates and this is estimated to reduce total demand by some 200,000 metric tons. The 13-member Cocoa Producers Alliance has opposed the approval of CBEs. However, the opposition has been side-lined and the approval came into law in 2000 (Beg et al., 2017).</li> <li>• Political instability in producing countries, including strikes, elections and policy such as LID.</li> <li>• Poor infrastructure (roads, energy, communication, etc.).</li> </ul> |

### SWOT Analysis – Organic Cocoa Producer

| STRENGTHS  | WEAKNESSES   |
|--|--|
| <ul style="list-style-type: none"> <li>• Reduced chance of intoxication for the producer and his/her family.</li> <li>• Improved knowledge regarding production of organic solid and liquid fertilizer and its application (than a conventional cocoa farmer).</li> <li>• Improved traceability systems in place and record keeping activities (than a conventional cocoa farmer).</li> <li>• Larger chance of being organized in a FBO or cooperative as, in the majority of the cases, the organic certification lies within the larger farmer group.</li> <li>• Understanding of the (non) use of inorganic fertilizer, pesticide and insecticide.</li> </ul>   | <ul style="list-style-type: none"> <li>• Some FBOs or exporters do not translate the organic premium in the FOB price to the farmgate price.</li> <li>• Insufficient knowledge on how beans can become contaminated (packing, transport, cross-border beans, etc.).</li> <li>• Outdated agricultural practices, including lack of knowledge of on-farm production of effective organic immune boosters to reduce pests and diseases.</li> <li>• Limited access to market information. Limited access to credits.</li> <li>• Lack of training and technical assistance to increase productivity.</li> <li>• Low literacy levels and difficulty to access big markets are key weaknesses across cocoa farmers.</li> <li>• Lack of involvement of women in the decision-making process and cooperative management.</li> <li>• Lack of awareness regarding child labor and other sustainability issues.</li> </ul> |
| OPPORTUNITIES  | THREATS  |
| <ul style="list-style-type: none"> <li>• Farmer receives some premium for organic beans, in the case of transparent cooperatives or other buyers.</li> <li>• Combined with Fairtrade, it commands a minimum FOB price of USD 2,940 per metric ton (including FT-premium).</li> <li>• The cooperative, exporter or buyer may provide the farmer support with his/her Organic Production System.</li> <li>• Organic cocoa is forecasted to grow at a CAGR of 9.5 percent in the period 2019–2025 reaching USD 620 million in retail value by 2025 (Voora et al., 2019). Supermarket groups like Waitrose (UK), REWE (Germany) and Coop (Switzerland) committed to only offer chocolates made from organic and fair-trade certified cocoa beans in their shops (CBI, 2020g).</li> <li>• Low-tech methods are available for improvement of soil health and thus climate- and pest-resilient trees and crops: solid and liquid organic fertilizer with help of efficient microorganisms.</li> </ul> | <ul style="list-style-type: none"> <li>• Several exporters and importers of organic cocoa expressed their concerns with the presence of agrochemicals in organic cocoa beans.</li> <li>• The large (farmgate) price difference between neighboring countries spurs cross-border trafficking of beans that may end up illegitimately in the organic supply chain.</li> <li>• No certified laboratories in producing countries to perform reliable lab tests on MRL's.</li> <li>• Lack of knowledge on organic composting methods. Increased scrutiny regarding food safety, including PAHs, cadmium, salmonella, etc.</li> </ul>  |

**SWOT Analysis – Craft Chocolate Maker**

| STRENGTHS  | WEAKNESSES  |
|--|---|
| <ul style="list-style-type: none"> <li>• Craft chocolate makers have a solid system of traceability, which demands a high degree of food safety and information about the processes in the supply chain to satisfy customers seeking transparency (Perez et al., 2020).</li> <li>• Craft chocolate makers meet popular health trends (e.g. gluten-free, dairy-free, vegan soy-free and GMO-free).</li> <li>• Craft chocolate companies often follow ethical and economical guidelines, paying higher farmgate prices to farmers than other buyers (Cadby, 2021), which is appreciated by their consumers.</li> </ul>   | <ul style="list-style-type: none"> <li>• Low profitability: driven by high production costs linked to machinery (maintenance, depreciation), premium packaging materials, and high margins to distribution channels (TheChocolateJournalist, 2018).</li> <li>• Lack of economies of scale: purchase of packaging materials, transport, certification and administration costs are spread over little volume.</li> <li>• Craft chocolate makers working with chocolate manufacturers in countries of origin face difficulty in (just in time) shipping, communication, shelf life and labeling issues.</li> <li>• Small companies lack access to credit. Lack of (professional) working capital; often private funds are used to pre-finance operations.</li> </ul>  |
| OPPORTUNITIES  | THREATS   |
| <ul style="list-style-type: none"> <li>• Consumers consider craft chocolate as “novel” and “exciting”. These characteristics make it more desirable for them (Brown et al., 2020).</li> <li>• Most popular trends like gluten-free, dairy-free, vegan soy-free and GMO-free, started several years ago and are still increasing (Hyslop, 2021).</li> <li>• Growth of B2B market opportunities: Pastry chefs are looking for chocolate couvertures with a better flavor and a story. Ice cream makers seek for more natural and original ice cream flavors. Cafes and shops are also looking for higher quality hot chocolates or to sell craft chocolate products to increase their offerings towards consumers.</li> <li>• Interest in market channels for craft chocolate. More distributors and retailers look for craft chocolate brands for their own portfolio. Big distributors like health-focused stores and small shops are interested in private label deals with craft chocolate makers. Also, chocolate retailers, online distributors and pop-up stores are increasingly interested.</li> <li>• Social media has proven to be a vehicle for great exposure. While many brands take full advantage of social media, craft chocolate makers have not used them as a vehicle to increase the exposure of their products.</li> </ul> | <ul style="list-style-type: none"> <li>• Competition is growing and the market is becoming saturated: Due to low entry barriers, anyone can become a craft chocolate maker. The supply has grown more than demand leading to a highly competitive market (TheChocolateJournalist, 2018).</li> <li>• Large manufacturers are copying craft chocolate terms and storytelling. Big manufacturers are using similar terms to those used in the craft chocolate industry: “Single origin”, “Bean-to-bar” and “Craft/ Artisan”. They are also including farm stories and showing cocoa pods in their packaging. All this makes them sound like the craft chocolate makers and misinformed consumers may not be able to notice the difference between industrial chocolate and craft chocolate.</li> <li>• Potential decrease of fine flavor cocoa production. Cocoa farmers may not see the benefits of harvesting fine cocoa due to similar prices compared to bulk cocoa. If that happens, the main ingredient of craft chocolate may be seriously threatened.</li> <li>• Potential unwillingness of consumers to spend more on fine chocolate. Craft chocolate makers will not be able to stay in business in the long term due to lack of demand. Currently, consumers willing to pay a premium for fine chocolate represents a niche and it is not sustainable in the long run.</li> </ul> |

# ANALYSIS OF COMPETITION THROUGH PORTER'S FIVE FORCES MODEL

Porter's 'Five Forces Model' provides a useful framework to assess competition in any industry. The Model assesses the foundation of competition by considering five basic forces (Gold et al., 2004):

- Competitive rivalry (among existing firms),
- Buyers (bargaining power of buyers),
- Suppliers (bargaining power of suppliers),
- Threat of new entrants (barriers to entry), and
- Substitutes (substitute products)

The model is used in this study to assess competition in the cocoa industry, considering the bulk and bulk certified (organic) product segments. According to this model, the strongest competitive force will determine the profitability of a specific sector (Porter, 1979).

## Bulk Cocoa Segment

### Threat of Competitive Rivalry

Depending on the intensity of competition, rivalry implies price cuts, new product development, marketing campaigns and service improvements (Dobbs, 2014).

- **High number of competitors:** Around 95 percent of the global cocoa production is grown by smallholder farmers. It is estimated that around five million smallholder farmers are engaged in cocoa farming (GISCO, n.d.).
- **Fixed costs are high:** Cocoa farming involves high fixed costs like administrative cost, land renting, establishment, and depreciation costs (Yahaya et al., 2015).
- **Low product differentiation:** Bulk cocoa lacks differentiating or unique characteristics across different origins.
- **Industry growth is forecasted to grow slowly:** The global cocoa bean market size was estimated at around USD 9.9 billion in 2018 and has been forecasted to grow at a rate of 7.3 percent per year from 2019 to 2025. This growth may be explained by a rapidly growing chocolate industry in emerging economies like China and India (Voora et al., 2019), among other factors.

- **High exit barriers:** Cocoa farming requires specialized knowledge and a high level of investment. Cocoa trees commonly bear fruit only after three or four years.

## Buyer Power

- **Buyers are concentrated and purchase cocoa in large volumes:** The concentration of buyers gives them high bargaining power, which impacts farmgate prices.
- **Bulk cocoa is a commodity:** Buyers often have the option to find other suppliers with similar product specifications and quality. Switching costs are relatively low.
- **Bulk cocoa buyers earn profits with large quantities only,** for this reason, they are highly price sensitive.
- **Buyers have good knowledge about the market,** and this information or knowledge gives them more power in relation to suppliers, for example, in contract negotiations.

## Supplier Power

Powerful suppliers ask for higher prices, limit product quality and shift costs to other industry players (Dobbs, 2014). From the perspective of a cocoa producer, his/her suppliers would be suppliers of all the necessary inputs to produce cocoa. For cocoa production a bean requires inputs like labor, planting material, fertilizers, and finance among others (S. K. Gayi & Tsowou, 2016). In this analysis, only fertilizers will be assessed.

- **High concentration of suppliers of fertilizers:** The global fertilizer industry is highly and increasingly concentrated. Only five fertilizer-producing countries control between 50 percent to 77 percent of the global production for major nitrogen, phosphate and potash fertilizers (Hernández et al., 2014).
- **High switching costs for farmers:** Fertilizers are differentiated products and difficult to replace for other alternatives.
- **Supplier substitutes are scarce:** Farmers do not find many viable options to replace fertilizers. Researchers are looking at the formulation of sustainable fertilizers that are viable (Lancaster University, 2014).

## Threat of New Entrants

The threat of new entrants puts pressure on prices and increases necessary costs to keep new entrants out of the industry (Dobbs, 2014).

- **Economies of scale are required for potential new entrants:** Scale economies in production, finance and marketing are key barriers for entry into the bulk cocoa industry.
- **Low product differentiation allows for new entrants:** Being a commodity product, bulk cocoa has relatively low barriers for new entrants compared to premium cocoa.

- **Large investment is required:** Cocoa farming requires high levels of investment, especially in the first years of activity. Capital is also needed for infrastructure and labor.
- **High switching costs:** Given the time that is needed for recovering the capital and starting to make profits, switching costs are high for cocoa farmers. It is not easy to switch to another crop without significant capital loss.
- **Easy access to distribution channels:** New cocoa farmers may find it relatively easy to find buyers that are interested in their cocoa. Middlemen/intermediaries generally show special interest in new cocoa farmers.

### Threat of Substitutes

Substitutes perform the same/similar function as products of the assessed industry. Viable substitutes place a ceiling on prices and drive up costs related to product performance, marketing, service, and R&D (Dobbs, 2014).

- The price of cocoa is determined by the world market price.
- **High Buyer Switching Costs:** Since cocoa beans are unique and cannot be replaced easily. Research presents other products as alternatives, but innovations and accurate recipe formulation are required to achieve it.



Photo: Ahmed Jallanzo, courtesy of CBI

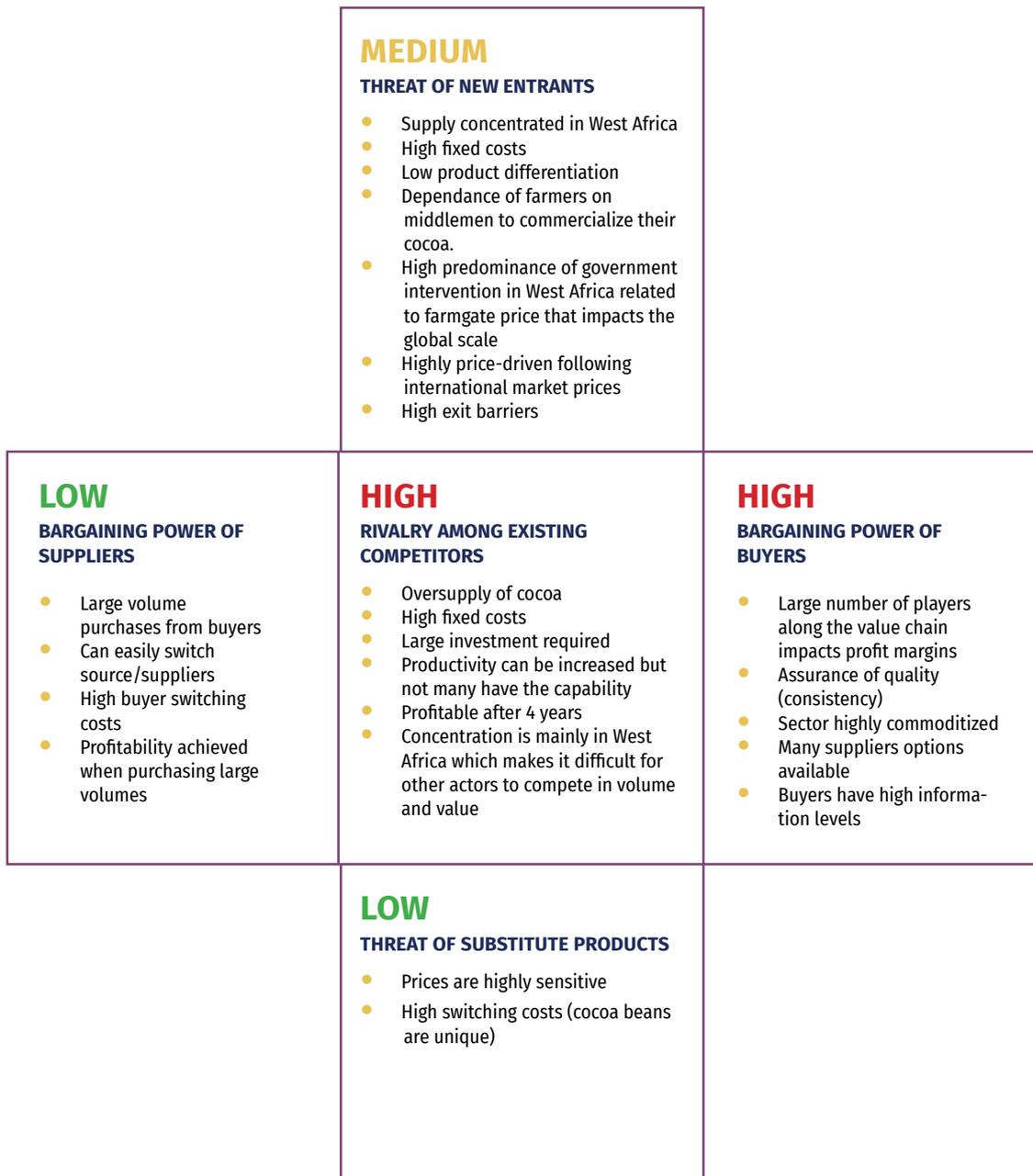


Figure 71. Analysis of competition through Porter's Five Forces Model for bulk cocoa beans.  
Source: Own elaboration, 2021

## Organic Cocoa

### Threat of Competitive Rivalry

- **Low number of competitors:** The organic cocoa market is just around 0.5 percent of the global production. Only a few countries supply organic cocoa beans. Main suppliers are: Dominican Republic, Peru, Mexico and Ecuador (EuroAfri Link, 2021).
- **Fixed costs are high:** Organic cocoa farming involves additional fixed costs in relation

to conventional production as it includes the cost of conversion and certification, as well as annual renewal of the certification.

- **High product differentiation:** Organic cocoa is produced according to international standards that vary per region. For instance, organic cocoa for the European market should comply with the regulations of the EU for organic production and labeling (Entering the European Market for Certified Cocoa, 2020).
- **Forecasted industry growth:** The global organic cocoa beans market is forecasted to grow at a rate (CAGR) of 9.5 percent/year, reaching USD 620 million in retail value by 2025. This growth may be explained by a rapidly growing chocolate industry in emerging economies like China and India (Voora et al., 2019), among other factors.
- **High exit barriers:** Organic cocoa farming requires specialized knowledge and international standards that make it difficult for producers to exit the industry. Additionally, a high level of investment is required. Cocoa trees commonly bear fruit only after three or four years.

## Buyer Power

- **Buyers are highly concentrated:** The high concentration of buyers gives them high bargaining power, which could therefore impact farmgate prices. Organic cocoa beans are profitable for buyers.
- **Organic cocoa is a differentiated product:** It is not easy for buyers to find other suppliers. Organic certification demands traceability and transparency practices embedded in the sourcing process. Switching costs are relatively high.
- **Organic cocoa buyers require medium to large volumes to generate profits:** For this reason, buyers are fairly price sensitive.
- **Organic cocoa buyers have good knowledge about the market:** This information or knowledge gives buyers more bargaining power in relation to suppliers.

## Supplier Power

Powerful suppliers ask higher prices, limit product quality and shift costs to other industry players (Dobbs, 2014). The production of cocoa beans requires inputs like labor, planting material, fertilizers, and finance among others (S. K. Gayi & Tsowou, 2016). In this analysis, suppliers of certification services are analyzed.

- **High concentration of suppliers of certification:** The certification industry is highly and increasingly concentrated. Only a few companies provide certification services, and, in most cases, the certification process is expensive for farmers.
- **High switching costs for farmers:** Certification services are very difficult to replace. In some countries, only a couple of certification bodies are represented.

- **Supplier substitutes are scarce:** Farmers do not find many viable options to replace certification services.

## Threat of New Entrants

The threat of new entrants puts pressure on lowering prices and increase customer retention costs (Dobbs, 2014).

- **Economies of scale are required for potential new entrants:** Scale economies in production, finance and marketing are key barriers for entry into the organic cocoa industry.
- **High product differentiation impedes new entrants:** Organic cocoa requires specific knowledge and must follow specific standards that the international market imposes. New entrants require specific knowledge on how to produce cocoa in an organic manner.
- **Large investment is required:** Cocoa farming requires high levels of investment, especially in the first years of activity; for organic cocoa, this may include conversion costs. Capital is also needed for infrastructure and labor.
- **High switching costs:** Given the time required for return of investment and profit gains, switching costs are high for organic cocoa farmers. It is difficult to switch to another crop without significant capital loss.
- **Easy access to distribution channels:** New organic cocoa farmers may find it relatively easy to find buyers that are interested in their produce. Exporters are currently showing special interest in new organic cocoa farmers due to the increase in market demand (Anonymous, personal communication, July. 2021).

## Threat of Substitutes

Substitutes perform the same/similar function as products of the industry but in a different way. Viable substitutes place a ceiling on prices and drive up costs related to product performance, marketing, service, and R&D (Dobbs, 2014).

- **The price of organic cocoa is referenced against the price of bulk cocoa,** which is set by the world stock market. Buyers of organic cocoa beans should pay a premium.
- **Buyer is a medium risk seeker** given that there is high demand, limited supply and high production costs.
- **High buyer switching costs** because organic cocoa beans have been produced under specific standards and certification costs are high. Also because of the uniqueness of the product.

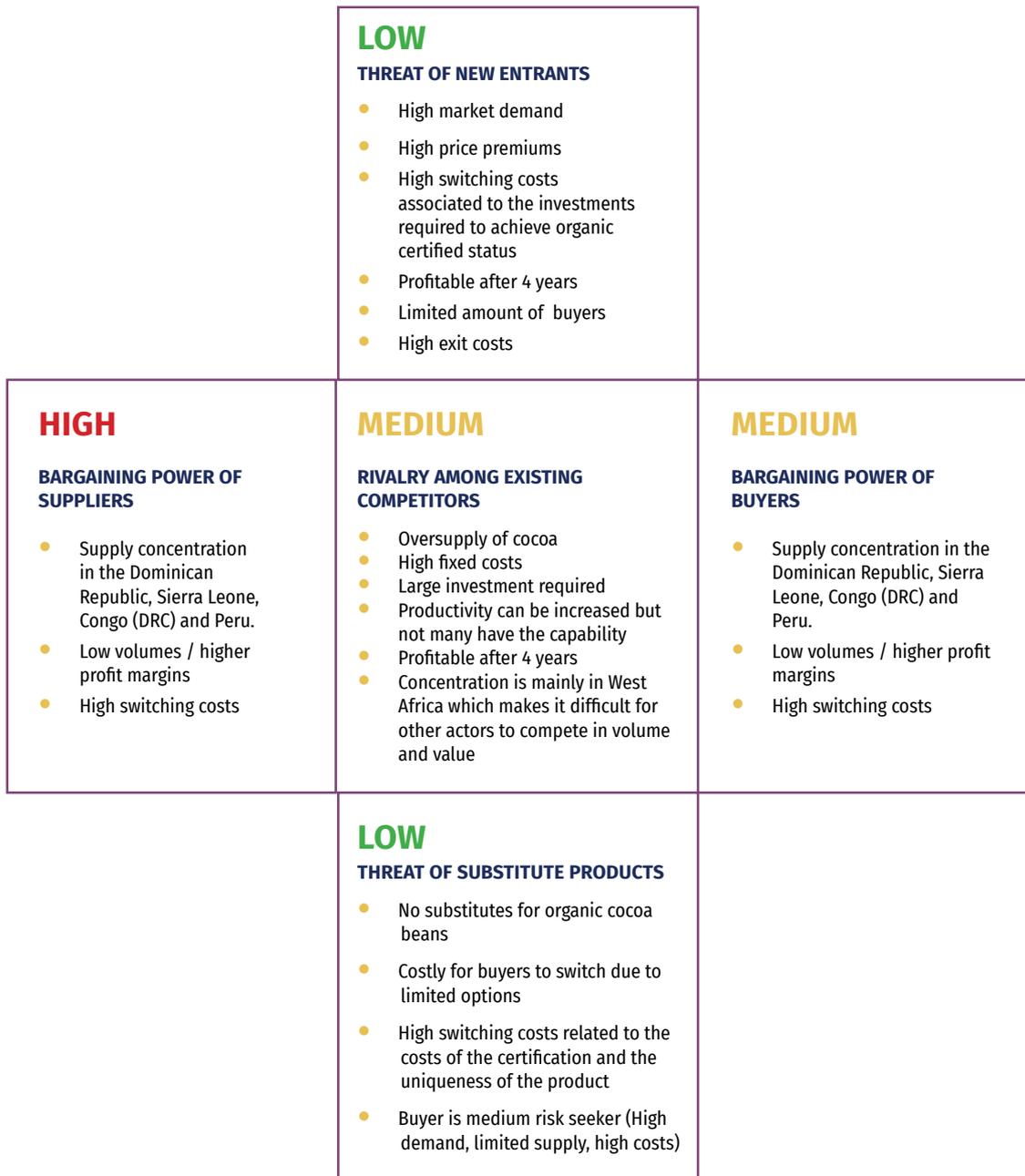


Figure 72. Analysis of competition through Porter's Five Forces Model for Organic cocoa beans.  
 Source: Own elaboration, 2021

# SUSTAINABILITY

## Introduction

### Brundtland Definition of Sustainability

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987).<sup>10</sup>

### Industry Definition of Sustainable Cocoa

Sustainable cocoa refers to any cocoa audited by a third-party organization, a regulator, or by a company corporate or 'managed' sustainability programs such as Nestlé Cocoa Plan or Barry Callebaut's Cocoa Horizons. A third-party organization such as Fairtrade or Rainforest Alliance audits through voluntary sustainability standards, while a regulator uses regional or international standards, such as the new ARS 1000 standard. Sustainable food was defined as any food with a seal under an independent audit system by research carried out by Wageningen University in 2021 looking at the rise of sustainable food sales in Dutch supermarkets (de Lange, 2021). However, the terms 'sustainable cocoa' or 'sustainable coffee' are used quite liberally, and certainly not without greenwashing purposes. It usually encompasses one or more of the following activities:

- The application of a recognized third-party certification scheme (e.g., Utz/RA, Fairtrade, Organic, ISO 34101).
- The application of proprietary sustainability criteria (or "managed programs") owned by companies (e.g., Olam's AtSource, Barry Callebaut's Cocoa Horizon, Nestlé's Cocoa Plan, Mondelez' Cocoa Life, etc.).
- Above programs will typically include one or more of the following activities:
  - Mapping of farms (traceability).
  - Survey or census taking of households to get insight into how to achieve 'living income'.
  - Awareness raising and setting up a Child Labor Monitoring and Remediation System (CLMRS).
  - Monitoring and awareness raising of deforestation.
  - Training of farmers on Good Agricultural Practices (GAP).
  - Distribution of cocoa seedlings and shade trees (for CO<sub>2</sub> sequestration, biodiversity and income diversification).

<sup>10</sup> In 1987, the World Commission on Environment and Development (WCED) published a report entitled "Our common future". The document came to be known as the Brundtland Report after the Commission's chairwoman, Gro Harlem Brundtland.

## Significant Sustainability Challenges in Cocoa

While large-scale cocoa producers in Indonesia and Ecuador are also struggling to satisfy basic living necessities (Olam Cocoa, 2020), the ‘bulk cocoa’ producing countries of West Africa face additional problems such as widespread deforestation and child labor. These issues may well be exacerbated soon by the climate and biodiversity crises, (United Nations Environment Programme, 2021). An additional issue identified during interviews is the ageing farming population, which is reflected in the neglected state of the farm, and the related issue of (young) people migrating from rural areas to cities. For instance, one Ghanaian cooperative reported 65 percent of farmers aged 45 or older and only 13 percent of farmers aged 35 or younger. Therefore, when not having the chance to migrate to a city, rural youth must make do with smaller and smaller pieces of land divided up by their parent(s). However, lack of land tenure prevents farmers from becoming entrepreneurs (Anonymous, personal communication, July 2021).



Figure 73. Sustainability map by ITC. Source: ITC, n.d.

## Managing Risks in the Cocoa Sector

Higher risk-aversion of the buyers and/or the sellers leads to more revenues for the other agents involved in the exchange relationship. Operating any business implies managing risks. Therefore, long-term contracts in the buyer-seller relationship leads to lower revenues (but also reduced risk) for sellers (Zúñiga-Arias et al., 2007). The Cocoa Barometer feels farmers

bear the most cocoa operational risks, Fountain and Huetz-Adams, (2020) identifies farmers as individuals “who have no influence on prices and are mostly not organized. In the meantime, at the top of the pyramid, multinational chocolate manufacturers, cocoa processors, traders, and retailers earn billions of dollars a year to feed consumer’s need for a product of pleasure.” However, considerable risks exist with others in the value chain, from traders, and manufacturers to brand holders and shops, whether small or large. Table 24 lists some of the risks for actors in the supply chain.

**Table 24. Risks for actors in the cocoa value chain**

| Farmers  | Traders, Manufacturers, Brands  | Retail   |
|--|---|--|
| <ul style="list-style-type: none"> <li>• World market price risk (fluctuations – (See chapter on Prices).</li> <li>• Crop risk (climatic conditions, effectiveness/access of inputs).</li> <li>• Market risk (what channels can farmers sell into).</li> <li>• Quality (e.g., rejection by the coop or exporter).</li> <li>• Logistic risks (e.g., COVID-19 travel restrictions).</li> </ul> | <ul style="list-style-type: none"> <li>• Supply risk (factories need to perform at full capacity to remain competitive).</li> <li>• Market risk (demand).</li> <li>• Ratio risks (butter/powder prices).</li> <li>• Quality deterioration risks (e.g., mold during transport, shelf-life for chocolate).</li> <li>• Negative publicity.</li> <li>• Financial risk (not recouping advanced payments to FBOs, exchange rates, long payment terms from retail).</li> </ul> | <ul style="list-style-type: none"> <li>• Rent risk.</li> <li>• Shelf-life risk.</li> <li>• Lockdown risk (COVID-19 measures).</li> <li>• Competitor risk (e.g., discount supermarkets).</li> </ul> |

Source: (Own elaboration, 2021).

## Actors in the Sustainability Initiatives

Non-governmental and civil society organizations (e.g., Solidaridad, Oxfam) started much of the sustainability initiatives, often together (or funded by) governmental organizations in both consuming countries (e.g., IDH, GIIZ, SECO) and in producing country (e.g., COCOBOD, FIRCA, CCC). In turn, the organizations have set up platforms, networks and associations, such as RSPO, CFI, SLCCCP (Sierra Leone Cocoa Coffee Cashew Platform). NGOs have spurred third-party certification (e.g., Fairtrade, Organic, Rainforest Alliance), which are overseen by institutions as ISEAL and IFOAM and use third party certification agencies such as FLO-Cert and Control Union. Third-party certifications were followed (or substituted) by proprietary corporate programs, such as Nestlé’s Cocoa Plan or Barry Callebaut’s Cocoa Horizons. There have also been projects and programs funded by international organizations, such as FAO, UNDP, and World Bank (Ingram et al., 2018). Traders, manufacturers, brand owners and retail are seen as important actors in adopting and implementing the sustainability criteria together with the producer and producer organizations. They use and communicate the third-party or corporate certifications on their products to the consumer, they are part of sustainability platforms and the companies are consulted regularly by (i) (N)GOs. The consumer, finally, is the actor that needs to buy into or drive the sustainability criteria put forth by companies.

**Table 25. Examples of actors in sustainability initiatives worldwide**

| International governmental bodies   | WB, FAO, UNIDO, UNDP, UNFPA, WHO, IMF, IBRD, IADB, ICCO etc.  |
|---|---|
| Governmental organizations from consuming countries                       | USDA, USAID (United States)<br>IDH, CBI (The Netherlands)<br>GIZ, IPD (Germany)<br>SECO (Switzerland)   |
| Non-governmental and civil society organizations from consuming countries | IESC, Catholic Relief Services, Lutheran World Relief, TechnoServe, FCCI (United States)<br>Solidaridad, Agriterra, Cordaid, ICCO, Progreso (The Netherlands)<br>WHH (Germany)<br>Rikolto, (Belgium)<br>Sida (Sweden)<br>Danida (Denmark)<br>Norad (Norway)<br>Swisscontact (Switzerland)<br>Adam Smith International (UK)<br>Oxfam International |
| Governmental organizations in producing countries                         | COCOBOD (Ghana)<br>FIRCA (Côte d'Ivoire)<br>PROEQUADOR (Ecuador)<br>PROMPERU (Peru)<br>PMB (Sierra Leone)<br>LACRA (Liberia)<br>CCC (Côte d'Ivoire)<br>COPAL (Nigeria)  |
| Platforms, networks and associations                                      | WCF, CFI (Cocoa Forest Initiative), FCIA (United States)<br>GISCO, SWISSCO, DISCO, Beyond Chocolate (German, Swiss, Dutch and Belgian Sustainable Cocoa Initiatives)<br>INCOCOA   |
| Research organizations  | INIAP (Ecuador)<br>IDIAF (Dominican Republic)   |

## Who Is Responsible for Sustainability?

Responsibility in cocoa sustainability is a complex issue. During the interviews for this study, traders argue that despite the scrutiny of activist consumers, NGOs and regulators, the participation of customers is critical in rule adoption. Traders feel they are customer-led. After all, if there is no level playing field, it is probable that a chocolate maker will use a cheaper supplier if there is one, and the consumer will buy the more affordable bar.

According to buyers, traders and in-country sourcing manufacturers are now perceived as

partners rather than vendors, contrary to 10-15 years ago. The terms “long term relationship”, “trust” and “traceability” describe key words that ensure the flow of volume and quality. However, it is unclear if this can be regarded as proof of trader-driven change towards sustainability. Buyers also identify that the demand for sustainable cocoa/chocolate is not keeping up with supply because customers refuse to pay extra for a more responsibly derived chocolate bar (Anonymous, personal communication, Aug. 2021).

Applying systems thinking to the sustainability challenges in the cocoa sector reveals that the ‘root causes’ of the problems lies with demand: If customers do not actively demand change through their purchasing habits, little can be done either privately (trade) or publicly (politics) (CBI, 2019). The dynamics of consumer behavior are beyond the scope of this study.

During interviews with industry experts in the cocoa sector, some express they do not believe in consumer power and feel the need to bypass the consumer’s opinion in the production process. All products on the shelf should be sustainable by law, according to Voice Network spokesman Antonie Fountain (personal communication, August 2021). Other sources indicate that consumers drive specific changes, as consumers organize advocacy organizations, publish on malpractices, and keep organic and Fairtrade shops in business. A study in 2015 found that 91 percent of global consumers expect companies to do more than just make a profit and 84 percent said they seek out responsible products whenever possible. Ninety percent would even boycott a company if they learned of irresponsible or deceptive business practices (CONE, 2015).

If consumers take little responsibility in their shopping behavior, civil society organizing in NGOs as drivers of sustainability cannot be discarded. Lawsuits have been a particularly interesting tool. NGO Mighty Earth’s 2016 lawsuit against Olam International for deforestation practices (palm oil in Gabon) moved the company to suspend further land clearing of forests (Mighty Earth, 2020). In 2015, NGO Urgenda’s lawsuit against the Dutch Government was the first in the world in which citizens established that their government has a legal duty to prevent dangerous climate change. The District Court of The Hague (and later the Supreme Court) ruled the government must cut its greenhouse gas emissions by at least 25 percent by the end of 2020 (compared to 1990 levels). The ruling required the government to immediately take more effective action on climate change (URGENDA, 2019).

In the cocoa industry, the self-indictment of TV-producer Teun van de Keuken in 2004 for abetting child labor by eating African chocolate was more of a media stunt, but it did put child labor on the agenda and was the birth of the ‘slave-free’ brand from Tony Chocolonely<sup>11</sup>. In 2021, Barry Callebaut, Nestlé, Cargill, Mars, Olam, Hershey and Mondelez were named in a U.S.-based class action lawsuit filed by eight former child slaves from Mali who alleged that the company aided and abetted their enslavement on cocoa plantations in Côte d’Ivoire. The suit accused the companies of knowingly engaging in forced labor, and the plaintiffs’ sought damages for unjust enrichment, negligent supervision, and intentional infliction of emotional distress (Myers, 2021). The suit failed as the Companies argued that there is no strong evidence for liability, as they had no control over the cocoa farmers in

<sup>11</sup>As of 2021, the Tony’s was removed from the list of slave-free chocolate producers due to its collaboration with Barry Callebaut, which cannot rule out that child labor and modern slavery are present in its production chain (NL Times, 2021).

Côte d'Ivoire, due to the distance with cocoa harvesting operations. On October 27, Corporate Accountability Lab sued Hershey and Rainforest Alliance for false advertising. For over twenty years, many chocolate companies have promised to eradicate child labor in their cocoa supply chains yet prevalence in this matter continues<sup>12</sup>.

## Living Income

### Definition and Impact of Living Income

Fundamental in the discussion to sustainability is the issue of a living income, as this is related to child labor and deforestation. Studies demonstrate that the cocoa industry's economic benefits generated do not sufficiently reach the cocoa producer, who is typically poor, middle aged, and holds only a small plot of old cocoa trees. Thus, the farmers cannot secure his/her subsistence solely on cocoa production and often have a different primary or secondary source of income (Hütz-Adams et al., 2016; Kozicka et al., 2018). Veldhuyzen (2019) defines living income as "sufficient income generated by a household to afford a decent standard of living for the household members. Elements of a decent standard of living include: a nutritious diet, water, decent housing, education, healthcare, transport, clothing and other essential needs, including a provision for unexpected events". The literature indicates that living income is related to a wide spectrum of factors along the supply chain. It ranges from farmers' low yield and low diversified income (Oomes et al., 2016) to inefficient government spending in origin countries and insufficient political economy analysis (Stanbury, 2019; Webb & Stanbury, 2020b) from commodity trade to the consumers that are not willing to pay a little more for a candy bar.

### Factors Included in the Calculation of a 'Living Income' and a Fair Cocoa Farmgate Price

Fairtrade in 2018 introduced the "Living Income Reference Price" (LIRP), indicating the price needed for an average farmer household with a viable farm size and an adequate productivity level to make a living income from the sales of cocoa in Côte d'Ivoire and Ghana. In 2019, an adjustment of the model incorporated potential diversified (in-kind) farm income (Anker & Anker, 2018; Veldhuyzen, 2019). The following are critical parameters in Fairtrade's LIRP:

- 1. Cost of a decent standard of living:** including a nutritious diet, water, decent housing, education, healthcare, transport, clothing and other essential needs, including a provision for unexpected events.
- 2. Sustainable yields:** by reviewing literature, interviewing experts and conducting workshops with Fairtrade lead farmers in both countries it was found that 800 kg/ha was considered a realistic benchmark under current circumstances (even if yield is around half of that currently).<sup>13</sup>
- 3. Viable farm size (to fully employ the available household labor):** in Côte d'Ivoire this

<sup>12</sup> <https://corpaccountabilitylab.org> <https://corpaccountabilitylab.org>

<sup>13</sup> Tony's Chocolonely already established the policy to buy only from farmers that produce at least this amount; purchasing from farmers producing less than 800 kg/ha would be "subsidizing poverty" (Tony's Chocolonely, 2021).

was established at 5.3 hectares, based on three full-time breadwinners, of which 2.5 full-time equivalents are dedicated to cocoa farming. Similarly, a typical six-member Ghanaian household with 2.25 full-time breadwinners was found to need four hectares to fully employ their available labor force. Productive and non-productive (in-kind income) cocoa areas are considered as well. A productive cocoa area of 4.4 and 3.3 hectares was set for Côte d'Ivoire and Ghana respectively. The cost of production, however, was based on the full 5.3 and 4 hectares, also covering the labor incurred in growing food, and compensating the lower investment needed in cocoa during the unproductive years.

4. **Cost of Production:** To project the farm business costs involved in producing 800 Kg/ha, Fairtrade considered hired labor (at living wages of USD 9.24 and USD 8.00 in Côte d'Ivoire and Ghana, respectively), fixed costs such as tools, infrastructure and administration (at USD 418 and USD 358 per hectare in Côte d'Ivoire and Ghana respectively) and agricultural input costs such as seedlings (USD 47/ha.), and (notably!) chemical fertilizers and pesticides<sup>14</sup> (around USD 300/ha.) (Anker & Anker, 2018; Veldhuyzen, 2019).

The conclusion was that Living Income Reference Prices for cocoa should be USD 2.20 and USD 2.10 per kg at farm gate for Côte d'Ivoire and Ghana respectively. Adding USD 0.80 per kg export costs for Côte d'Ivoire, Fairtrade calculates that USD 3.00 per kg, or USD 3,000 per metric ton should be the Living Income Reference Price FOB. As demonstrated in figure 49, the increased Fairtrade Minimum Price for cocoa per Oct. 1, 2019, was a first step in a gradual approach to bridge the price gap (Veldhuyzen, 2019).<sup>15</sup>

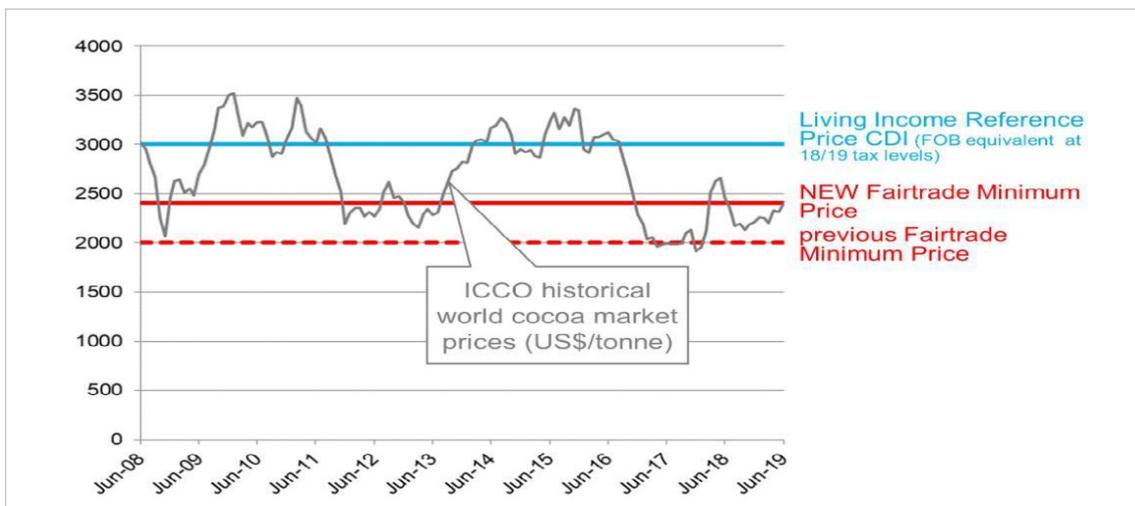


Figure 74. Fairtrade living income reference price for Côte d'Ivoire in relation to the Fairtrade minimum price and historical world market prices.

Source: Veldhuyzen, 2019

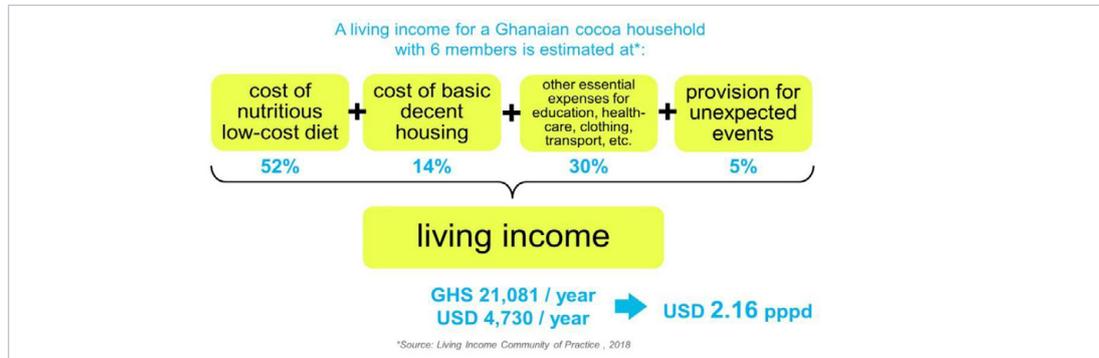
<sup>14</sup> Further research is needed to determine whether similar yields are achievable through adoption of agroecological production techniques, as on a study published by (Inckel, de Smet, Tersmette, Veldkamp) Veldhuyzen et al. (2019) concerns were raised around agroecological production practices not being taken into consideration and that synthetic chemicals, known to erode soil health, were used for the LIRP.

<sup>15</sup> Tony's Chocolonely also reaches the same prices for their farmgate purchase policy as recommended in the LIRP (Tony's Chocolonely, 2021)

## Living Income Calculation for Ghana and Côte d'Ivoire

### Example 1: Calculating the LIRP for Ghana (Veldhuyzen, 2019)

Living income studies calculated the cost of decent living at USD 2.16 per person per day in Ghana, as shown below. A typical six-member household in Ghana, would then need USD 4,730 per year.



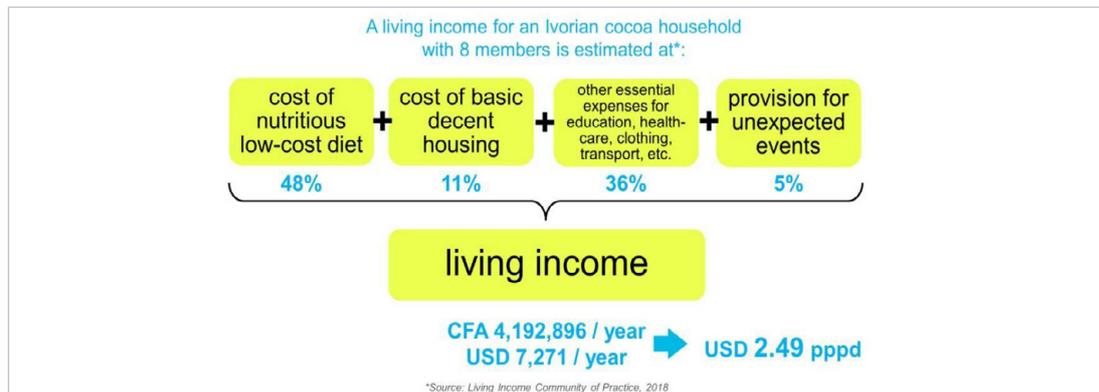
Subsequently, this leads to a Fairtrade Living Income Reference Price of USD 2.10 per kg of cocoa at farm gate for Ghana, as follows:

$$\text{Living Income Reference Price Ghana} = \frac{(4730 - 612) + (4 \times 358)}{3.3 \times 800} = 2.10 \text{ US\$/kg}$$

Where Living Income Reference Price = Yearly (costs of living – production food on farm) + (viable farm size x cost/ha)/(viable productive hectares of cocoa x average production of cocoa/ha). For more precise definitions, please see (Veldhuyzen, 2019)

### Example 2: Calculating the LIRP for Côte d'Ivoire (Veldhuyzen, 2019)

Living income studies calculated the cost of decent living at USD 2.49 per person per day in Côte d'Ivoire, as shown below. A typical eight-member household would need USD 7,271 per year.



Subsequently, this leads to a Fairtrade Living Income Reference Price of USD 2.20 per kg of cocoa at farm gate for Côte d'Ivoire, as follows:

$$\text{Living Income Reference Price Côte d'Ivoire} = \frac{(7271 - 1745) + (5.3 \times 418)}{4.4 \times 800} = 2.20 \text{ US\$/kg}$$

Where Living Income Reference Price = Yearly (costs of living – production food on farm) + (viable ha. under cultivation x cost/ha)/(viable productive hectares of cocoa x average production of cocoa/ha). For more precise definitions, please see (Veldhuyzen, 2019)

## Basic Needs Covered by a Cocoa Farmer's Income

Sustainable Food Lab brought together a coalition of cocoa companies, the Global Living Wage Coalition (GLWC), the Anker Research Network and the Living Income Community of Practice to publish living income reference values and investigate how much of basic needs are covered by a farmer's total household income (Olam Cocoa, 2020). As can be seen in the figure below, none of the four largest cocoa-growing countries' farmer households reaches 100 percent of their basic needs. Interestingly Ecuador and Indonesia rank worse than Ghana and Côte d'Ivoire, as typically the latter countries are perceived to be the poorer ones and effectively fall into lower income brackets. Possible explanations could be that in Indonesia and Ecuador farmers have more needs (e.g., inputs), things are more expensive (food, housing), or the sample-size is not representative of the general (cocoa) population.

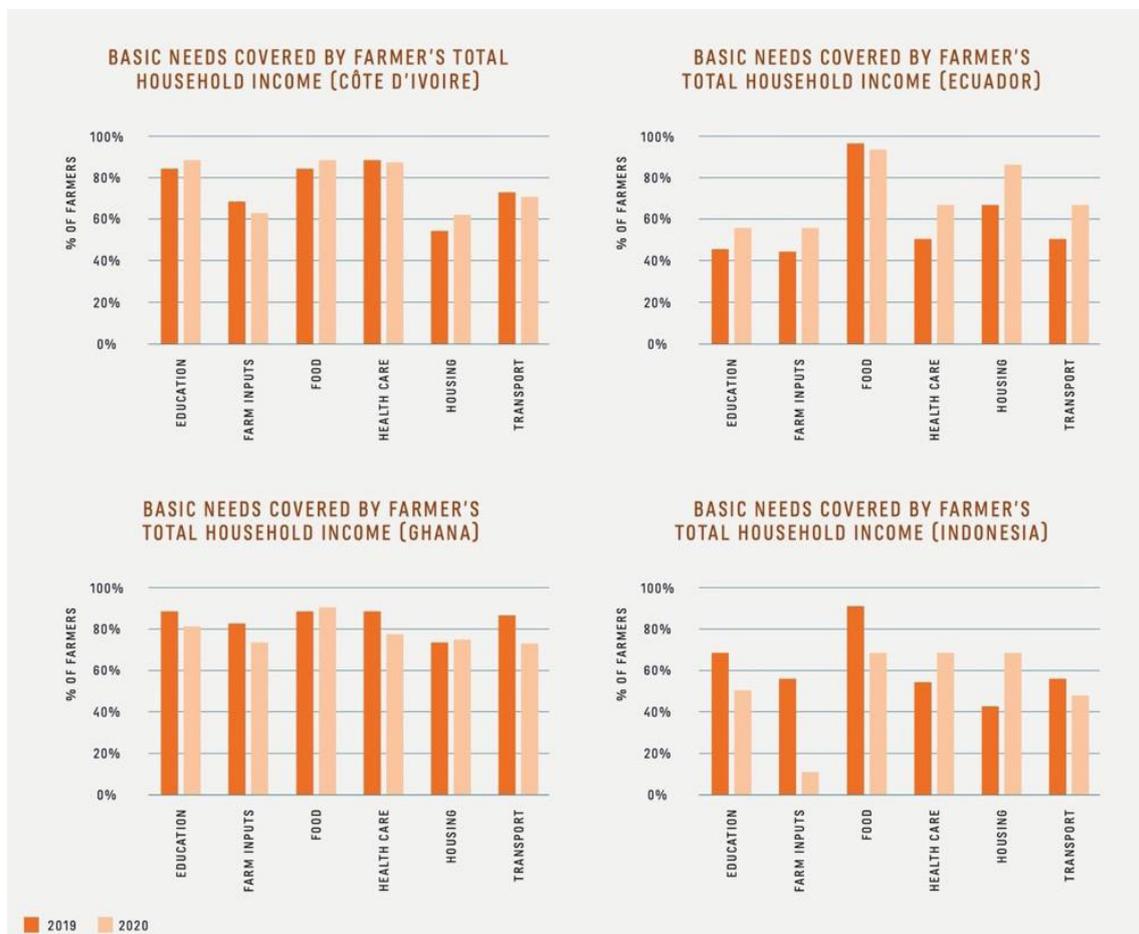


Figure 75. Extent of reaching basic cocoa farmer needs in four countries. Source: Olam Cocoa, 2020

## Cartel Forming – A Solution to Higher Cocoa Prices for Farmers?

Several cocoa researchers have suggested that the easiest way to raise cocoa prices for farmers would be through a cocoa cartel, i.e., an agreement among the governments of cocoa producing countries not to sell below a certain price (A. C. Fountain & Hütz-Adams, 2017; Waarts, 2021). Given the concentration of the majority of cocoa production in a limited number of countries, such a cartel might be easier to enforce than the current OPEC cartel for oil. Even

if just the largest two producers, Ghana and Côte d'Ivoire were able to agree amongst themselves on a minimum export price, this would have a major impact on the sector. However, literature and experience in the last two years after implementing the 'LID' (see section below) suggest that such a 'cocoa cartel' is unlikely to work. (Oomes et al., 2016) point out that if the cartel were to agree to artificially fix farmgate prices at a higher level, the following would likely happen:

1. Demand for cocoa would fall and supply would rise. Thus, an oversupply of cocoa would need to be destroyed or otherwise disposed of if persistent. This could undermine domestic political support for the cartel.
2. Lack of enforcement of the price agreements. Particularly the poorest countries will find it politically difficult to voluntarily cut cocoa production when prices are high.
3. Lack of storage facilities: Cocoa is more difficult to store than for example oil, and would require major investments in storage facilities, particularly in West Africa.
4. Cocoa processors and manufactures could increase efforts to set up large cocoa firms in cocoa producing countries, which over time would erode the cartel.
5. Such a cartel would not be allowed under the WTO and would jeopardize WTO membership.

## Historic Attempts to Form Support Prices

A 'Buffer Stock Fund' operated in the 1980s and 1990s and was the reason to create ICCO. However, it failed to stabilize world cocoa prices because (i) it was economically too difficult to determine the equilibrium price; (ii) it was politically too difficult for member countries to cut production when this was needed for price stabilization. As a result, the fund accumulated enormous inventories of cocoa that then took years to sell off, as a gradual approach was deemed necessary to not disturb the market (Oomes et al., 2016). A 'Living Income Differential' (LID) was introduced in 2019 by the governments of Ghana and Côte d'Ivoire, to apply a premium of USD 400 per ton on the export price of cocoa from the 2020–21 crop. The intention was to increase the income of farmers with this additional revenue, part of which would go into a 'stabilization fund'.

## The Reaction to the 2020 Living Income Differential

Besides the Ghanaian and Ivorian governments, many socially engaged people and organizations in consuming countries were hopeful about the introduction of a Living Income Differential. Reactions to its introduction included: "This historic initiative is an important and necessary step in order to improve the income situation for farmers" (A. Fountain & Huetz-Adams, 2020). According to Veldhuyzen (2019), LID would "create a welcome level playing field for the industry to address low cocoa prices at scale". Fairtrade Netherlands called upon the cocoa industry to use this new norm and several chocolate companies committed to pay this price (e.g., Tony's Chocolonely and Belvas). "The right moment to engage with these two countries on this issue" and "similar processes could be replicated later in other regions and for other commodities" (Laird, 2021; Sustainable Cocoa Initiative, 2021a).

However, by others it was soon qualified as “ill thought-through quick fix” to challenges in global supply chains and that supporters of the LID simply did not understand market economics nor the complex and messy issues which need to be addressed if systemic change is genuinely to be achieved (Laird, 2021; Webb & Stanb).

## Effects of the LID in Ghana and Côte d’Ivoire

In the end, the LID was offset by negative country differentials, as was predicted to happen in an open market economy. The problem is that there is no level playing field if a critical mass of cocoa-producing countries will not join the cartel formation. Countries outside the cartel, such as Ecuador, benefited from West African cocoa becoming (temporarily) more expensive, as buyers turned to other suppliers. In November 2020, it was reported that U.S. manufacturer, Hershey was buying significantly more of its cocoa through the ICE commodities futures exchange. Other reports suggested that Mars was adopting a similar strategy. The response of the Ghanaian and Ivorian governments was to cancel all of the sustainability programs Hershey was involved in directly or indirectly, placing additional hardships on farmers. (The programs were later reinstated). As of 2020, many reports indicated that the LID was not working. A Bloomberg report wrote that the governments’ attempt to exert control over prices was backfiring. At the same time, the cocoa trade journal Confectionary News concluded that the LID actually made the situation worse for smallholder farmers, due to decreasing income revenues. Part of the problem seems to be the lack of transparency at government level; an evaluation of the implementation of the LID by market research firm IHS Markit in Autumn 2020 concluded that “there is very little transparency over exactly how the LID is being collected, where the money is being stored and how it’s going to be spent.” Findings from Webb & Stanbury’s smallholder research, suggest that the LID is also driving corruption (Webb & Stanbury, 2020b).

## Effects of the LID on Farmgate Price

In Ghana, the farmgate price went up from GHS 515 in 2019–20 to GHS 660 in 2020–21, as mandated by the government. This farmgate price is being maintained in 2021–22, which may appear as if the implementation of the LID worked. However, it seems that the farmgate price is being kept high by the government for political reasons. “If the farmgate price goes down, this will be used by political opponents” (Anonymous, personal communication, July 2021). The high farmgate price is quite feasible for COCOBOD to pay as in Q4 of 2021, future prices are relatively high, and so the Board will have sold forward the customary 70 percent of the harvest at those prices. In addition, the government could lower its FOB-levies, which are currently 42.2 percent. In fact, the idea of the LID was to reduce levies to 30 percent (Boysen et al., 2021). In Côte d’Ivoire, however, the increased farmgate price of 2020–21 was not sustained. In April 2021 Côte d’Ivoire’s government dropped the farmgate price to CFA 750 (USD 1.35) per kg of cocoa beans for the mid-crop, from CFA 1,000 (USD 1.80) per kg announced during the main crop and has as per Oct. 1, 2021, announced CFA 825 (USD 1.46) per kg for its main crop (Reuters Staff, 2021). In addition, an Ivorian exporter mentioned that there had been very little awareness raised of the concept of the LID with farmers by the authorities (Anonymous, personal communication, Oct. 2021).

## How the LID Would Affect Production and Deforestation

A promise of increase in local cocoa prices for farmers induces increased production by planting new trees to increase their incomes. Farmers may branch out (as they have done in the past) into forest areas that are poorly monitored. It is possible that the rise in cocoa production driven by the LID has led to further damage to forests (Laird, personal communication, Jul 2021); (Webb & Stanbury, 2020b). It also had the effect of pushing manufacturers to seek other, cheaper cocoas to substitute for Côte d'Ivoire and Ghana. This had the double negative impact on Côte d'Ivoire and Ghana of inciting manufacturers to move away and at the same time forcing up prices in other origins, stimulating production in these origins. As an industry expert mentions: "Manufacturers tend to loathe to change the recipes of their chocolate – if they reduce their usage of Côte d'Ivoire and Ghana, for whatever reason, they will be reluctant to return once they've found satisfactory substitutes elsewhere" (Laird, personal communication, Jul 2021).

## How the LID Would Affect the Consumer Price of Chocolate

Modeling of the cost transmission of the LID adopted at origin by Côte d'Ivoire and Ghana might result in a consumer price rise of +1.5 percent for milk chocolate tablets and +2.0 percent for dark chocolate tablets in France (FAO & BASIC, 2020).

## The 'True Price' of Cocoa, Considering All Externalized Costs

External costs result from economic activities not reflected in the prices charged for the provided goods and services. External costs can be classified as environmental costs if they have a direct effect on the environment and as social costs if they have a direct effect on the well-being of people. The cultivation of smallholder cocoa in Côte d'Ivoire has staggering costs of EUR 5.75 per kg cocoa beans (IDH & True Price, 2016). These are primarily social costs such as underpayment of hired and family workers, child and forced labor, lack of social security and deforestation. By summing up the external costs with the farm gate price of EUR 1.35 per kg cocoa beans, a true price of EUR 7.10 per kg cocoa beans is obtained by IDH (2016). Certified cocoa has 16 percent lower external costs of cultivation than conventional cocoa because of higher productivity of certified farms, better environmental conditions, and better social conditions (lower rates of child labor, accidents and deforestation). Application rates of herbicides and fertilizers were found to be higher on certified farms, but this was offset by yield increase. Certified farms were found on average to be 49 percent more profitable than conventional farms (IDH & True Price, 2016).

## Child Labor

According to the International Labor Organization (ILO, 2021), child labor is still as much a global problem today as it was in 2000. ILO reports that the number of children in child labor has decreased from 245.5 to 160 million, however, this number is still enormous (See Figure 76). At the start of 2020, 160 million children—63 million girls and 97 million boys—were in child labor, with nearly 79 million children working in dangerous jobs that threaten their health, safety and moral development (International Labour Office and United Nations Children's Fund, 2021).

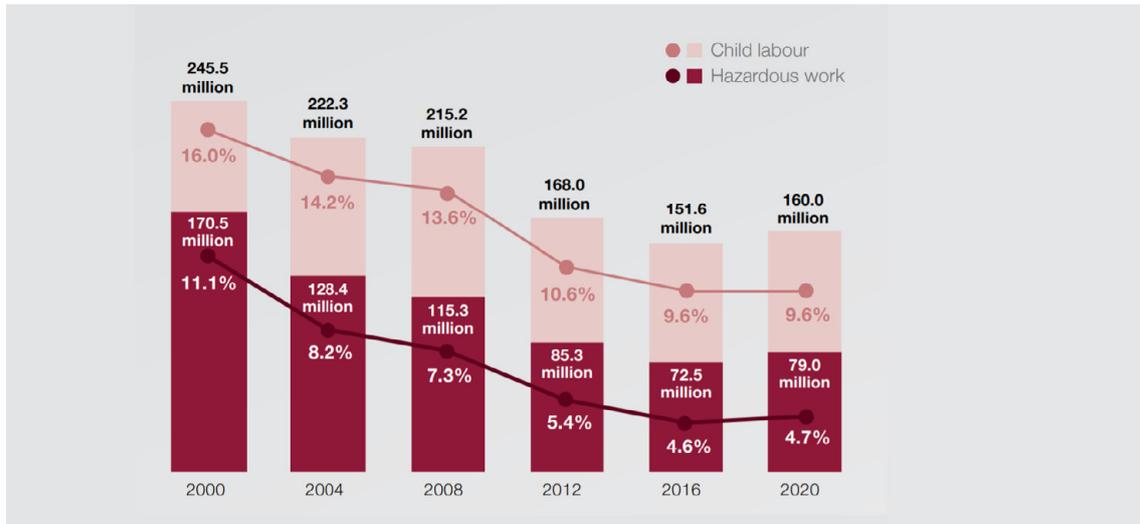


Figure 76. Percentage and number of children aged 5-17 in child labor and hazardous work, from 2000 to 2020. Source: International Labour Office and United Nations Children’s Fund, 2021

The International Labor Organization also states that agriculture is the sector with the largest amount of child labor worldwide. More than 110 million children, nearly 70 percent of child laborers in the world, are estimated to be involved in agricultural work such as farming, fishing, aquaculture, forestry, and livestock (See Figure 77). Nearly 68 percent of them would be unpaid because they work for their families, working long hours, and in dangerous conditions (International Labour Office and United Nations Children’s Fund, 2021).

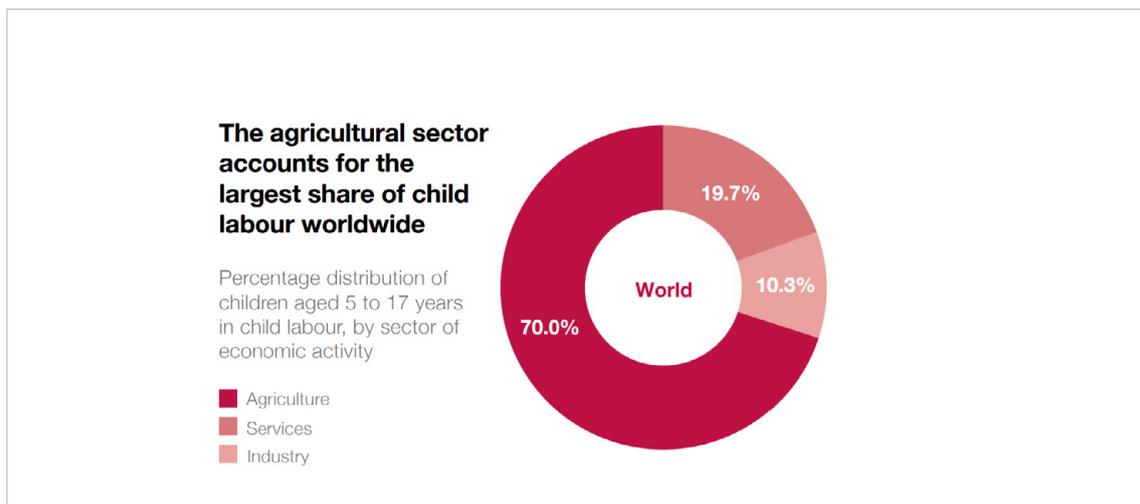


Figure 77. Percentage distribution of children in child labor, by sector of economic activity. Source: International Labour Office and United Nations Children’s Fund, 2021

In their latest report, ILO points out that Asia-Pacific, Latin America, and the Caribbean regions have decreased their percentages of child labor steadily from 2008 to 2020. The Asia-Pacific region might have decreased child labor levels from 13.3 percent (2008) to 5.6 percent (2020) while Latin America and the Caribbean decreased from 10 percent (2008) to 6 percent (2020). Sub-Saharan Africa decreased its percentage of child labor in 1.4 percent from 25.3 percent (2008) to 23.9 (See Figure 78).

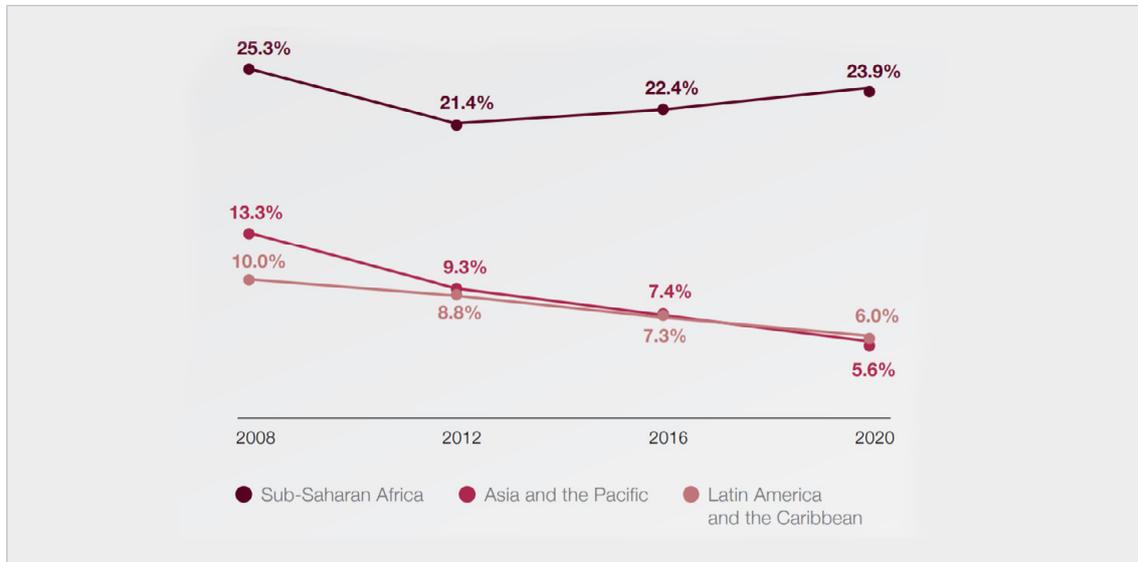


Figure 78. Percentage of children in child labor by region from 2008–2020. Source: ILO, 2021

## Child Labor in the Cocoa Sector

In October 2020, the National Opinion Research Center (NORC) from the University of Chicago, funded by the U.S. Department of Labor (USDOL), completed a four-year review of the various interventions conducted by representatives from the cocoa and chocolate industry and the governments of Côte d’Ivoire and Ghana, to reduce the worst forms of child labor. The study reports that there are still 1.56 million children involved in child labor for cocoa cultivation in Côte d’Ivoire and Ghana in the 2018–19 season, an increase of 14 percent since 2015 (NORC, 2020) (Barry Callebaut, 2021). Some 1.48 million child laborers were engaged in hazardous work during this period (Just Food, 2021).

## When Did the Child Labor Concern Start in the Cocoa Sector?

Concerns about child labor use in cocoa production became widespread in 2000. These concerns were the result of newspaper and documentaries released in high-income countries, about child slavery in West Africa. The information, which focused on the discovery of boys working on Ivorian cocoa farms, later propagated concerns about such practices being used in other West African cocoa producing countries (Luckstead et al., 2019).

However, many of the media reports were contentious. Firstly, some of the publications were based on doubtful evidence. In addition, some of the media reports on child slavery which appeared in 2000 and 2001 were based on desk research in the UK instead of serious field research in involved countries. Furthermore, it is possible that some information might have been exaggerated or even created. For example, the journalist Michael Finkel who worked for The New York Times Magazine, was fired when it was discovered that the article, he had written on child slavery on cocoa farms in the Côte d’Ivoire was a dishonest mixture of fact and fiction. Secondly, many publications were emotional and provided only an incomplete picture of the cocoa industry. For instance, contrasting images between poor African children and rich Western European children were used. Such images, together with the objective of contrasting poor producers and rich consumers, were meant to “educate” consumers about

the cocoa industry. However, the apparent abuses need to be placed in a wider perspective and in a real dimension. The fact that most children who work on cocoa farms do it freely, voluntarily and in a family context, at least in Ghana, were not considered in these media reports (Berlan, 2009). Most children participate in cocoa production because it is part of an age-old tradition of sharing cocoa farming skills to future generations who will oversee family farms. The tradition of passing farm skills through the generations has not been considered properly (Luckstead et al., 2019).

Hence, the assumption that children were representative of an entire industry remains highly debatable. Even though some of the initial claims have been proved to be misleading, the link between cocoa and slavery is still there. It seems that the idea of cruel and exploitative treatment of children on cocoa farms in West Africa will not be easily forgotten (Berlan, 2009).

### Reasons for Child Labor

Child labor in West Africa is not 'caused' by the international cocoa trade, nor can a price hike simply solve the challenge of low incomes. Wider societal structures are causing child labor, such as low prices and low income (Webb & Stanbury, 2020b). Families rely on children to support their income. While data shows that in 97 percent of cases in both Côte d'Ivoire and Ghana, children work for their parents or another family member, it also shows that collective interventions at both the community and national levels drive up school attendance. Companies like Olam participate in programs such as Child Learning and Educational Facility (CLEF). However, it is still observed that children take on hazardous tasks like using sharp tools and carrying heavy loads (Olam Cocoa, 2020). Interviews reveal that there is the sense that certification with promises of higher prices plus free seedlings to boot from NGOs or governments have caused too much planting, for which, consequently, farmers need more hands-on pods – these become children's hands (Anonymous, personal communication, July 2021).

### School Attendance

In Côte d'Ivoire and Ghana, two of the highest risk countries for child labor, data shows that school attendance is on the rise, in line with the recent report from NORC at the University of Chicago. In Côte d'Ivoire, 79 percent of school-aged children attend school, and 75 percent of children identified as in child labor combine work and school. For Ghana, 98 percent of children identified in child labor were attending school (NORC, 2020; Olam Cocoa, 2020). When looking at school attendance rates among children surveyed across all our cocoa sourcing countries in 2019–2020, they compare well with national enrolment rates.

**Table 26. Enrollment rates of children surveyed across all our cocoa sourcing countries in 2019/2020**

| COUNTRY          | AGES 6-17<br>% Attending school | AGES 6-11<br>% Attending school (primary) | AGES 12-17<br>% Attending school (secondary) | SCHOOL ENROLMENT<br>(primary, %NET) | SCHOOL ENROLMENT<br>(secondary, %NET) |
|------------------|---------------------------------|---|--|-------------------------------------|---------------------------------------|
| CÔTE D'IVOIRE    | 79%                             | 75%                                       | 89%  | 90%                                 | 40%                                   |
| GHANA            | 97%                             | 97%                                       | 96%  | 86%                                 | 57%                                   |
| CAMEROON         | 97%                             | 97%                                       | 98%  | 93%                                 | 46%                                   |
| NIGERIA          | 91%                             | 91%                                       | 92%  | 64%                                 | N/A                                   |
| UGANDA           | 99%                             | 99%                                       | 99%  | 95%                                 | 22%                                   |
| INDONESIA        | 97%                             | 95%                                       | 98%  | 93%                                 | 79%                                   |
| PAPUA NEW GUINEA | 80%                             | 71%                                       | 88%  | 74%                                 | 32%                                   |
| BRAZIL           | 94%                             | 87%                                       | 100%   | 96%                                 | 82%                                   |
| ECUADOR          | 98%                             | 100%                                      | 96%  | 91%                                 | 85%                                   |
| SOURCE           | OLAM CLMRS DATA                 |   |  | UNESCO INSTITUTE FOR STATISTICS     |                                       |

Source: (NORC, 2020; Olam Cocoa, 2020).

## Reducing Child Labor

Since concerns about child labor in cocoa started to arise in the media in 2000–2001, a considerable range of interventions have been put in place to investigate and combat this problem and considerable resources have been invested into research and interventions on this problem. Tulane University reports that the total funds for direct and indirect interventions received since 2001 by the organizations they have surveyed in Ghana and the Côte d’Ivoire exceeds USD 15 million. Despite such large investments from government, industry, and other stakeholders, concerns remain that not enough has been achieved on the ground and the media still report cases of child labor in cocoa (Berlan, 2013).

Most cocoa farmers do not consider child labor as a problem in cocoa production in West Africa. Most of them do not feel that interventions had been effective or even that the problem was appropriately well understood. The reason most cited is poverty or social traditions of child participation in the household economy. Although of course significant, ‘poverty’ as a single justification for child labor is insufficient because it is very ambiguous and in some cases, it might even be a misleading explanatory framework (Berlan, 2013).

In fact, several interviews with actors along the value chain point out that child labor reflects poverty. In their view, tackling it in the cocoa sector may not impact if child labor is not addressed country or region-wide and in all industries (Industry experts, personal communication, July 2021). While the Sustainable Cocoa Initiative brings the EU’s sustainability agenda to cocoa supply chains, and EU President von der Leyen announces a ‘zero-tolerance’

approach to child labor (European Commission, 2020a), others indicate that these 'zero tolerance' policies miss the fact that eliminating child labor from cocoa production does not solve child labor; it simply means children will work in fields other than those where cocoa is produced (Webb & Stanbury, 2020b). Fundamental public policy reform at origin country-level is required, for example, in terms of access to quality education.

## Re-Examining Child Labor through a New Lens

A potential conflict exists between the cultural model of children and ILO's broader goal of child labor eradication. The ILO emphasizes excluding children from the workplace, using age and the harm (physical and/or psychological) that they may be exposed to as the criteria for exclusion.

According to these standards, the involvement of children on cocoa farms in Ghana could be considered as hazardous based on several elements. However, it is common that children in Ghana socialize from an early age into using machetes every day to perform several tasks such as preparing food. As a result, children become very skilled in using machetes, since it is a widespread practice. Therefore, it might be misplaced that the use of these tools is only condemned on cocoa farms and not in schools, where they are normally used. It could be that the ILO campaign to end child labor is partly bearing the marks of a Western conceptualization of childhood, which believes labor to be negative (Berlan, 2009).

This Western lens of childhood might not be considering cultural differences. It may be ignoring that children's participation in the labor market, as well as housework, is considered a central part of the socialization process in many African countries. In most cases, the types of work that children are expected to do are established by the social and cultural organization of the community, which usually defines children's responsibilities. As a result, what is seen as children's work may vary from one country to another based on different social and cultural rules. However, formal definitions of child work, constructed from national surveys and international organizations involved in the field, are restricted and do not consider the socio-cultural dimensions of the phenomenon. When conducting research into child labor and children's harmful work, it is important to bear in mind that not all work undertaken by children is detrimental to their development. Certainly, work that does not impede children's development is considered positive as these kinds of activities provide children with valuable skills and experiences that contribute to make them more productive and responsible adults in the future (Lambon-Quayefio, 2021).

Child labor is considered by many societies in the developing world to be critical for developing character and discipline and preparing children to be competitive in the future job market. In some communities, child labor tends to have higher value over education, and children attending school instead of working can face social humiliation. Existing research suggests that these kinds of cultural attitudes play a particularly important role in the Ghanaian context, especially in the farms where it is common for children to work as apprentices. Many Ghanaian parents and their children believe that engaging in economic activities from a young age is the way to a productive life. Child labor is a crucial part of the socialization process, helping children learn the importance of a strong work ethic, along with other values. Ghanaian parents may have parenting styles quite different from those of Western societies. The difference of these styles might be related to several factors such as history, economic

system, culture, religion and the geography in which they grew up (Adonteng-Kissi, 2021).

Anthropologically, the representation of children among cocoa producers in West Africa as a single homogenous mass of oppressed victims (in spite of them having different ethnic origins and living in different regions in four different countries, each of which have distinct social dynamics, production patterns and marketing arrangements) is erroneous (Berlan, 2009). These representations may be biased and superfluous representations, which are not supported in any way by long-term and field-based qualitative research. By building and reaffirming a stock of erroneous ideas, they do not benefit needs of children and even deviate attention from more serious and widespread cases of child labor (Berlan, 2009).

## Actions for the Future

With the renewed interest in child labor and its worst forms through the Sustainable Development Goals, there is a need to re-examine and reanalyze available data to provide new insights for effective policymaking. In this direction, a review of survey protocols about whom to ask questions relating to child labor and children's harmful work is a critical step if new insights into the phenomenon are to be obtained. The conventional practice is that household heads or parents are selected as the main respondents to questions relating to children's work. A re-examination of child labor from the child's perspective may generate deeper insights into child labor. Also, there is a need to collect information about specific activities to understand better which activities can be hazardous work in the sector. The ILO Convention on the Worst Forms of Child Labor allows each country to prepare its list of hazardous activities in each sector of the economy. Based on this, a list of tasks that are commonly undertaken by children could be referred to during interviews and interactions with children during fieldwork. Understandably, this is likely to increase the time spent on interviews. However, this will deepen our understanding of the nature of activities undertaken and how long children engage in such activities (Lambon-Quayefo, 2021).

Major cocoa importing countries and regions, such as the EU and the United States, have the size and resources to drive change in the cocoa sector. This should include legislative action in partnership with the governments of cocoa-producing countries (Barry Callebaut, 2021b). While most agree that significant changes are needed in the way international supply chains operate, including cooperative collaboration, engaging the origin governments and looking critically at commodity trade, it is not clear how international spot and futures commodity exchanges, that are purely price-driven, are compatible with sustainability, which is driven by reductions in environmental degradation and better incomes (Initiative for Sustainable Agricultural Supply Chains, 2020).

## Youth

### Reasons for Youth Involvement in Cocoa Production

Contrary to child labor, where children younger than 18 years of age are deprived from education, playing, a healthy diet and sufficient rest, the involvement of youth as of the age of 16 is beneficial to the agricultural sectors. Youth councils in cooperatives in The Netherlands are commonplace, where youth brainstorm about business and operational innovation that is considered by the board of directors. In southern countries, the involvement of youth in

coffee and cocoa operations are a welcome stimulus to a generally aging agricultural population (Agriterra & Agriterrayouth, 2021).

Some youth venture into the business because they have no other feasible choice for a living, while others are passionate about it as a career dependent on technical or business administration training. Given the tremendous stress on cities and a lot of room to improve yield through technical skill, governments of West Africa in the first place, and iNGOs in the second place, would do well to invest in youth to become agribusiness professionals. In Ghana, young people who are engaged in cocoa farming supply labor to other farms and are engaged in the production and selling of cocoa seedlings. These youth offer their labor or cocoa seedlings as a substitute for the purchase of agrochemical inputs. This suggests that creating employment for young people in the cocoa-growing communities also promotes agroecological farming. The challenge of access to credit can be minimized if the youth establish contractual arrangements with Cocoa Licensed Buying Companies (LBCs) (Mabe et al., 2020).

## **Training of Youth**

Young people that receive training on cocoa value chain activities influence their participation in the value chain activities. Without skill training on cocoa production, the youth will continue to live as unskilled laborers (Mabe et al., 2020). Organizations such as Agriterra make training of youth an integral part of their approach, establishing business units and youth councils within cooperatives, exchanging ideas with youth councils of cooperatives in The Netherlands (Agriterra & Agriterrayouth, 2021).

## **Youth and Land Access**

A significant factor that influences young people to enter cocoa farming is access to land. According to Mabe et al. (2020), there should be deliberate efforts by the government (in Ghana through COCOBOD) to help the youth get access to fertile lands. This can be done through negotiation with chiefs and opinion leaders in cocoa-growing communities on how lands could be availed to the youth. Though sharecropping does exist, usually the young people who are the tenants lose out due to improper written documentation (Mabe et al., 2020).

## **Gender**

### **Challenges for Women in the Cocoa Industry**

Although with an extensively perceived economic role to play, women are hardly seen as economic actors in Sub-Saharan African contexts, both in domestic and community terms (Msonganzila, 2013). Yet, women are engaged in most of the steps of cocoa production, from preparing seedlings to selling beans and participate in household activities, child rearing, and food production, all of which adds up to a heavy workload. In many cases, women are excluded from land ownership, and partly due to a high percentage of women with low literacy levels, often do not share in the rewards of the family's farms. Additionally, women are often confronted with sociocultural systems that do not enable them to run their cocoa farm as a successful business. They also have a harder time accessing extension services, credits and

certification than their male counterparts, and are often underrepresented in farmers' organizations, public meetings and leadership roles in communities (A. Fountain & Huetz-Adams, 2020). There is an evident engagement of women in the first steps of the value chain, and in the production of artisanal chocolate, but a limited role in decision-making positions. (CBI, 2018). A difference is seen in different continents: "In Latin America the cooperatives are much more powerful, much better organized. They are often run by women, educated women, and you immediately see the difference when compared to Africa, where men are taking the lead" (Henk Veldman, Tony's Chocolonely, 2020). As in most other countries globally, women in cocoa are paid less than men for the same work. Also in consuming countries, women face challenges. Of the 10 key players in the cocoa industry<sup>16</sup>, only Hershey has a female CEO (and Cargill's head of HR is a woman).

## The Benefits of Gender Inclusion

If gender-inclusivity does not reach cocoa growing communities, this has negative consequences for the women themselves, but also for their communities, as women are change agents. Projects like poverty alleviation, infant nutrition, forest preservation and child labor awareness all become much more effective when women in the communities are involved. (A. Fountain & Huetz-Adams, 2020). What is often observed is that while women do a lot of labor on the fields, they are not registered at the coop level, as the male registers as head of the household; interviews with cooperatives suggest that a range of 17 percent to 30 percent was identified as registered women. This means that if formal training sessions are organized by FBOs or NGOs, it is usually only men that are invited, also because men are more 'mobile' and will travel to the coop office more often than women, who stay at home taking care of the family. Thus, the male has more contact with office and technical staff. He will also more often receive the household payment for the cocoa, which he brings in. Often it is the men that go to the office and receive the cash, but the question is if they are the best person at managing the money (UK Research and Innovation, 2021). Male earnings are often destined to individual spending, while women are more concerned with the financial allocation for the family as a whole (Kiewisch, 2015), with clear focus on educating their children, health, nutrition and family well-being (Women's World Banking, 2014). The establishment of loan associations should be encouraged to help women have more independence (CARE, 2017). Divine Chocolate and Kuapa Kokoo cooperatives are both led by women, and work toward achieving gender equality and women's empowerment. Body Shop cosmetics co-founded Divine Chocolate and still works with them stimulating not only the empowerment of women, but also in helping them develop cocoa butter to be used in their cosmetics (Ferro et al., 2021a).

## Correlation between Head-Of-Household Gender and Income

Some studies indicate that it matters whether the head of a household is a man or a woman, in terms of food security and poverty rates. Being the head of the household typically implies an important role in decision-making and it is also often related to ownership over assets such as land and taking responsibility for farm management. In West African marriages, the man normally self-identifies as the household head, suggesting that female-headed households typically will not have a husband in the house and have a smaller

<sup>16</sup> Barry Callebaut AG, Blommer Chocolate Company, Cargill, Inc., Ciranda, Inc., Guan Chong Cocoa, Olam International Limited, The Hershey Company, Touton SA, United Cocoa Processor, Inc., VJ Jindal Cocoa Pvt. Ltd.

household size than male-headed households. This may be the reason that in West Africa, although female-headed households have a slightly higher mean land size, they have a slightly lower mean yield (kg/ha); female-headed households have 0.5 fewer adult males in the household, which appears to drive higher hired labor costs, leading to lower net cocoa income. Nonetheless, the Ghana Living Standards Survey reports that, overall, poverty rates among female-headed households are lower than those of their male counterparts (25.9% versus 19.1%). Their findings are similar to what was found a decade ago (Bymolt, Laven, & Tyzler, 2018).

Findings suggest that the narrative ‘women typically do not own land’ is inaccurate for female-headed households: in Ghana, a slightly higher proportion of female-headed households (91%) reported being a landowner than male headed households (85%). In Côte d’Ivoire, 95 percent of the female-headed households are landowners, versus 98 percent of the male-headed households. In Ghana significant differences were found between certified male- and female-headed households: 38 percent of male-headed households reported they were certified compared with only 20 percent of female-headed households. In Côte d’Ivoire, comparisons between male and female-headed households are not particularly valid as many respondents stated “do not know”: the concept of certification is probably not well understood by many (Bymolt, Laven, & Tyzler, 2018).

### Other Issues Related to Gender

There are many other issues relating to gender, such as the gender imbalance in school attendance, which becomes more marked at higher ages as older girls are kept at home to help with various household tasks. Or how it is culturally unacceptable to require both husband and wife to sign the receipt when the cocoa money is handed to the man (at least that way the woman would know how much money has been paid). However, it is beyond the scope of this study to discuss all the issues affecting women in cocoa.

Another issue related to gender is the Female genital mutilation (FGM). There is an extremely high percentage of victims of female genital mutilation (FGM) in some cocoa producing countries, like Liberia, Nigeria (24,8%), Sierra Leone (89,6%) and Guinea (96,9%). FGM has been internationally recognized as a violation of the rights, health and integrity of women and girls and constitutes both a result and a perpetuation of gender inequality and discrimination against women and girls. The global consensus on the need to eliminate all forms of FGM worldwide is clearly reflected in Sustainable Development Goal No. 5 and in several United Nations Resolutions. “Although the actual number remains unknown (due to a lack of reliable data on girls younger than 15 years), it is estimated that at least 200 million girls and women have been subjected to FGM worldwide. It is worth noting that parents do not have their daughters cut with the intent to harm them, but because they think that they have no choice. They believe that their community or society requires them to continue practicing FGM and fear that if they do not conform, they and their families will face social sanctions such as social exclusion, disapproval, ridicule and difficulty in finding a husband for their daughters. In such contexts, having a law alone—even one that is effectively enforced—is not enough to eliminate this deeply rooted traditional practice. Strong law enforcement without efforts to promote social change is unlikely to have a positive effect and can even drive the practice underground” (Middelburg, 2017).

## Deforestation

### Deforestation in the Last 20 Years

In the last 20 years, humanity has not been able to curb deforestation on an annual basis, stripping between 3 to 6 million hectares of primary forest yearly. In 2020 12.2 million hectares of tree cover<sup>17</sup> was lost. A third of this tree cover loss, 4.2 million hectares, represents tropical primary forests. The carbon emissions from this primary forest loss represent 2.64 Gt CO<sub>2</sub>, which is equivalent to the annual emissions of 570 million cars (more than double the number of cars on the road in the United States). Ironically, 2020 was meant to be a landmark year in the fight against deforestation. The many companies, countries and international organizations who had pledged to halve or completely stop forest loss in the end continued to fail in meeting these targets (Weisse & Goldman, 2021a). Analysis by IDH (2020) also shows that “despite a host of successful initiatives, gains to reduce deforestation have remained modest, and in fact worsened in some regions. The ambitious objectives set forth by governments, companies, civil society, and indigenous peoples’ organizations in the New York Declaration on Forests in 2014 was not met by 2020” (IDH, 2020). Since 2013, the murder count of land and environmental defenders has doubled, to 227 in 2020, mostly in Colombia, Mexico, Philippines, and Brazil. It is thought that the number is actually much higher, as it does not reflect unregistered murders, especially in Africa (Watts, 2021).

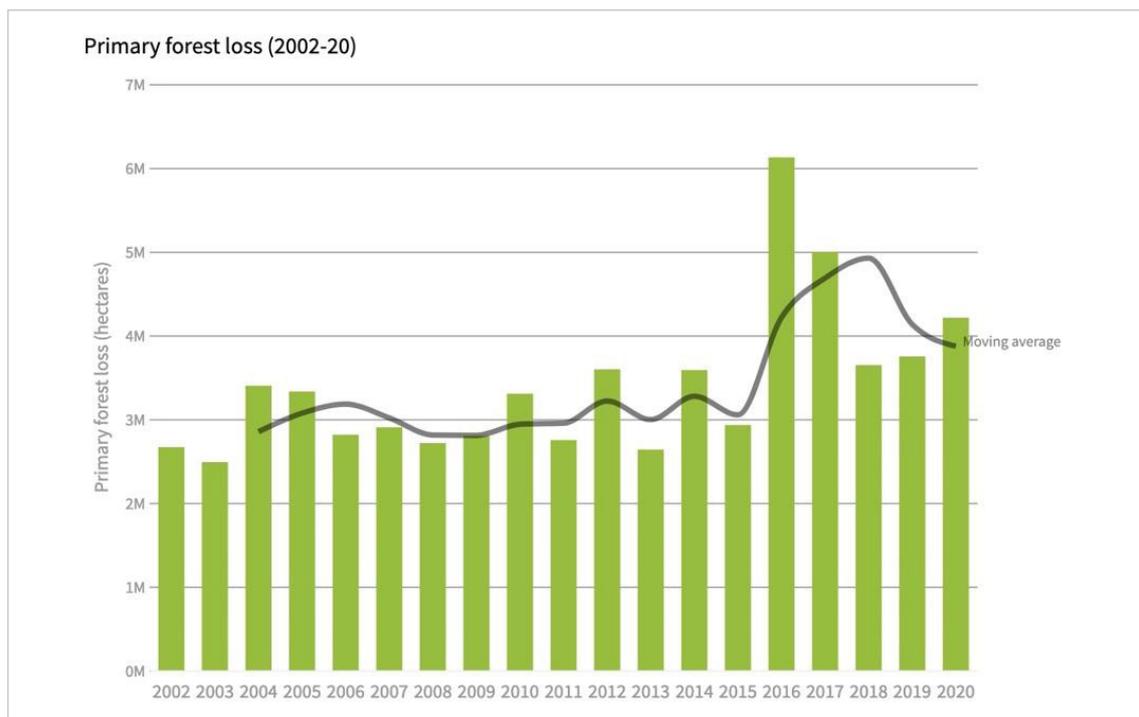


Figure 79. Primary forest loss from 2002 to 2020. Source: Weisse & Goldman, 2021b

### The Global State of Deforestation in 2021

As of July 2021, it is reported that primary forest loss is either decelerating or accelerating

<sup>17</sup> Tree cover refers to trees in plantations as well as natural forests.

compared to 2020 but maintains its rate of some 4,2 million hectares annually (the size of The Netherlands). Many of the ongoing losses in countries like Brazil and the Democratic Republic of the Congo continue to follow similar patterns to last year, while Indonesia continues to experience relatively low rates of primary forest loss. Brazil shows no signs of reducing primary forest loss from the high levels experienced in 2020 (1.7 million hectares); Brazil by itself represents 40 percent of global deforestation. Large-scale clear cuts have continued over the first six months of 2021, even in the “Environmental Protection Area” of Triunfo do Xingu and around the borders of the Xingu Indigenous Park. In the Amazon, the government’s DETER system detected 17 percent more deforestation between January and June of 2021 than the same period in 2020. Rising palm oil prices may result in increased deforestation (Weisse & Goldman, 2021a).

### The Main Causes of Deforestation in Tropical Countries

Agricultural production is the major cause of deforestation and forest degradation in tropical and sub-tropical countries. The Intergovernmental Panel on Climate Change (IPCC) reported that global per capita supply of vegetable oils and meat, which are major land use commodities, has more than doubled since 1961 (IDH, 2020). The main driver of this increase in agricultural production is a growing demand for the world population, particularly in emerging economies, which results in expansion of the cultivated area as there is lack of knowledge on how to improve yield, e.g., effective use of (organic) fertilizer applications and other GAP’s. In cocoa, labor-intensive maintenance of old plantations spurs farmers into forest area, where smaller trees are cut, and large ones set on fire<sup>18</sup>. Historically, farmers have abandoned old cocoa farms and cultivate new farms (often by cutting down forest) and use up the ‘forest rent’, although forest land is less and less available (Kozicka et al., 2018).

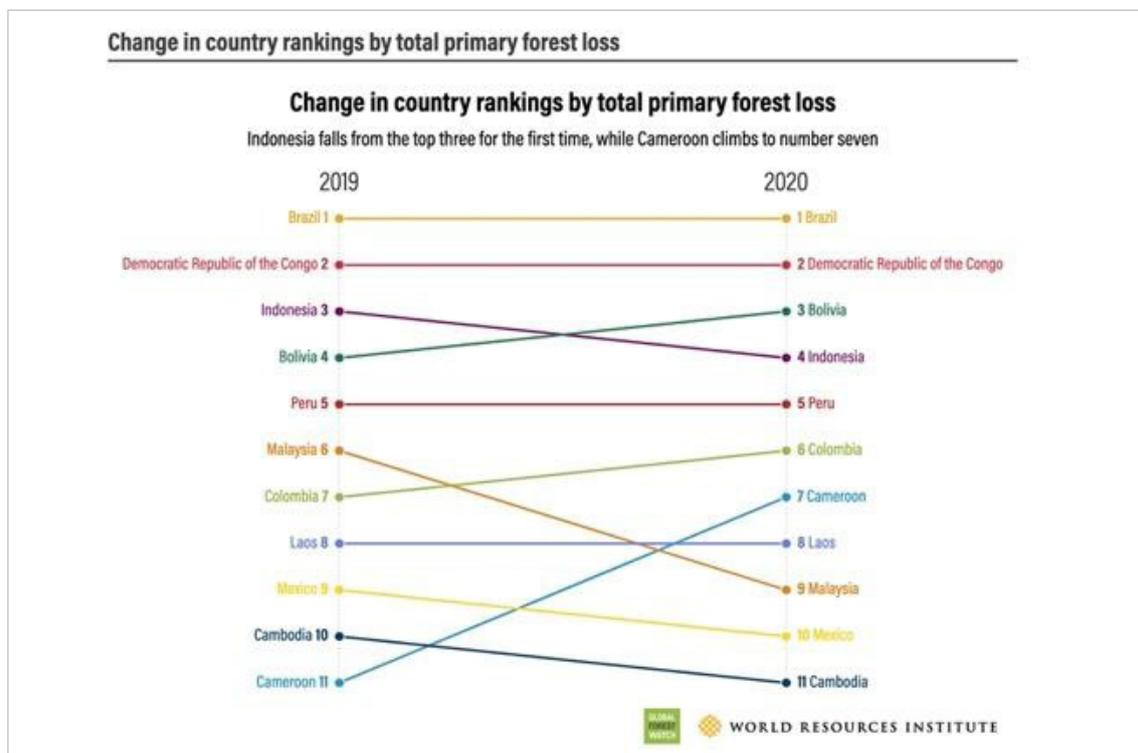


Figure 80. Change in country rankings by total primary forest loss. Source: Global Forest Watch, 2021

<sup>18</sup> Shown by the DW documentary Bitter Chocolate, since taken offline

The migration of internally displaced people that produce food crops is a severe driver of deforestation, such is the case as well in the Democratic Republic of Congo (DRC), migrants acquire land from the local chiefs and plant short-cycle rice, long-cycle rice, and maize on new fields opened in the forest. Farmers will only plant cocoa after two to three years, when the soil fertility begins to reduce. Another major cause of deforestation is illegal logging and the production of charcoal. When a logging concession is granted, and a road is built into the forest to source the wood, the population follows and clears fields for agricultural use within the concession. Timber theft and piracy of truckloads of wood are also common, with officials' knowledge and cooperation. Local authorities facilitate further deforestation; in the DRC, local chiefs will sell any amount of land to any buyer. If the land is not being used, the chief will sell it again regardless of the first contract. As a result of this practice, farmers or businessmen will clear all the land they obtain to avoid losing it to another buyer (De Beule et al., 2014). The link between deforestation and poverty is clear, as many rural poor depend on natural resources for their livelihoods. This results from the high levels of geographical coincidence between tropical forests and most of the world's rural poor (FAO, 2007).

## Deforestation and Climate

An analysis conducted by Francois Ruf et al. (2014) stated that climate and drought were not the main drivers of cocoa migrations, but rather the perceived availability of forest land for planting. A decrease in rainfall in the cocoa regions during the 1970s and 1980s was not primarily a response to local deforestation related to cocoa farming, although deforestation may have caused microclimatic changes. Climate extremes like the 1982–3 droughts also triggered adaptations of farming practices like replanting and crop diversification.

## Deforestation and Cocoa Production

It is estimated that over the 2001–2015 period, cocoa farming has caused 1.9 percent of global agriculture-linked deforestation. It is a smaller share compared to that attributed to cattle, oil palm, and soy, but it particularly affects rainforests in biodiversity hotspot areas (Kroeger et al., 2017; Weisse & Goldman, 2021a). According to the World Resources Institute (WRI), Côte d'Ivoire and Ghana accounted for 22 percent and 10 percent of the total cocoa-related deforested area, respectively. This corresponds to 25 percent and 33 percent of total tree cover loss in Côte d'Ivoire and Ghana over that period, respectively (Weisse & Goldman, 2021a).

Cocoa agriculture does not always correlate to deforestation: in Colombia, for instance, Castro-Nuñez found that regardless of its widespread production across Colombia, in the past 15 years cocoa has not been an important driver of deforestation. This suggests that efforts to end deforestation in the Colombian cocoa sector emerged following global trends, and not because of an evident link between cocoa production and deforestation (Castro-Nunez et al., 2020). In Figure 81 cocoa is found to be one of the more responsible commodities, in comparison with soy, timber and palm oil. Nonetheless, cocoa has a low percentage of responsibly sourced volume, namely only 30 percent (IDH, 2020).



Figure 81. Share of what is considered ‘responsible’ production, per commodity. Source: IDH, 2020

### Countries with High Risk for Deforestation

In Latin America, the Brazilian Amazon and Cerrado, as well as the “Grand Chaco” stretching over Argentina, Paraguay and Uruguay are the most at risk due to cattle ranching and (to a lesser extent) soy production. In Southeast Asia, primary forests in Indonesia and Malaysia, are at risk mostly due to palm oil, wood pulp and rubber production (IDH, 2020) as well as shifting agriculture such as Dayak rice farmers in Kalimantan (Masarang Foundation, 2020). In Africa, incremental forest degradation due to smallholder farming and logging is most apparent in the Democratic Republic of the Congo, and it is expected that the Congo Basin may soon host oil palm plantations. The rate of deforestation in Côte d’Ivoire and Ghana seems to be slowing down, in part due to the Cocoa and Forests Initiative, what little remains of the forests there continues to be threatened (IDH, 2020).

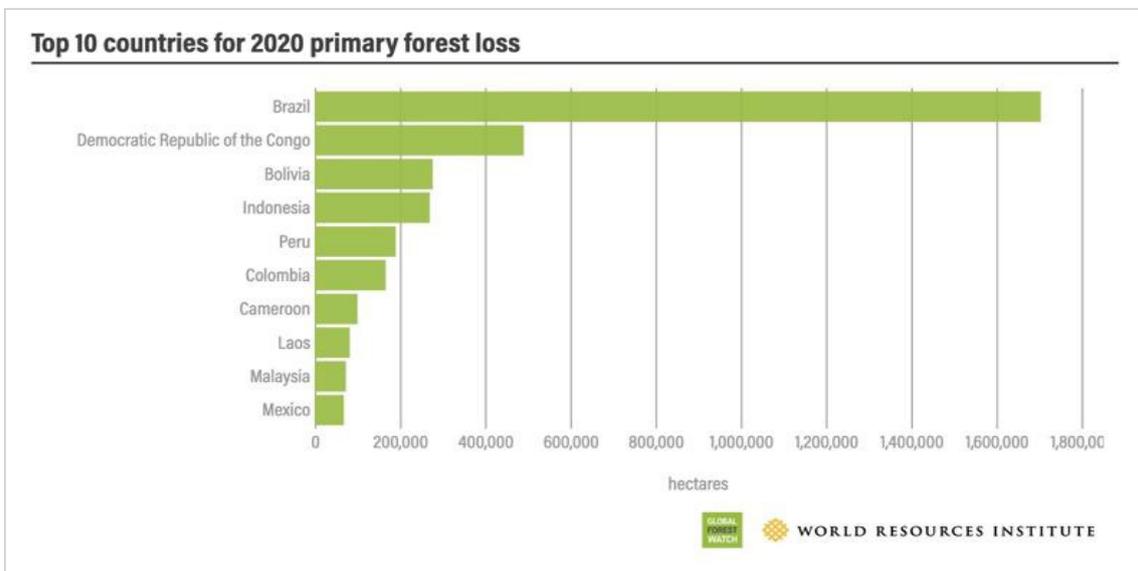


Figure 82. Top 10 countries for 2020 primary forest loss. Source: Global Forest Watch, 2021

### Deforestation and COVID-19

No obvious, systematic shift in forest loss trends can be clearly linked to COVID-19. However, there have been reports of increased illegal harvesting in protected areas, as these were temporarily closed to the public and had restrictions on ranger activities. Another trend is

the large numbers of people returning to rural areas, and disruptions in the supply chains. It is not clear yet if this will affect forests and require further study. Of importance will be how countries choose to rebuild their economies after the coronavirus pandemic. “Some countries have already weakened environmental protections in the name of economic recovery. Whether countries take the opportunity to rebuild in a way that better safeguards their forests, or instead resort to cutting them down to bring back their economies, will impact forest loss for years to come” (Weisse & Goldman, 2021a).

## Deforestation and Yield

Increased agricultural output can be obtained with increased yield or expansion of cropland. Since the expansion of the agricultural frontier is reaching a limit, the improvement of yield performance is critical; small households are unable to subsist on this crop only (Gomez et al., 2011; Kozicka et al., 2018; Tothmihaly, 2018). Farming on existing land will become more challenging as soil fertility management is neglected (both soil health and availability of nutrients). Yield on existing farms will decline and replanting will become increasingly difficult whilst young farms on old land without soil management will not yield well (see section on Soil Health). On the other hand, productivity levels could certainly be boosted on existing land by applying ‘good agricultural practices (GAP). For cocoa, this includes particularly:

- taking care of soil health, sufficient pruning (ventilation through the farm prevents disease).
- the identification and propagation (through grafting) of highly productive ‘elite’ trees.
- It is recommended to maintain (or create) agroforestry systems to retain ground water supply, prevent erosion and to maintain (or generate) a micro-climate that provides rain.

Highly productive full-sun clones such as CCN-51 and Mercedes varieties may, in the short term, create high yield but could in the end prove disastrous as they have stripped the land of the necessary vegetation for a healthy agroecology.

## Agroforestry – A Solution to Deforestation?

Agroforestry is the purposeful integration of trees in the farming landscape for generating social, economic and environmental benefits. Agroforestry is a significant contributor in alleviating poverty (Garrity, 2004) which aims to cut the number of hungry and desperately poor by at least half by 2015. Such pathways include fertilizer tree systems for smallholders with limited access to adequate crop nutrients, and expanded tree cropping and improved tree product processing and marketing. These advances can also help address lack of enterprise opportunities on small-scale farms, inequitable returns to small-scale farmers (especially women, commercialization of agroforestry tree products (AFTPs) is rapidly gaining grounds.



Photo: Ahmed Jallanzo, courtesy of CBI

Agroforestry is ideal for cocoa—after all, the plant once only grew wild in the Amazon Forest—and can be a tool to leverage pro-poor development. Ingram et al. (2014) demonstrate how disadvantaged and marginalized people can be empowered by interventions to positively influence the benefits gained in the chains. However, agroforestry systems are complex as their design and implementation must draw on multiple perspectives: 1) cocoa farms as diversified production systems, 2) cocoa farms as sustainable livelihood systems, and 3) cocoa farms as competitive enterprises capable of facing the challenges of the market (Kozicka et al., 2018).

Strategic partnerships with private sector, state and civil society organizations play a key role in changing the position and activities of actors (Vellema & Helmsing, 2011). Viraponga and colleagues emphasize how forest product chains can be used as a development tool to improve the livelihood stability of socio-economically vulnerable communities (Ingram et al., 2014). The Masarang Foundation has been working with farmers on growing back agroforests in Indonesia, harnessing products such as cassava, cocoa, coffee and Arenga sugar, as explained in this TedTalk. La Campesina (Nicaragua), La Divisoria (Peru), UNOCACE (Ecuador) and FEDECOVERA (Guatemala) are examples of cooperatives and coop unions that work with cocoa in agroforestry. ACOPAGRO (Peru) planted three million trees in eight years and takes care of a natural area of 108,000 ha.

### Adoption by Farmers of Agroforestry

Adoption of agroforestry by farmers currently in cocoa monoculture systems still seems minimal, as costs and benefits of agroforestry are often unclear to farmers, and many farmers have been led to believe that full-sun monoculture is the way to go. There are also investments involved in transitioning to agroforestry. Many farmers themselves cannot afford it and look towards NGOs like Solidaridad that can help finance the rolling out of cocoa in agroforestry, such as in Liberia. Land and tree tenure insecurity are other barriers, and when farmers have access to new cocoa planting material, these are often varieties like CCN-51 in Latin America or Mercedes in West Africa, which have been adapted to full-sun conditions, and therefore are not very suitable for agroforestry. In Côte d'Ivoire, despite a great number of tree distribution campaigns, distributed tree survival was less than 2 percent (A. C. Fountain & Huetz-Adams, 2020). Even when trees do survive distribution, most young tree seedlings are cut down during weeding, due to a lack of training on agroforestry practices provided to the person who is doing the actual work at farm level, such as sharecroppers (Uribe-Leitz & Ruf, 2019).

### Compatible Varieties of Cocoa Trees for Agroforestry

In 2018, World Cocoa Foundation (2019) started working on transformation of traditional cocoa agroforestry systems to climate-smart cocoa agroforestry systems in the Dominican Republic, El Salvador, Honduras, and Nicaragua, in association with national or regional research institutes, such as the Honduran FHIA and CATIE. The practice involved the use of grafted polyclones, complementary irrigation, fertilizer use based on soil analysis, intensive pruning management, efficient floor management, integrated pest management, soil conservation practices, and diversification of agroforestry systems with fruits, timber, and service trees in optimal density. Attention was also given to the selection of correct varieties or clones of cocoa plants. Self- or inter-compatible clones (between five

to seven) were planted in single or double rows, depending on the interest of the farmer, using different models, developed by CATIE and FHIA:

- High productivity model: UF-221, Caucasia-47, FHIA-330, CCN-51, SCC-61, IMC-67, SPA-9 y EET-48.
- High tolerance to moniliasis model: Caucasia-57, CCN-51, Caucacia-39, EET-96, EET-400, ICS-95 y FHIA-330.
- Fine flavor cocoa model: ICS-39, ICS-6, ICS-1, TSH-565, ICS-60, UF613, IMC-67, UF-221, UF-676, y UF-667.

World Cocoa Foundation (WCF) developed web-based tools to assess the current state of climate readiness. They monitor and evaluate performance of newly established agroforestry systems and the agroforestry systems' performance and conduct cost-benefit and financial analysis of climate-smart cocoa agroforestry systems. Given that the project started in 2018, definitive results on productivity and a complete cost-benefit analysis are not in yet. However, educated projections on output from the third to the tenth year were made leading up to yields between 740 kg and 1000 kg per year expected between year 11 and 25 (World Cocoa Foundation, 2019). This exceeds full-sun, biodiversity-poor planting models with 'high productivity clones' such the Mercedes variety, in Ghana and Côte d'Ivoire, where yield has remained between 400 – 650 kg/ha during the last 20 years for those countries, with an upward trend in Ghana and slightly decreasing trend in Côte d'Ivoire (Kozicka et al., 2018).

INGENIC, part of the INCOCOA network of cocoa scientists, provides Integrated Breeding Platforms (IBP), which are web-based solutions for crop breeders, where registered users can access purpose-built tools to manage their plant breeding programs, obtain support, find new knowledge, access training resources, and have peer-discussions. It includes a Breeding Management System (BMS), which is interconnected breeding software specifically designed to help breeders with project planning, data management, statistical analysis, and decision-making in their integrated plant breeding programs for cocoa.

## Deforestation and Living Income

If clearing of protected forest areas for cocoa growing is prevented effectively across the globe, production increases will find land as a limiting factor, thus creating scarcity and increasing its price. This points out the need for formal land property rights and forest protection enforcement. But also, that the cocoa sector cannot be considered in isolation from the rest of the agricultural sector (Boysen et al., 2021), as a price hike in cocoa would motivate farmers to replace other crops with cocoa, thus driving the price down again. This dynamic would then create scarcity with the other crop(s), thus finding a balance in the end. The main point being that if agricultural land is limited, prices will increase with scarcity. In contrast, good agricultural practices will increase yield but, most of all, resilience against climate change, pests, and plagues. If forests are not off-limits to farm expansion soon enough the arable land will be limited by desertification, either through global climate change or microclimatic changes resulting from local deforestation (Francois Ruf et al., 2014).

## Examples of Deforestation in Cocoa Producing Countries

The four largest cocoa producing countries (Côte d'Ivoire, Ghana, Ecuador and Indonesia) lost a combined area of 10.4 million hectares (the size of Kentucky) in the last two decades, with Indonesia taking the lion share of 94 percent (Global Forest Watch, 2021). As a result of cocoa production, seven of the 23 Ivorian protected areas have been almost entirely converted to cocoa. Between 1960 and 2010, the forest areas of Côte d'Ivoire shrank from 16 million hectares (around 50% of the country) to less than two million hectares. It was often displaced persons from other parts of the country or migrants from neighboring countries who established plantations on protected areas (Hütz-Adams & Schneeweiß, 2018).

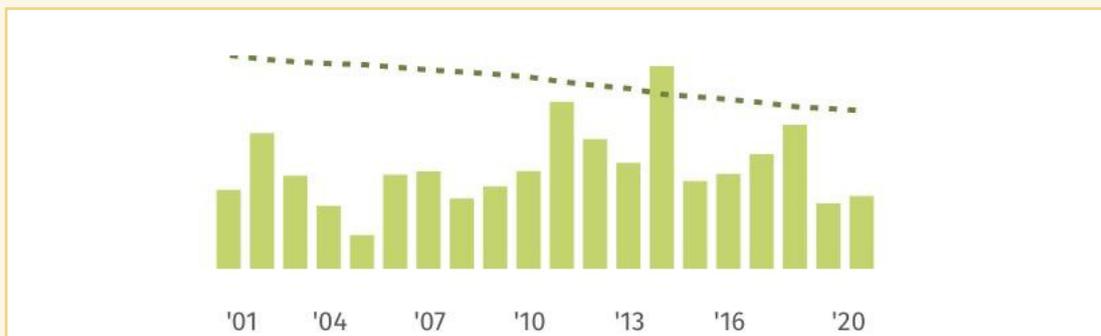
*For below cases, note that methodologies have changed, especially after 2015 (Global Forest Watch, 2021). The horizontal units are to be ascertained by using the highest column, for which the number is listed.*

**Indonesia:** From 2001 to 2020, Indonesia lost 9.75 Mha of humid primary forest, making up 36% of its total tree cover loss in the same period.



Total area of humid primary forest in Indonesia decreased by 10% in this period. In this graph 2020 showed the highest loss: 929 kHa (Source: Global Forest Watch, 2021).

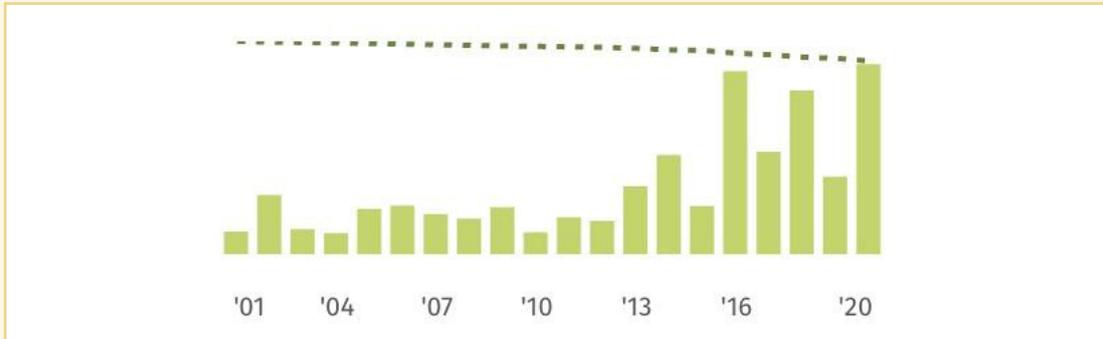
**Côte d'Ivoire:** From 2001 to 2020, Côte d'Ivoire lost 362 kha of humid primary forest, making up 11% of its total tree cover<sup>19</sup> loss in the same period.



Total area of humid primary forest in Côte d'Ivoire decreased by 26% in this period. In this graph 2014 showed the highest loss: 3,1kHa (Source: Global Forest Watch, 2021).

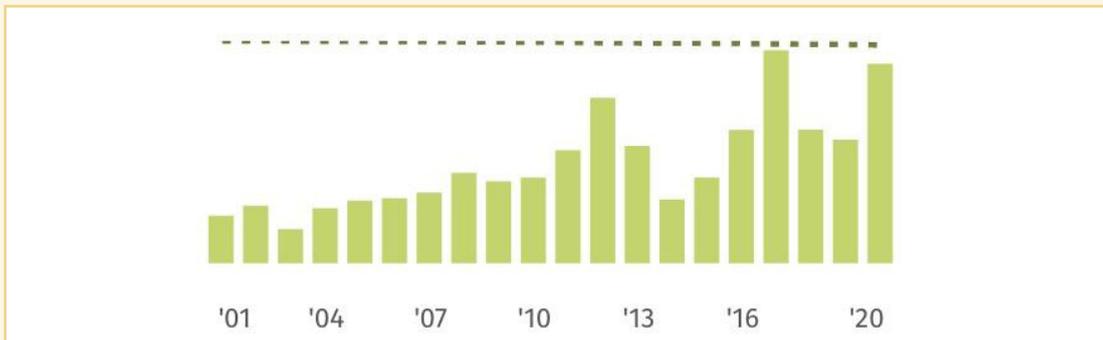
<sup>19</sup> Tree cover refers to trees in plantations as well as natural forests.

**Ghana:** From 2001 to 2020, Ghana lost 103 kha of humid primary forest, making up 7.8% of its total tree cover loss in the same period.



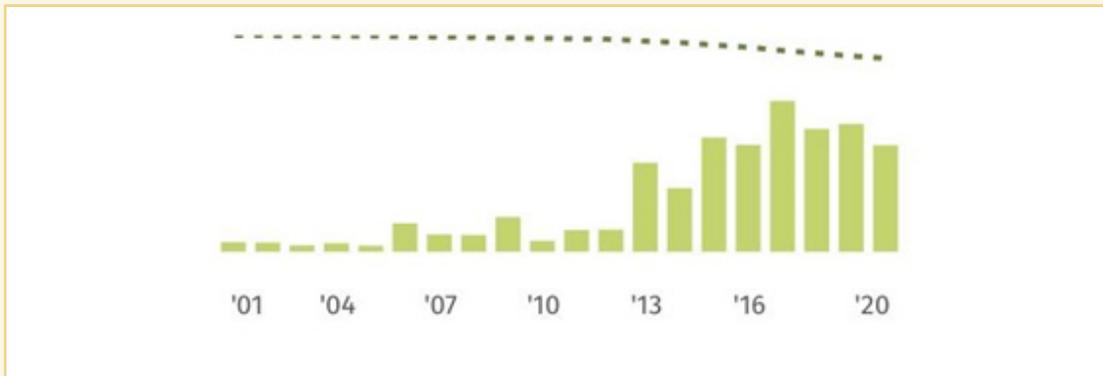
Total area of humid primary forest in Ghana decreased by 9.3% in this period. In this graph 2020 showed the highest loss: 14.3 kHa (Source: Global Forest Watch, 2021).

**Ecuador:** From 2001 to 2020, Ecuador lost 198 kha of humid primary forest, making up 23% of its total tree cover loss in the same period.



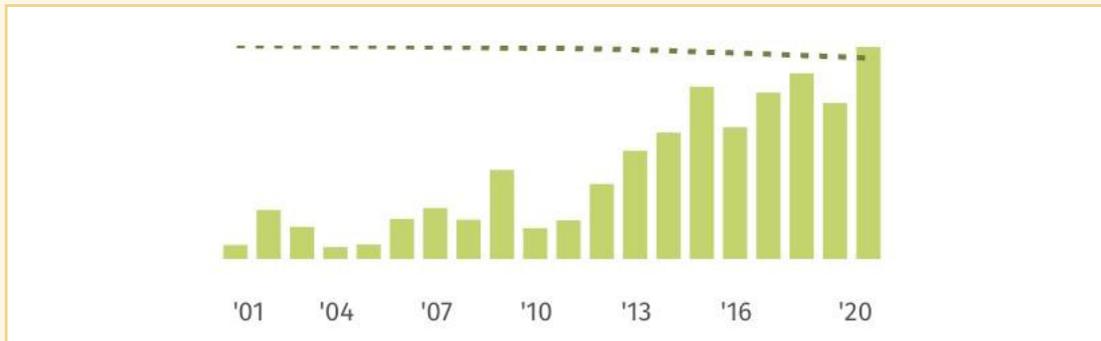
Total area of humid primary forest in Ecuador decreased by 1.8% in this period. In this graph 2017 showed the highest loss: 21.1 kHa (Source: Global Forest Watch, 2021).

**Sierra Leone:** From 2001 to 2020, Sierra Leone lost 29.7 kha of humid primary forest, making up 1.7% of its total tree cover loss in the same period.



Total area of humid primary forest in Sierra Leone decreased by 11% in this period. In this graph 2017 showed the highest loss: 4.18 kHa (Source: Global Forest Watch, 2021).

**Liberia:** From 2001 to 2020, Liberia lost 262 kha of humid primary forest, making up 14% of its total tree cover loss in the same period.



Total area of humid primary forest in Liberia decreased by 5.9% in this period. In this graph 2020 showed the highest loss: 31.8 kHa (Source: Global Forest Watch, 2021).

## What Major Companies are Doing about Deforestation

Major companies continue to import significant parts of the global production of agricultural commodities, with links to deforestation (IDH, 2020). The industry is currently investing in GPS technology to monitor and map deforestation risk, plant forest trees to increase carbon capture, and deliver tools and training as farmers need to grow more cocoa on less land. For example, in 2019–2020, Olam distributed 740,233 trees for agroforestry and income diversification, Barry Callebaut distributed 1.6 million shade trees. Olam trained 115,694 farmers on the importance of preserving forests. Major companies, among which Barry Callebaut, Mars Wrigley, Ferrero, Mars, Mondelēz and Nestle, are also calling upon governments to legislate, feeling that environmental laws in consumption markets like the United States and the EU would not only create a level playing field across the supply chain but also strengthen the industry’s efforts to tackle deforestation and carbon emissions issues (as well as poverty reduction and child labor) (The Voice Network, 2021a) Mars Wrigley and Mondelēz International. In the COP26 FACT (Forest, Agriculture and Commodity Trade) Dialogue, the industry intends to collaborate with its partners to share best practices from the cocoa sector on how to turn the tide on commodity-driven deforestation (Olam Cocoa, 2020).

## What FBOs are Doing about Deforestation (Together With NGOs)

Local companies, such as cooperatives, may join conservation organizations for environmental protection, such as the Sierra Leonean NGOCFU cooperative union, teaming up with Gola Rainforest Conservation (GRC). The Congolese cooperative Esco Kivu is supported by the Wildlife conservation Society (WCS), where active promotion of cocoa growing was combined with financing from the International Fertilizer Development Center (IFDC) to develop 1,250 ha of forest-cover cocoa within the context of the national REDD + program. Government extension workers are responsible for conducting training on cocoa growing and forest conservation, and farmers are advised to cut undergrowth in the forest rather than cutting everything down. However, there is limited involvement by the government extension workers, and farmers rely strongly on the assistance of the Esco extension workers for training. Most of the farmers prefer to cut down everything and plant cocoa and food crops instead of just cocoa. WCS seems to accept this practice if the farmers replant sufficient shade trees, thus at

least creating agroforestry (De Beule et al., 2014). This goes against the idea that agroforestry should not replace forest areas and should only be used to restore degraded land (A. Fountain & Huetz-Adams, 2020). However, expansion of the cocoa growing area appears to be limited and is mainly on agricultural land (De Beule et al., 2014).

## What Retailers are Doing about Deforestation

In some countries, retailers are increasingly becoming part of the discussion, especially on national levels through the national cocoa platforms mentioned in the regulations section of this chapter. Several individual retailers have started sustainability projects, often in collaboration with actors from further upstream reaching an FBO in the supply chain. Examples of retailers engaged in deforestation are:

- Lidl's "Way To Go" project with the Kuapa Kokoo cooperative in Ghana.
- Ahold's collaboration with Tony's Chocolonely for Ahold's private label "Delicate Chocolate" are examples of how retailers can start moving towards more sustainable cocoa sourcing.
- Another notable example is the German retailer initiative for living income. The Retailer Cocoa Coalition brings together several European retailers with a specific focus on combating deforestation.

## What Governments are Doing about Deforestation

In contrast to subsistence use, commercial harvests are generally associated with over-exploitation unless governance institutions (whether formal, international, customary or market based) effectively regulate and control their use to mitigate degradation (Ingram et al., 2014). In 2015, the signatories of the Amsterdam Declaration came together to commit to zero net deforestation and preservation of primary forests in the supply chains of the key tropical commodities—palm oil, soy, and cocoa—by 2020. Efforts to prevent deforestation must include a wider scope of deforestation-linked commodities, including beef, wood pulp, tropical timber, rubber, and coffee (IDH, 2020).

In 2017, the Cocoa & Forests Initiative was launched, chaired by the governments of Côte d'Ivoire, Ghana and Colombia, and is facilitated by IDH and WCF (funded by P4F and BUZA). CFI brings together all the relevant stakeholders – the cocoa and chocolate industry (35 companies so far, accounting for over 85% of global cocoa usage), governments of producing countries, cooperatives, farmers, and rural communities to end deforestation. The actors spell out detailed individual action plans. These plans spell out the specific actions each company will take during 2018-2022, to deliver on their commitments set out in the Frameworks for Action. Each company's action plan has been aligned to the National Implementation Plans. Downloads of these frameworks and action plans, as well as CFI progress reports are available on the IDH/CFI website (IDH/CFI, 2021).

## Climate Change

### Current State of the Climate

“It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. The scale of recent changes across the climate system as a whole and the present state of many aspects of the climate system are unprecedented over many centuries to many thousands of years. Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since our last (fifth) report” (IPCC, 2021).

### Possible Climate Futures

“Global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered. Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in carbon dioxide (CO<sub>2</sub>) and other greenhouse gas emissions occur in the coming decades. Many changes in the climate system become larger in direct relation to increasing global warming. They include increases in the frequency and intensity of hot extremes, marine heatwaves, and heavy precipitation, agricultural and ecological droughts in some regions, and proportion of intense tropical cyclones, as well as reductions in Arctic Sea ice, snow cover and permafrost. Continued global warming is projected to further intensify the global water cycle, including its variability, global monsoon precipitation and the severity of wet and dry events. Under scenarios with increasing CO<sub>2</sub> emissions, the ocean and land carbon sinks are projected to be less effective at slowing the accumulation of CO<sub>2</sub> in the atmosphere. Many changes due to past and future greenhouse gas emissions are irreversible for centuries to millennia, especially changes in the ocean, ice sheets and global sea level.” (IPCC, 2021).

### Climate Change and Cocoa Production

Climate change is a growing concern in crop production in general and cocoa production in particular (Kozicka et al., 2018). Adverse weather and pests are major factors influencing cocoa yields: it is estimated that diseases destroy about 30 percent of the global production every year (UNCTAD, 2006). Climate change may be a catalyst for diseases. Cocoa can only be grown in certain warm and humid regions, and three-quarters of global output is produced within eight degrees of the equator. There is speculation that climate change in these countries might cause production to plummet in the long term. Others believe that some countries have considerable potential to expand production, especially in Latin America (The Economist, 2021). In West Africa, cocoa has been a “pioneer crop”. Instead of replanting aging plantations, farmers usually migrate to the forest frontiers to establish a new cocoa farm.

During the second half of the twentieth century, in Côte d’Ivoire the cocoa frontier moved from the drier east to the wetter southwest of the country, fueled by massive immigration of prospective cocoa farmers from the savanna. The main driver of this migration was ‘perceived availability of land’, and its resulting deforestation may have caused microclimatic changes

(Francois Ruf et al., 2014). Analyzing cocoa’s vulnerability to climate change in the West African cocoa belt, based on climate projections for the 2050s with IPCC findings (2016), it found that: 1) temperatures are projected to become as or more limiting for cocoa water availability; 2) systematic use of adaptation strategies like shade trees in cocoa farms will be necessary, in reversal of the current trend of shade reduction; 3) the most vulnerable areas are near the forest-savanna transition in Nigeria and eastern Côte d’Ivoire, and the least vulnerable areas are in the southern parts of Cameroon, Ghana, Côte d’Ivoire and Liberia; 4) this spatial differentiation of climate vulnerability may lead to future shifts in cocoa production within the region, with the opportunity of partially compensating losses and gains, but also the risk of local production expansion leading to new deforestation (Schroth, Läderach, Martinez-Valle, Bunn, & Jassogne, 2016).

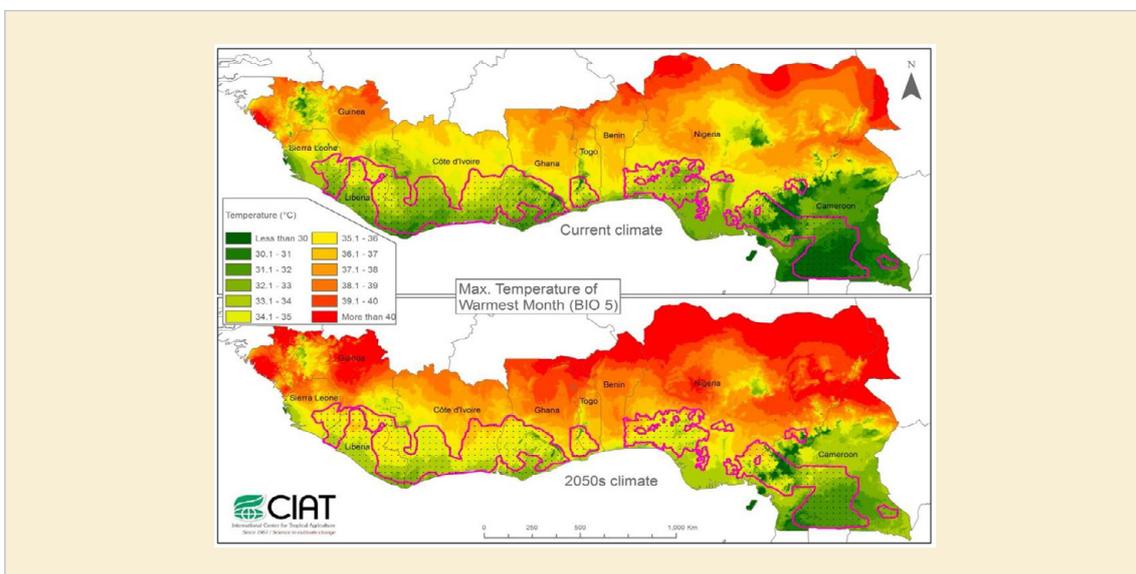


Figure 83. Maximum temperature of warmest months. Source: Schroth, Läderach, Martinez-Valle, Bunn, & Jassogne, 2016

Figure 83 shows the maximum temperature of the warmest month under current and projected 2050s climate conditions in the West African cocoa belt. The dotted area shows the extent of current cocoa production as used for model calibration. The red lines show areas of cocoa production.

### Climate Change and Migration

The IBRD/WB reports that by 2050, Sub-Saharan Africa could see as many as 86 million internal climate migrations as follows:

- East Asia and the Pacific, 49 million.
- South Asia, 40 million
- North Africa, 19 million
- Latin America, 17 million
- Eastern Europe and Central Asia, 5 million.

In total, climate change could force 216 million people across these six world regions to move within their countries by 2050. Hotspots of internal climate migration could emerge as early as 2030 and continue to spread and intensify by 2050 (Clement et al., 2021).



### What the International Community is Doing about Climate Change

Most of the work to reduce emissions of GHG needs to be done in the industrialized nations, as these are the largest polluters; the tropical (including cocoa growing) regions contribute the least to climate-change but will suffer the most under it. In 1997, the Kyoto Protocol extended the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits state parties to reduce GHG emissions, based on the scientific consensus that (part one) global warming is occurring and (part two) that human-made CO<sub>2</sub> emissions are driving it. The Kyoto Protocol entered into force on Feb. 16, 2005. There were 192 parties to the Protocol in 2020. The United States, although a signatory to the Kyoto Protocol, has neither ratified nor withdrawn from the protocol. (In 1997, the U.S. Senate voted unanimously that it was not the sense of the Senate that the United States should be a signatory to the Kyoto Protocol) (Dunn, 2021).

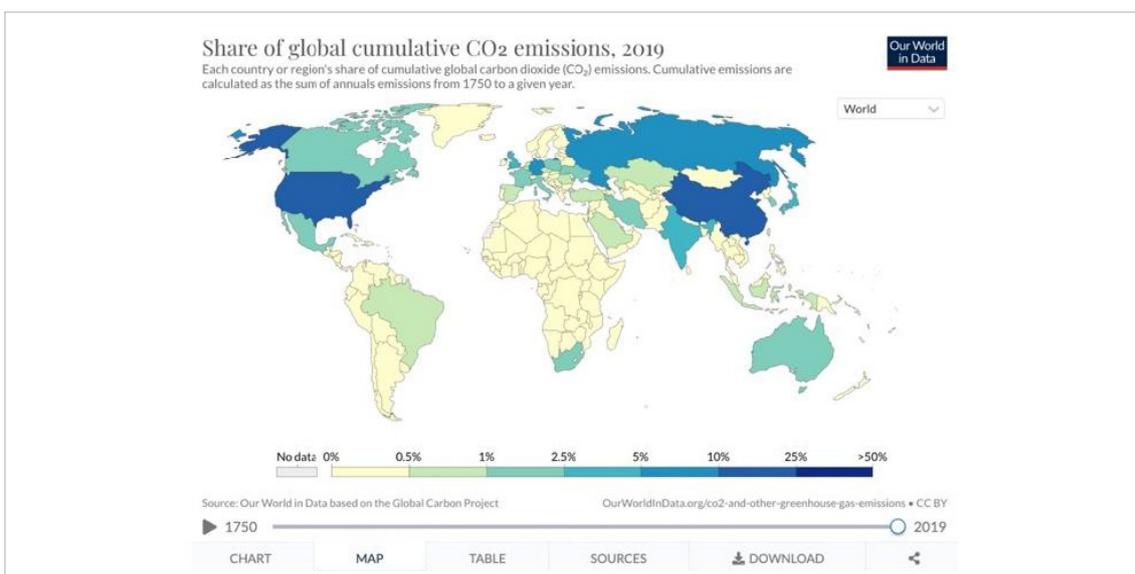


Figure 84. Share of global CO<sub>2</sub> emissions. Source: Our World In Data, 2021; Ritchie & Roser, 2021

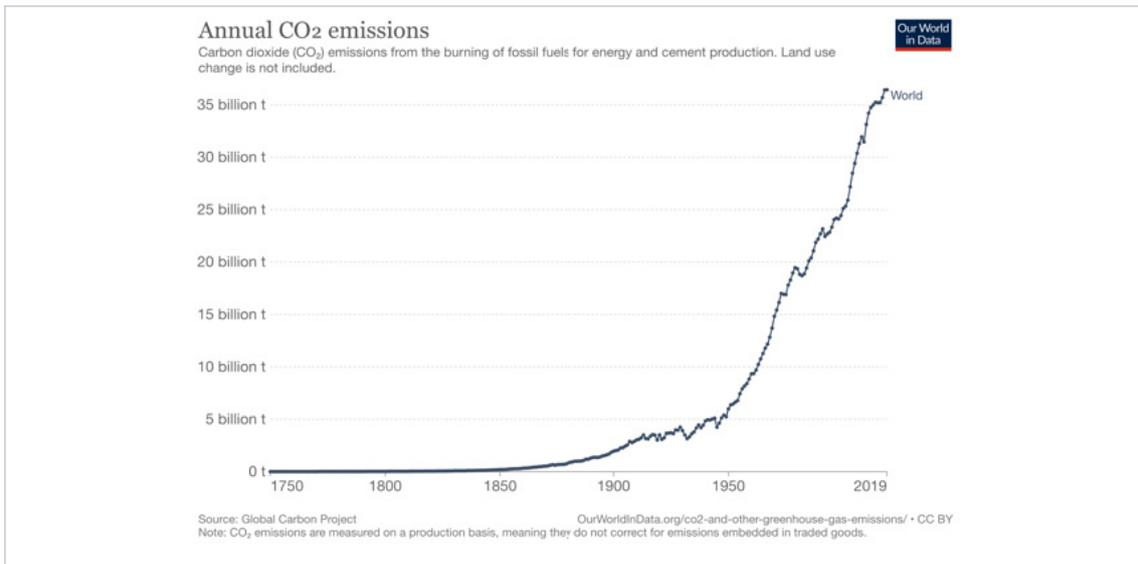


Figure 85. Annual CO<sub>2</sub> emissions. Source: Ritchie & Roser, 2021

Ultimately, there is one climate measurement that matters most: How quickly the entire world can get to zero emissions and halt the warming of the planet. To avoid many of the most catastrophic risks of climate change, such as the collapse of polar ice sheets or widespread crop failures, IPCC scientists agree we need zero emissions from fossil fuels and deforestation by around mid-century. On that score, the world is still falling far short. While the United States and the EU are both now vowing to get roughly halfway to zero by 2030—on the way to net zero emissions by 2050—they account for only one-quarter of global greenhouse gas emissions. Many lower-income countries, including China—pledging climate neutrality in 2060—and India, still expect their emissions to either plateau or keep rising over the next decade (Plumer & Popovich, 2021).

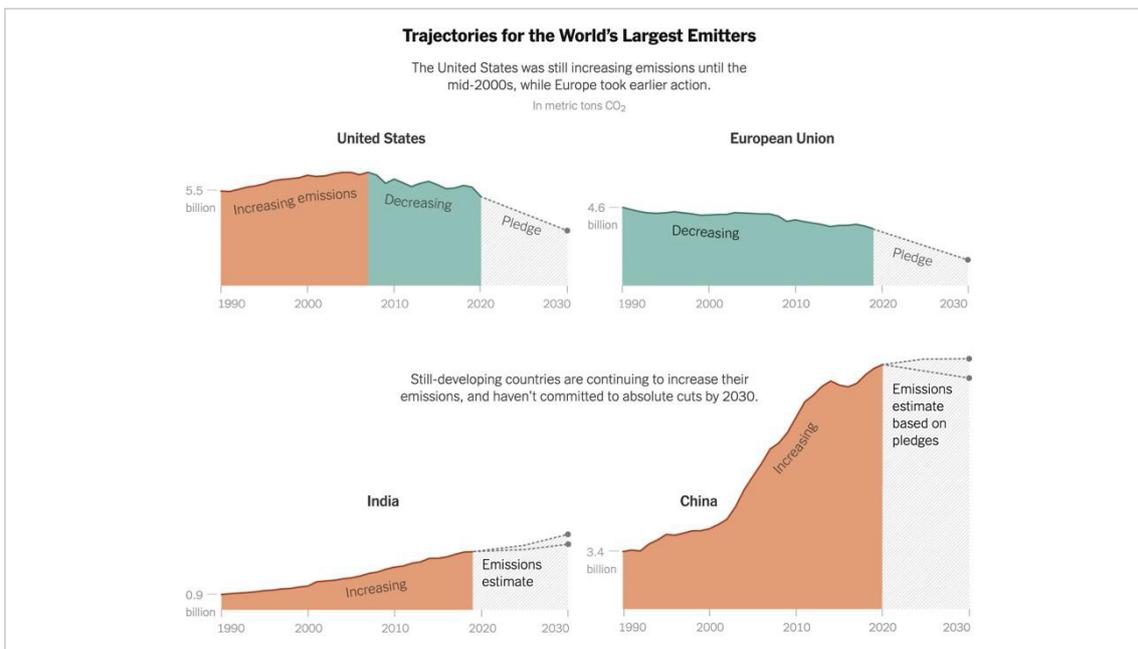


Figure 86. The world's largest emitters. Source: Plumer & Popovich, 2021

## What the United States is Doing about Climate Change

President Biden has long vowed to transform the United States into a global leader on climate change, after the Trump administration had primarily dismissed the issue for four years.

Currently, the United States uses far more fossil fuels per person than almost any other country in the world (although China is quickly narrowing the gap).

- The United States aims to cut its greenhouse gas emissions 50 percent to 52 percent below 2005 levels by 2030. The United States has decided to measure its reductions from 2005, which is roughly when the nation's fossil fuel emissions reached a peak. (European countries tend to measure their reductions from 1990, when emissions began falling across the continent because of early climate policies and the collapse of polluting Communist economies in the East.)
- To get at least a 50 percent cut by 2030, a variety of studies have found that the United States would need to adopt sweeping new policies, including mandating utilities to install vastly more wind and solar power, persuading Americans to buy many more electric cars, and forcing oil and gas companies to slash emissions of methane, a potent heat-trapping gas.
- The Biden administration has paused construction of the Keystone XL Pipeline, created a National Climate Task Force and paused oil and gas leases on public lands. His administration has also proposed spending on climate change in his infrastructure bill, including USD 174 Billion for electric cars and USD 35 Billion for Research & Development in climate- focused technology.
- An infrastructural proposal, estimated at between USD 3 trillion and USD 4 trillion, includes tax incentives for clean energy and electric vehicles. The Environmental Protection Agency is looking at enacting stricter regulations for tailpipe pollution from cars and trucks and for methane emissions.
- None of the above measures have passed into law yet, facing an uncertain fate in Congress and the courts: many Republicans in Congress have argued that the Biden administration is acting too aggressively on climate change when countries like China and India have yet to commit to absolute emissions cuts. In addition, there is the fear that a change of president in the United States in 2024 might undo much of the passed legislation – like Trump did with Obama's environmental acts. (In the EU there is a broader political consensus around climate policy that does not change too drastically when different parties take power) (Plumer & Popovich, 2021).
- States and municipalities often function as “policy laboratories”, developing initiatives that serve as models for federal action. This has been especially true with environmental regulation –most federal environmental laws have been based on state models. In addition, state actions can have a significant impact on emissions, because many individual states emit high levels of greenhouse gases. Texas, for example, emits more than France, while California's emissions exceed those of Brazil. States like California and New York are expected to be following through on their

plans to clean up their power plants and vehicle fleets (Plumer & Popovich, 2021).

## What the EU is Doing about Climate Change

The EU Commission's 'Green Deal' includes a 'Fit for 55 package' that is to lead to a reduction of 55 percent less CO<sub>2</sub> by 2030 compared to 1990, on the way to achieve EU climate neutrality (net zero CO<sub>2</sub> emissions) by 2050. The latest (Sept 2021) proposals from President Von der Leyen and Green Deal Commissioner Timmermans are as follows:

- To link the price of fuel for cars and heating of homes and offices to their CO<sub>2</sub> emission. This will stimulate the use of clean fuel but will lead to higher fuel prices in the short term. To prevent 'energy poverty' (citizens who can no longer afford their heating and transport), as well as a new wave of protests, the Commission is presenting a Social Climate Fund reportedly worth EUR 20 billion per year, funded half from the EU-budget and half by individual Member States. The fund is filled with the proceeds of the CO<sub>2</sub> emission rights that fuel producers such as Shell and Esso must buy. An EU recovery fund of EUR 750 billion is used for the renovation of houses, so that the energy costs for families will drop again.
- The EU proposes to tighten the emission requirements for new cars and vans, which is politically sensitive particularly in member states with a car industry (Germany, France, Italy, Czech Republic). These must emit 55 percent less CO<sub>2</sub> in 2030 (current requirement is 37.5% less) and be completely clean (zero CO<sub>2</sub> emissions) by 2035. That means the end of the classic combustion engine. To encourage citizens to drive electrically, EUR 4 million is expected to be earmarked for new charging stations.
- The phasing out of free CO<sub>2</sub> rights for the aviation, steel and cement industries will also meet with resistance. Free aviation rights would disappear in 2028, leading to higher airfares.
- The Commission wants 40 percent of the energy used to be generated sustainably by 2030 (currently the target is 32%) and energy savings must be reduced to 37 percent (current target: 32%). The higher ambition for energy savings means that three times as many houses must be renovated every year than now.
- Although a large part of science, society (including the Netherlands House of Representatives) last year called for a stop on biomass subsidies, there is still a strong lobby towards Brussels for the continuation of this, as well as for the controversial 'sustainable' production-forestry in Sweden and Finland. In 2030, 30 percent of European nature must be protected to preserve biodiversity.
- Discussion is also inevitable about the planned carbon tax on imports from foreign companies to avoid unfair competition with EU companies. The United States and China are very critical of this tax (Peeperkorn, 2021; Raaij, 2021; Swart et al., 2021).

## What China is Doing about Climate Change

China, the world's largest emitter of greenhouse gases, is not yet committing to specific cuts before 2030. China's argument is that it was slower to industrialize than the United States and Europe, and therefore needs more time for a transition to clean energy.

- China plans to have net zero emissions by 2060.
- China has pledged that its emissions will peak by around 2030, with efforts to peak earlier – China announced (September 2021) a divestment in coal plants outside of its country and plans to lower carbon intensity by over 65 percent in 2030 compared to 2005 levels.
- Share of non-fossil fuels in primary energy consumption to “around 25 percent” in 2030, (up from “around 20%”).
- Getting one-quarter of its electricity from low-carbon sources (wind, solar or nuclear)
- Increase the installed capacity of wind and solar power to 1,200 GW by 2030.
- Increase forest stock volume by around 6 billion cubic meters in 2030, (previously 4.5 billion cubic meters) (Climate Action Tracker, 2020).

## What Other Countries are Doing about Climate Change

- At the Glasgow climate summit, India announced its goal for carbon-neutrality in 2070, and has announced goals for increasing the use of cleaner energy sources like solar power and slowing its growth in fossil-fuel consumption. Officials there point out that India is still much poorer than the United States or Europe, and it is unfair to hold them to the same standard.
- Japan announced it would strengthen its climate targets, aiming for a 44 percent cut below 2005 levels by 2030 (Yamaguchi, 2021).
- Canada updated its climate goals, committing to a 40 – 45 percent cut below 2005 levels by 2030 (Plumer & Popovich, 2021).

## Soil Health

### Soil Health and Sustainability

For a permanent and sustainable agriculture soil health is imperative. Soil health is defined as the capacity of the soil to function as a living system, maintaining a diverse community of microorganisms that form beneficial symbiotic associations with plant roots and help to control populations of insects, weeds and plant diseases (FAO, 2015). Soil Health can be achieved by a combination of techniques such as zero tillage, regenerative agriculture, or agroforestry and organic inputs. The organic inputs are commonly composted materials such as animal manure, crop residues, wood ashes, tree leaves, weeds from canals, wild grasses,

but also urban sewage, and street refuse. Soil health improves quality and volume of crop production while reducing soil erosion and nutrient runoff (Chen & Wu, n.d.). However, agriculture has changed considerably, and farmers are now facing problems of rapid soil degradation and soil productivity loss (Chen & Wu, n.d.; Kozicka et al., 2018). According to a report by the United Nations Environmental Program, the accumulation of chemicals on our planet can be considered as the third planetary crisis (in addition to climate change and the extinction of plants and animals) (United Nations Environment Programme, 2021). Over the next ten years, we expect to double the number of chemical substances we introduce here on earth, according to Jacob de Boer, professor of environmental chemistry and toxicology at the VU University in Amsterdam.

According to soil researcher Violette Geissen from Wageningen University, 'we live under a blanket of poison'. Our soil is filled with a disturbing cocktail of many substances without proper knowledge about which concentrations exactly are harmful to humans and animals, or what they do to the health of the soil. According to the RIVM, the Dutch National Institute for Public Health and the Environment, the so-called combined exposure is one of the spearheads of the EU's new long-term strategy for the environment (Van Hal, 2021).

## Composting

Composting is the biological degradation and stabilization of organic matter derived from plants, animals or humans through the action of diverse microorganisms under aerobic conditions (Fischer & Glaser, 2016a). Bacteria, fungi, actinomycetes, and earthworms are the main actors of the composting of common materials such as food waste, leaves, grass and plant trimmings, straw, shredded paper, animal manure, and municipal solid waste. The final product is a stable dark-brown or black crumbly material with an earthy smell. Modern technology of composting introduced technical improvements as forced aeration, mechanical shredding, mixing, grinding, drying, remineralization and even inoculation with microbial decomposers ('beneficial microorganisms') have been introduced.

Composting is basically a microbial bio-oxidative process that changes the properties of organic material into a material that is safe to apply to crops as fertilizer or soil conditioner, whereby organic matter content is usually used as an index of soil fertility (Chen & Wu, n.d.). One can differentiate between heap composting, pit composting (air-less) and (the more sophisticated) worm composting.

Numerous publications provide evidence that compost improves the soil's physical, chemical and biological properties. (Chen & Wu, n.d.; Fischer & Glaser, 2016a). Application may trigger immediate improvements such as increasing microbial activity and diversity. Microbial activity is important as only a well-balanced community of microorganisms can counteract microbes that would potentially create diseases, such as fungi, if becoming dominant (Borge, 2021). The fibrous portion of organic matter plays an important role in improving soil physical properties. Soil organic matter (SOM) improves permeability and aeration of clayey soils, reduces soil erosion, and controls the water balance for sustainable soil management system.

Organic matter (humus fraction) accounts for at least half of the 'cation exchange capacity' (CEC) of soils. (Chen & Wu, n.d.). CEC is a measure of the capacity of the soil to retain several nutrients in plant-available form; a cation is a positively charged ion (Astera, 2014). Thus,

organic matter is very important not only in retaining nutrients from fertilizers applied but also in increasing the buffering capacity of soils, enabling crops to better cope with such stresses as soil acidity and nutrient excess. Organic matter and biological activity helps to fix nitrogen (N) from the atmosphere and increases availability of many nutrient elements locked in the soils, phosphorus (P), potassium (K), sulfur (S), and —importantly—micronutrients one does not find easily in synthetic NPK fertilizers such as Iron, Zinc, Boron, Cobalt, Copper, Molybdenum, Selenium and Manganese (Chen & Wu, n.d.; Borge, 2021; Chen & Wu, n.d.).

## Bio-Liquids

Organic crop fertilization can be supported also with organic bio-liquids ('Bio-L'). These products contain diverse bacterial metabolites rich in bioavailable nutrients that can be sprayed directly to leaves of a crop. These liquids can be manufactured on-farm by harvesting microorganisms from the soil, after which a variety of mineral-rich sources are added (e.g., ash, milk, algae, rock dust) as well as multiplication-agents for the microorganisms (e.g., molasses, sugar). Once mixed, and stored in absence of oxygen, a fermentation processes occur. This produces a liquid that can be stored for many months. A farmer can then use (part of) the liquid, diluted 1:20 with clean (rain) water, and spray or brush it on the stomata (bottom part) of the crop leaves. This enhances mineral uptake and strengthens the plants immune system against pathogens and pests by creating a community of well-balanced microorganisms.

## Nutrient Levels in Organic Compost Versus Mineral Fertilizer

Experiences by cooperatives such as La Divisoria (Peru), Coca-fcal-Capucas and Coca-felol (Honduras) show that yield for cocoa and coffee produced under organic composting systems rivals that of cocoa and coffee yields produced with commercial mineral fertilizer (Progreso Foundation, 2010). Fischer and Glaser, who are pro-organic methods, admit that crop yields after pure compost application are mostly lower when compared to mineral (synthetic) fertilization at least during the first years because of the slow release of nutrients (especially nitrogen) during mineralization of compost. A common practice in composting is the addition of manure. Manure enriches organic compost with NPK, but the NPK levels of enriched compost are still below commercial fertilizer levels (Fischer & Glaser, 2016a). The added value of compost resides not only in the intrinsic nutritional NPK levels, but also in the content of organic matter and more importantly in diverse groups of beneficial microbes able to deploy new functionality to the soil. However, organic composting requires a long-term commitment from the farmer to reap the benefits of a well-balanced soil system that can transport all macronutrients and micronutrients to the plant, while fending off potentially harmful microorganisms holding water better and conferring resistance to erosion (Borge, 2021).

## Pros and Cons of Synthetic (Mineral) Fertilizer and Pesticides

Maintaining high levels of agricultural productivity and profitability while reducing pesticide use presents a significant challenge, especially in nutrient depleted soils. Small amounts of chemicals in the form of fertilizers, insecticides and fungicides seem unavoidable in the effective management of (cocoa) farms. Much of the agricultural production growth of the last century can be attributed to the use of synthetic fertilizers and pesticides (Afrane & Ntiamoah, 2011). Worldwide, use of synthetic fertilizer and pesticides has tripled between 1970 and 2010, with no signs of stagnating growth. However, fertilizers and pesticides have

produced more than 400 “dead zones in coastal ecosystems totaling more than 245,000 Km<sub>2</sub> (an area bigger than the United Kingdom or Ecuador) (United Nations Environment Programme, 2021) and show up in agricultural produce in excessive levels. Synthetic fertilizer and pesticides strip soil of their organic matter, biodiversity and communities of microorganisms that keep harmful pathogens at bay (such as those that create black pod).

The research of Chabousou 2004, demonstrated how the use of synthetic fertilizers and pesticides create metabolic disorders in the plants hindering the synthesis of proteins or cellulose and leaving the plant with abnormal high concentrations of amino acids and sugars, that make the plant prone to attacks from insects and diseases (Chaboussou, 2004).

Mycelium threads in the soil that transport important micronutrients to plants are destroyed when applying synthetic fertilizer and pesticides (Borge, 2021). There are clear indications that the current agricultural practices for cocoa production are not sustainable, from both the environmental and economic perspectives. Continued increase in the costs and amounts of chemicals put into the environment does not portend well for the future of this cash crop. In the long-term, integrated pest management (IPM), which encourages natural control of pest populations, promises to reduce the use of pesticides (Afrane & Ntiamoah, 2011).

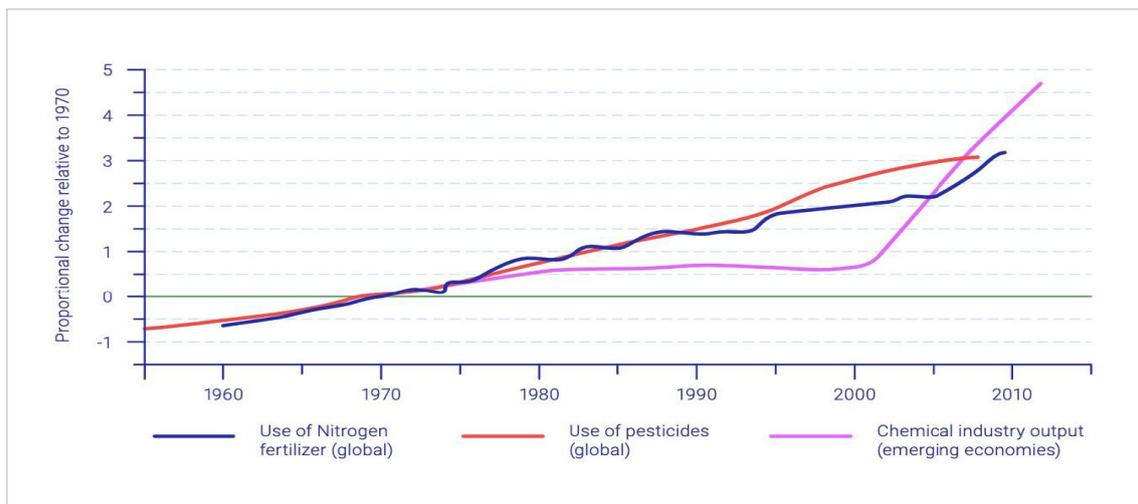


Figure 87. Examples of growth in the global use of chemicals and the output of the chemical industry in emerging economies in the period of 1955-2015. Source: UNEP, 2021

## The Role of Integrated Pest Management in Cocoa Production

Integrated pest management (IPM) is a broad-based approach that integrates practices for economic control of pest populations below the economic harm level. IPM emphasizes the growth of a healthy crop with the least possible disruption to agroecosystems and encourages natural pest control mechanisms. Entomologists and ecologists have urged the adoption of IPM pest control since the 1970s (Knipling, 1972).

Some of the techniques used in IPM include enhancing natural enemies (insects), planting pest-resistant crops, and - only when necessary - careful use of pesticides. Technologies are presently available for the safe use of pesticides in cocoa. However, introducing Good Agricultural Practices to the millions (often illiterate) smallholder farmers in the cocoa sector

is a major challenge, especially as pesticides continue to be attractive to most farmers and governments because they are simple to use. Also, synthetic fertilizer and pesticide packages are often subsidized by governments, making it even harder to make the switch to IPM (let alone to organic methods). A switch to IPM must include careful planning, and intensive education and training at the farm level, along with local research. Importantly, promoting IPM will require adjusting those subsidies and policies that encourage extensive pesticide use; otherwise, farmers may not be able to resist the temptation of going back to their old ways (Afrane & Ntiamoah, 2011).

### Standards on Maximum Residue Levels (MRL)

The acceptable levels of active ingredients in foods are determined by the committee on Pesticide Residue of FAO/WHO, known as the Codex Alimentarius Commission, CAC, which was created in 1963. The CAC implements the Joint FAO/WHO Food Standards Program with the aim to protect the health of consumers and ensure fair trade practices in the international food trade. The commission has set maximum levels of residue poisons in commodities going to the international market, including cocoa. If for any reason the residual levels in any commodity exceed the Codex levels, that commodity could be rejected by the importing country. The EU, the United States, and other countries base their regulations on the Codex but may include additional requirements. Japan, for instance, banned coffee beans from Ethiopia and Indonesia due to Organo Chlorine Pesticides (OCP's) and Carbaryl, respectively. At the same time, in the EU, the issue of Cadmium, Glyphosate and Ethylene Oxide has recently received much attention (Various importers, personal communication, July 2021).

### Cocoa is Highly Susceptible to Becoming Contaminated with Pesticide Residues

The cocoa bean has a high content of butter or fat, which absorbs the active ingredients in insecticides. Secondly, the accumulation of any chemicals in the cocoa fat may change the taste of the beans and eventually that of the chocolate made from them. This is known as tainting. In particular, the herbicide Glyphosate D24 leaves residues in cocoa and is widely used in Côte d'Ivoire (it is a banned substance, so is being offloaded cheaply), particularly on larger farms to alleviate manual labor (under-brushing). From interviews, it was found that much of this contaminated cocoa finds its way into the Sierra Leonean organic supply chain. In 2020, 60 percent of the organic-certified cocoa imported by one major company did not pass the residue test (Anonymous, personal communication, 2021). Certain companies are now becoming stricter and will only pay the organic premium after the residue test is done in the processed cocoa fat. The cross-border traffic makes the urgency for solid traceability systems apparent.

### Evidence on Yield and Disease Control with Organic Fertilizers

Organic fertilizer is especially interesting for farmers that have not applied anything to their cocoa crops. Positive results have been reported not only in cocoa but also in coffee and rice.

**Coffee:** A group of nearly 466 farmers applied organic fertilization to their coffee crop in Rwanda early 2019 and experienced an immediate increase in yield (ABAKUNDAKAWA, 2019). In 2013-2014, various Honduran coffee cooperatives reported that the coffee rust disease affected conventional coffee farms more (an average of 40% of the farms) than organic farms (15%-20%), as the latter benefitted from better shade and humidity control as well as

application of organic fertilizer (COAGRICAL, 2014).

**Cocoa:** Ivorian cooperatives have reported that black pod incidence was reduced after the use of liquid organic fertilizers, as well as an increase in branch and leaf regeneration, more flowering and fruiting in less than one year (Borge, 2021).

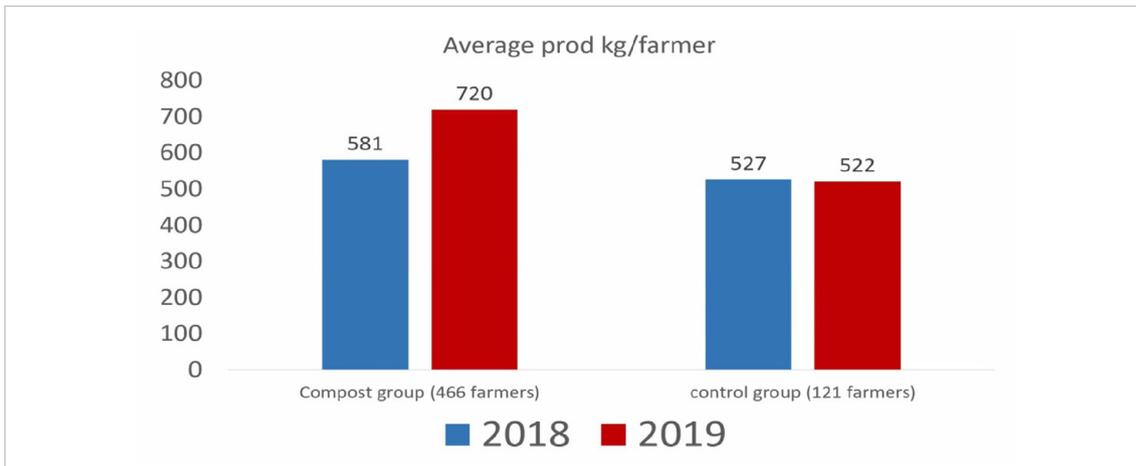


Figure 88. Results of coffee cherry yield before and after applying organic compost. Source: Abakundakawa, 2019



Figure 89. Farmers at an organic composting workshop in Rwanda. Source: RockInSoils, 2021 (Photo credit: Rubén Borge)

## Ivory coast

- Tree regeneration
- new leaves more shadow
- New Branches
- Green color healthy health
- Better flower
- Better fruiting
- Increase production
- Less tan 1 year tree response



Figure 90: Findings by RockInSoils in Côte d'Ivoire, after application of (liquid) organic fertilizer. Source: Borge, 2021

**Rice:** In Indonesia, various rice companies are demonstrating that yield increases are possible with organic farming, and diseases in the communities decrease as they no longer spray toxic pesticides. The companies report that the production costs of organic fertilizer are equal to those of mineral fertilizer plus the accompanying pesticides used to produce conventional rice. (Organic fertilizers are less expensive but more of it is needed per hectare: two metric tons instead of 500 kg). The rice companies validate the theory that in the beginning of the organic practice (converting from commercial synthetic fertilizers) there is lower yield, but after a few years this changes to an even higher yield with organic production than conventional production<sup>20</sup>. Additionally, there is a (30%) higher selling price (Pt. Sarinah Agro, 2019; Sirtanio, 2018)

## Soil Health and Climate Change

A study conducted by Rutgers University revealed that there is a limit to how much carbon dioxide plants can absorb (Smit et al., 2020). Global observations suggest that natural ecosystems take up about as much carbon dioxide as they emit; plants also respire, so the CO<sub>2</sub> levels are barely changed (Whelan et al., 2020). Farm practices that enable soil carbon sequestration can improve soil quality, eco- efficiency, and profitability (Gomez et al., 2011). Biochar has received much attention for its role in reducing carbon emissions as it is a form of charcoal, produced by thermal conversion of biomass under low-oxygen (O<sub>2</sub>) conditions. It significantly prolongs the lifetime of biomass materials and thus helpful for global carbon sequestration. Realistic estimates are that annual net CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions could be reduced significantly, corresponding to 16 percent of current anthropogenic CO<sub>2</sub> emissions with the application of biochar. Therefore, biochar can significantly contribute to climate change mitigation. An impressive example by Fischer & Glaser (2016b) is the production of biochar from organic wastes in an environmentally friendly way, while also generating heat and electricity from renewable, carbon neutral resources. Thus, a decentralized application of this technology represents a promising and sustainable strategy for the future (idem).

<sup>20</sup> Whereas in conventional production rice farmers in Java typically harvest three times six metric tons during the wet season plus two times three metric tons in the dry season over a period of two years, which results in 24 metric tons/ha in two years = 12 metric tons/ha/yr. With organic rice production, these two companies achieved within two to three years five harvests of at least six (sometimes seven) metric tons of rice over a period of two years (interestingly no change between wet or dry season), which results in 5 x 6 metric tons/ha = 30 metric tons/ha in two years = 15 metric tons /ha/yr. It was also reported that in conventional rice production sometimes one entire crop is lost (because of its lower resistance to pests or pathogens), leaving them with only four harvests instead of five.

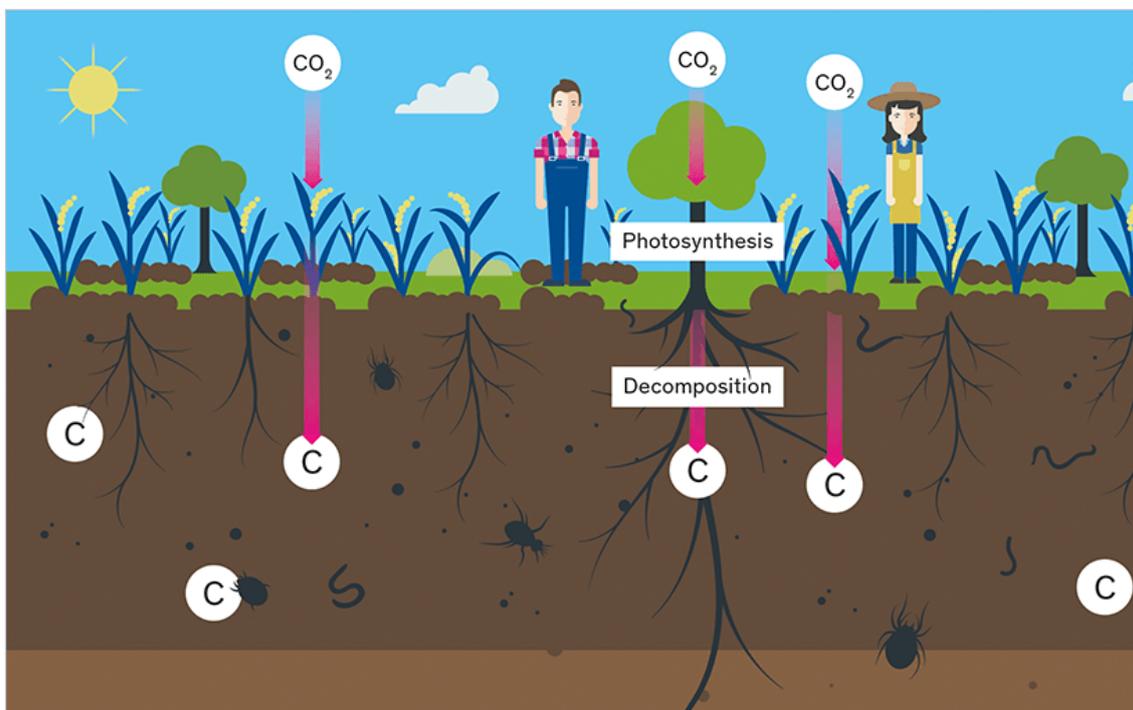


Figure 91. Soil Organic Matter (SOM) is an excellent sink for CO<sub>2</sub>. Source: MyClimate, 2019

## Benefits of Organic Fertilizer

There are considerable health benefits for farmers who no longer need to utilize toxic chemical pesticides. In Indonesia, drowsiness, fatigue and illness are reported by conventional rice farmers due to extensive spraying of pesticides without proper protective wear. Organic farming not only increases farmer health, but also the health of his or her environment; for instance, clean water supply in the community and no risks of children accidentally intoxicating themselves with stored chemicals. Current pests and diseases control practices in West African cocoa production rely primarily on chemical methods, and though well administered, is shown to result in environmental damage (Afrane & Ntiamoah, 2011). Studies regarding farmer health would be welcomed to make the cocoa sector aware of probable injury (disease) upon insult (low pay). Another benefit of using organic fertilizer methods is that it allows for relatively easy organic certification, which in turn may represent an interesting premium payment for farmers (assuming there are sufficient connections to international organic markets).

Next, composting allows farmers to become independent from costly commercial synthetic fertilizers. Chemical fertilizer in Honduras costs USD 57 per 100 kg, whereas organic compost has a production cost of about USD 5 per 45 kg bag = USD 11 per 100 kg if installing a compost production center at the coop level. Considering four times more organic compost than mineral fertilizer is required (as it contains a lot of soil organic matter), a more realistic price would be USD 44 per 100 kg but with the added benefits of better nutrient and water retention, and the natural boosting of the plant's immune system. Finally, without the use of synthetic fertilizer and pesticides (they usually come in packages), there is much less risk (bar cadmium-rich soil, contaminated packaging or transport) that cocoa will be rejected by the buyer upon an analysis for maximum residue levels (MRLs).

## Biochar

Biochar, a form of charcoal, has become recognized during the past decade as a useful component of compost programs (Fischer & Glaser, 2016a). Biochar is a solid form of Carbon produced by thermal conversion of biomass under low-oxygen (O<sub>2</sub>) conditions. It is easy to make and may persist in the soil for centuries; in central Amazonia, up to 350 ha wide patches of a pre-Columbian black earth-like anthropogenic soil have been found (terra preta), indicating that the indigenous American population had been using this in pre-Columbian times. Biochar provides a habitat for soil microorganisms which can degrade more labile soil organic matter and provides important nutrients for plant growth, increased water storage, air quality, yield, and reduced emissions of nitrous oxide, and leaching (Fischer & Glaser, 2016a). During the low-oxygen conversion of woody substances into biochar, only carbon and nitrogen are produced in situ. All other elements, such as phosphorus, potassium, sulfur, calcium and magnesium must be added for nutrient accumulation, which can be best achieved by adding organic fertilizers such as manure or compost.

After direct nutrient addition via organic fertilizer amendments, nutrient retention and nutrient availability are enhanced after biochar application. Higher nutrient retention ability, in turn, improves fertilizer use efficiency and reduces leaching. Enhanced water-holding capacity causes a higher nutrient retention because of a reduced percolation of water and the dissolved nutrients. Terra preta could be a model for sustainable resource management in the future not only in the humid tropics but also in temperate and arid regions around the world providing a solution for land degradation due to intensive land use and growing world population. (Fischer & Glaser, 2016a) The Masarang Foundation has been experimenting with biochar in Indonesia to fertilize rice fields with the Dayak tribes, pre-empting the need to slash and burn new land every season in Kalimantan, Indonesia (Smits, 2020).

## Regenerative Agriculture

Regenerative Agriculture is a system of farming principles and practices that increases biodiversity, enriches soils, improves watersheds, and enhances ecosystem services. Regenerative Agriculture aims to capture carbon in soil and aboveground biomass, reversing current global trends of atmospheric accumulation. At the same time, it offers increased yields, resilience to climate instability, and higher health and vitality for farming and ranching communities. The system draws from decades of scientific and applied research by the global communities of indigenous people, organic farming, agroecology, Holistic Management, and agroforestry (Kiss The Ground, 2021). In the United States various groups have been promoting this way of agriculture as an alternative to soil-impoverishing synthetic fertilizing and tilling practices, including Terra Genesis, The Regenes Group and Investing in Regenerative Agriculture and Food. USDA lists a host of master's studies one can take at universities on Regenerative Agriculture. Recently, the Regenerative Organic Certification was launched, which goes beyond normal organic certification and demands active soil improvement and agroforestry techniques. Tradin Organic produced a series of informative videos contributing to the ROC YouTube channel. The idea of Regenerative Agriculture appears to get some traction, as even Netflix hosts the documentary Kiss The Ground, narrated by actor Woody Harrelson, though some claims in the movie are to be nuanced.

## Diversification

Diversification enables a high resilience of the producers contrary to harvest- and price variations (Hütz-Adams & Hegger, 2018). The lack of diversified income is one of two main factors identified as main drivers of poverty (the other factor being low yield) (Oomes et al., 2016). Cocoa households already diversify their crops and are more diversified than non-cocoa households in both Ghana and Côte d'Ivoire. A higher number of crops produced correlates with slightly larger average land sizes of cocoa households compared with non-cocoa households. There is no evidence that cocoa has adversely displaced crops needed for household food security. In Ghana, after cocoa, the next most frequently produced crops are cassava and plantain. These crops partly derive their popularity from their role as being both food and cash crops. A further advantage is that they can be intercropped with young cocoa and function as shade trees.

In Côte d'Ivoire, the next most frequently produced crop was cassava, sometimes also considered a 'cash crop'. Other frequently produced crops are chili, okra, plantain, eggplant, and maize. 'Cash crops' such as rubber, cashew, palm, and coffee are alternatives to cocoa, but these are all produced at much lower rates in both countries (with some regional exceptions). Staple food crops such as cassava, plantain, maize, yam and rice are frequently sold in both countries to supplement household incomes. Cocoa in Ghana and Côte d'Ivoire is the most important crop, despite long periods of declining prices and revenues. This is because of the guaranteed market and established knowledge and habits. Competing crops are not (yet) perceived to be better than cocoa (Bymolt, Laven, & Tyzler, 2018). The industry has been making modest moves to implement programs to aid cocoa farmers in their diversification needs. Companies like Barry Callebaut and Olam distribute not only cocoa seedlings, but also shade trees that can be used for additional income (Olam Cocoa, 2020; Barry Callebaut, 2021a).

## Certification

### Certification and Sustainable Cocoa

The terms "certified cocoa" and "sustainable cocoa" are still often used interchangeably. But neither of them can guarantee that the products are not still related to low income and connected with human rights abuses and deforestation. Certifying can be a good first step, but additional measures are needed to attain sustainability as defined at the beginning of this chapter. To achieve real sustainability, other actions, e.g., activities towards climate-resilience (composting, shade trees), farmer group, and SME support (e.g., governance, financial literacy, trade finance, marketing, and not to be underestimated: better enforcement by governments of their laws. Telling evidence that certification is not the solution to all, is that (according to interviews with traders) certification caused prices to drop in West Africa in the last decade, as the attractive premiums resulted in overproduction.

In interviews it was pointed out that companies abandon third-party certified cocoa, as they do not trust that premiums reach farm organizations; they would rather switch to their own corporate programs. It is noteworthy that not all certified cocoa is necessarily 'sustainable,' therefore, the study cannot state that all uncertified cocoa is unsustainable. Particularly smaller traders and chocolate makers in the specialty segment will forfeit formal certification

in favor of direct relationships with suppliers that can result in more positive outcomes for people and the planet than with certified cocoa. These smaller players usually put a lot of effort into communication with customers, explaining the ecological and social practices involved. Also, larger companies, like Rausch (Germany) do not use certification labels for its premium origin range of bars, partly to avoid certification bureaucracy and premiums that might not end up in the right pocket, partly because of the preference to do things hands-on and sponsoring projects tailored to the needs of the communities. Also, plantations cannot be Fairtrade certified with Europe's FTI (and much of the specialty cocoa comes from estates). Rausch does not even communicate their CSR on their website, as marketing is focused on quality, flavor and origin, instead, they answer to individual clients' questions about CSR through the website and social media. Ironically, the company's mass other production line (bars for Aldi and other retail) is Fairtrade-certified (soon to add organic) but probably much less 'sustainable' than its high-priced estate cocoa.

### Third-Party Certification

'Third-party' certification, such as Organic, Fairtrade or Rainforest Alliance, are schemes where independent auditors (e.g., Control Union, Ecocert, CERES, BCS) inspect a producer group against these standards. This is opposed to proprietary company standards, where the company itself might do the audit (although large companies may hire inspection agencies to also inspect proprietary standards). Third-party certification is therefore considered to be more thorough, although it is not a guarantee that it will significantly increase farmer income, protect against environmental harms, or labor grievances. But there are several ways in which certification plays an important role to make value chains more transparent and it plays an important role in supporting farmer organizations (VOICE, 2019). For instance, Fairtrade-certified cooperatives were able to contact Fairtrade International (FTI) for funding from a Fairtrade Producer Relief Fund during the COVID-crisis (CBI, 2020b). Many of the third-party certifications, such as Fairtrade and Rainforest Alliance are accredited by the International Social and Environmental Accreditation and Labelling (ISEAL) Alliance, which evaluates the standards and guides for instance to harmonize the Rainforest Alliance and UTZ standards during their merger (ISEAL, 2021).

### Certification and Cocoa

In West Africa, UTZ certified cocoa grew sevenfold from 2010 to 2017, by which time 329,978 farmers in Côte d'Ivoire and 144,007 in Ghana were certified, producing 671,854 tons and 176,200 tons i.e., 34 percent and 19 percent respectively of the 2016–2017 national production. The UTZ standard focuses on mainstreaming sustainability in farming practices, promoting and improving farmer's agricultural and management practices, with a chain of custody approaches, traceability, and transparency reflecting concerns by consumers and NGOs about chain governance. Seven of the main trader-exporters and processors in West Africa have adopted UTZ and, often, a second certification scheme (Ingram et al., 2018). Much of certified cocoa is not sold with any certification, because of a lack of demand in the market or the fluctuation of buyers, as these may move to different suppliers. FBOs may also certify more than 'needed' to have a cushion of volume in case more certified cocoa is demanded from them in the (near) future. A producer organization will be able to make a deal more effectively with a buyer interested in certified cocoa if that cocoa is already certified and the buyer will not have to wait for the FBO to certify it (running the risk that the buyer will

look elsewhere). In the end, the fact that not all produced certified cocoa is sold as such is less important than making the calculation that the certification costs are covered by the premiums of the certified cocoa sold and that the certification has added value to the functioning of the FBO, at the technical and/or social-organizational level.

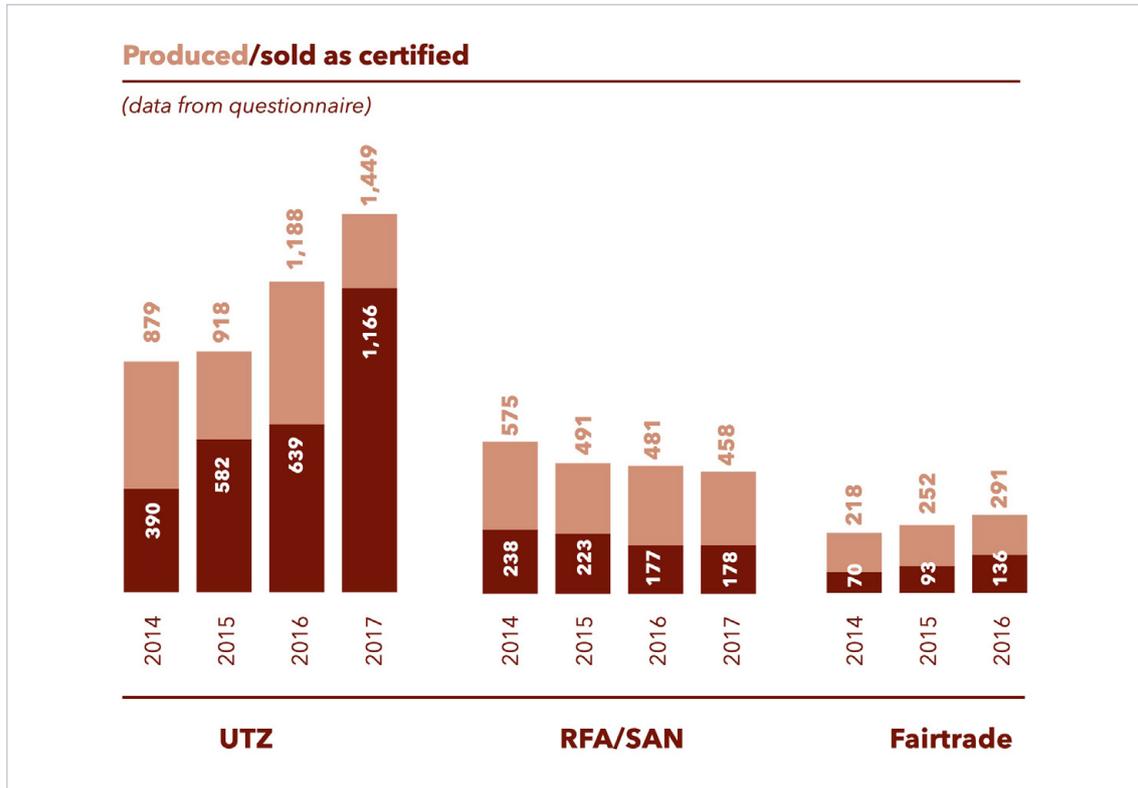


Figure 92. Produced versus sold as certified. Source: A. Fountain & Huetz-Adams, 2018

## Dual Certification

In 2015, 13 percent of total certificates in the cocoa sector were multiple certified by more than one of the Fairtrade, UTZ or Rainforest schemes, 99 percent being group certificates as opposed to individual farms. Most multiple certifications consist of a combination of UTZ and Rainforest Alliance (58%) or Fairtrade International and UTZ (52%), while a minimal 2 percent of cocoa certificates are triple certified. 68 percent of multiple certified cocoa certificates are in Côte d'Ivoire, while Peru has the highest concentration of multiple certifications with 43 percent of cocoa certificates in Peru being certified by more than one ISEAL member scheme. The Dominican Republic, Nigeria and Nicaragua also have a high percentage of multiple certifications compared to their share of the total certified number of certificates (Standards Impacts, 2018). In 2020, 19 percent of Rainforest Alliance certified producers had at least one or more certifications: 13 percent also had UTZ; 6 percent also had Organic; 7 percent also had Fairtrade and 4 percent had some other certification. Double-certification Rainforest Alliance (RA) and UTZ is the predominant combination. However, the percentage dropped from 27 percent in 2019 to 13 percent in 2020, partly due to the ban on dual UTZ/RA certification in Côte d'Ivoire and Ghana (Rainforest Alliance, 2021).

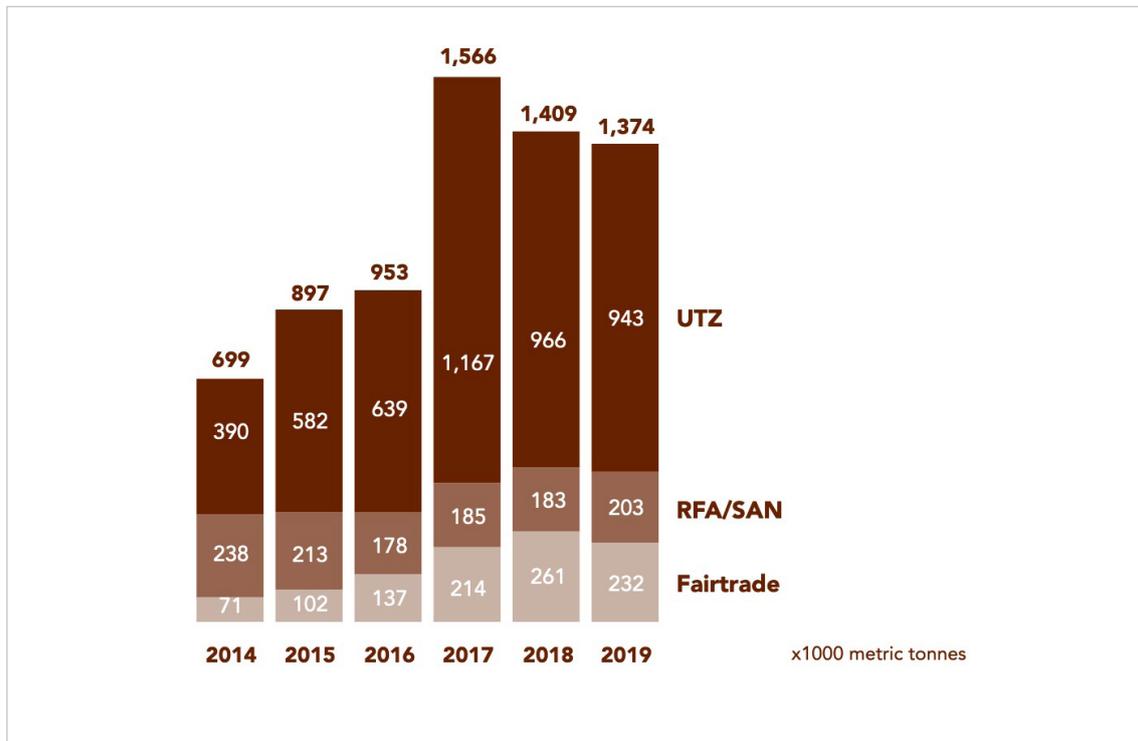


Figure 93. Estimations of double certification 2014 – 2019. Source: A. Fountain & Huetz-Adams, 2018

## Private, National, Voluntary, International and Regional Standards

Voluntary Sustainability Standards (VSS) include Fairtrade and Rainforest Alliance and Organic, where the latter is regulated by national bodies. The VSS includes codes of conduct, internal management system requirements, traceability requirements, and certifications for consumer brands. Standards set by international or regional bodies include ISO 34101, and the African Regional Standard (ARS) (Sustainable Cocoa Initiative, 2021b). Private, company-owned sustainability programs, on the other hand, are a form of corporate social responsibility and self-regulation, whereby a business monitors and ensures its own active compliance with the law, ethical standards, and national or international norms (Ingram et al., 2018). Third-party auditors may be used to audit against private standards. The corporate programs are sometimes accused of watering down third-party certification standards, while the industry claims that third-party certifications did not live up to their standards (Subramanian, 2019). Fairtrade, Rainforest Alliance, USDA- and EU-organic have been joined in recent years by other certifications and even in-house programs used by large retailers and multinationals.

- Other third-party certifications: Biodegradable packaging, Beter Leven Keurmerk and American Grassfed (animal welfare), FSC (sustainable paper packaging).
- Retailer and brand level examples: Communication of reduction of packaging weight, reducing store energy (emissions) and waste, and launching own sustainable brands, e.g. Albert Heijn's "Puur & Eerlijk" (2009, stopped in 2015 after criticism), GEPA's "Fair+", Tesco's "Made Mindfully", Wholefoods "Sourced for Good".

- Multinational level examples: Nestlé Cocoa Plan, Mars' Cocoa for Generation Plan, Hershey's Cocoa for Good, Barry Callebaut's Cocoa Horizons, Olam's AtSource.

## The Move towards Proprietary Certification

Sometimes, third-party certifications are sacrificed for private certifications. For instance, in 2017, Sainsbury (UK) abandoned Fairtrade for its tea, starting its own program, calling it "Fairly Traded". Soon after, Mondelez pulled some of its chocolate bars away from Fairtrade and started its own corporate program: "Cocoa Life". Cargill ("Cocoa Promise"), Starbucks ("CAFÉ Practices") and McDonalds ("McCafé Sustainability Improvement Platform") are other examples of large companies that prefer their own program to that of third-party certification, such as Fairtrade, Rainforest/UTZ or Organic. The companies all have their own definition of fairness, and its own explanatory literature on a web page somewhere and the company-program labels contribute to 'label fatigue' with consumers (Subramanian, 2019). Past research showed that private company certification has meant that only a small fraction of the additional value of these certified products is transferred to producers, as powerful actors along the chain capture most of the value (Elder & Dauvergne, 2015; McMichael, 2013). The companies themselves respond that they have concerns about the alignment between the third-party certifications and their original ethical, alternative purposes. Sainsbury's reported to have been unhappy with Fairtrade for years, claiming it wasn't clear where the premiums were going: "It wasn't always going to medicines and schools and things like that, as we found through our own investigations. (...) If you wanted to find out what a cooperative had done with a whole wad of Fairtrade premiums, or what the impact of that had been over the years, nobody could tell you. Or you'd get some anecdotal stuff" (Subramanian, 2019).

Fairtrade responded to the claims by insisting that farmers spend their premiums the way they wish, setting their own goals, and monitoring their progress and that Fairtrade has "strengthened the requirements on Fairtrade premium use, management, and reporting, in order to promote best practices and increase transparency", mandating an external auditor if a cooperative's annual premiums exceed USD 150,000 (Subramanian, 2019). Despite the increase of private corporate certification initiatives, Fairtrade and Organic certification still has a group of motivated buyers for whom the seal ensures a reliable supply of fairly-traded products in the case of Fairtrade and ecologically produced products in the case of organic certification.

The growth of sales of organic food and organic outlets, with a trend towards increasingly larger supermarket-type outlets in Europe and the United States is testimony to that. Also, in regular (and even discount) supermarkets there is an increase: a Wageningen University study shows a 21 percent increase in 'sustainable' food in Dutch supermarkets in 2020<sup>21</sup>, where the definition of sustainable was: any food with a seal under an independent audit system. In Germany, the largest European organic consumer, organic sales grew nearly 7 percent every year, from under EUR 6 billion in 2008 to EUR 12 billion in 2019. In the United States, organic sales increased over 10 percent annually, from USD 21 billion in 2010 to USD 56 billion in 2020 (ALDI, 2021; de Lange, 2021; Global Organic Trade, 2021; Kreuzer, 2017; Statista, 2021).

<sup>21</sup> This was not just because HORECA had lockdowns. Admittedly, sustainable tea and coffee decreased in the HORECA segment by 19 percent but in supermarkets it was more than compensated, with a 34 percent increase (turnover percentages).

## Why the Segment of Certified Products Is Still Small

While there has been progress made in sustainable production of palm oil, soy, cocoa, and coffee, still only a small share of global production is either third-party certified or under a corporate sustainability program. This has to do with consumer demand: when demand for certified commodities is much lower than supply, producers are forced to sell their sustainably produced commodities. This will disincentivize companies to make costs in certification. There are movements towards a greater share, however, particularly in the corporate program area. For instance, Olam reported 380,000 metric tons of cocoa sourced under client-paid-for managed corporate sustainability programs in 2021 (representing 60 percent of its total direct sourced cocoa), up from 350,000 metric tons in 2020. Traceability for cocoa went up from 118,000 metric tons to the entire 650,000 metric tons Olam sourced in-country, either under a client-paid-for managed corporate sustainability program or under its proprietary AtSource program (Anonymous, personal communication, July 2021).

## Relevant Certifications in Cocoa

**Table 27. Certification schemes in Europe and main characteristics**

| Logo  | Certification Scheme    | Characteristics   |
|---|-------------------------|---|
|  | Organic                 | Organic certification mainly addresses environmental aspects such as the sustainable use of resources, minimal use of agricultural inputs, crop rotation, segregation of organic and conventional produce, traceability, etc. Production, distribution and marketing of organic products are regulated by legislation in the USA and in Europe. Around 2.7% of the global cocoa production was under organic management in 2018 and has increased significantly in recent years.  |
|  | Fairtrade International | Fairtrade International is a certification, which requires adherence to a set of social standards, as well as environmental. Fairtrade mostly focuses on producer organizations composed of smallholder farmers. Products that carry the Fairtrade label indicate that producers are paid a Fairtrade Minimum Price and a Price Premium, an additional sum of money that goes into a communal fund. With this fund, that farmers and workers invest in projects they democratically choose in areas like health, education, farming, etc. |
|  | Fairtrade USA           | Fair Trade USA is the leading certifier of Fair Trade products in North America. For every Fair Trade USA product sold, the business selling it pays a small premium into a Community Development Fund, which goes directly back to the community of origin. The compliance and certification mechanisms are similar to Fairtrade International, but Fair Trade USA is an Independent organization and not a member of the international Fairtrade system.  |

|   |  |  |
|---|--|--|
|  | <p>Rainforest Alliance and UTZ Certified</p> | <p>In 2018, Rainforest Alliance merged with UTZ into one single organization: Rainforest Alliance. Rainforest Alliance and UTZ still operate under two separate programs but are being currently merged - aiming at achieving a greater social, environmental and economic impact. Rainforest Alliance/UTZ works with both small and large farms and is focused on conserving biodiversity and supporting sustainable livelihoods by transforming land use and business practices.</p> |
|---|--|--|

Source: (Ferro et al., 2021a)



## Fairtrade International

Various labels: Fairtrade International (previously Fairtrade Labeling Organization or FLO) in the EU and FTUSA (previously TransFair USA) is the leading standard-setting organization and certification for “fairly traded” products. Other fair trade standards used on the market are Fair for Life, FairChoice and the Small Producers’ Symbol (SPP). The World Fair Trade Organization (WFTO) is an umbrella organization for some of these certifications and a community of social enterprises. WFTO also has a label that companies can use if abiding by their 10 fair trade principles. Some companies, such as Zotter Chocolate, will only work with fair trade certifications that are accredited with WFTO (CBI, 2021b; World Fair Trade Organization, 2021).

**History:** By far, Fairtrade (issued by FTI) is the most recognized and has the longest history: In 1988, a Dutch NGO introduced the first certification for ethically traded coffee, then named Max Havelaar, after the hero-protagonist in an anti-colonial novel by the Dutch writer Eduard Dekker, published in 1860, about the colonial abuses in Dutch-ruled Indonesia. Three Dutch coffee brands signed on to source their beans from a farmers’ cooperative in Mexico, paying an agreed upon fair price. The following year, in 1989, coffee prices crashed, and coffee farmers faced hardship. The urgency of the label became even clearer: within a year, 65 percent of Dutch consumers had heard of Max Havelaar, and the certified coffee found its way to supermarkets. Max Havelaar inspired other initiatives across Europe. The various national Fairtrade chapters were gathered under the umbrella body FLO (Subramanian, 2019).

**Standard:** Fairtrade (FTI) and SPP are the only fair-trade certifications that establish a minimum price to shield farmers from periodic depressed world market prices – SPP has a higher minimum price. In 2019, Fairtrade revised their minimum price for cocoa, from USD 2,000 to USD 2,400 per ton, FOB. This new Fairtrade minimum price still leaves a significant gap towards the USD 3,000 FOB that Fairtrade calculated as the Living Income Reference Price (LIRP) in Côte d’Ivoire (USD 2,200 farmgate + USD 800 export costs) (Veldhuyzen, 2019). This has caused criticism: “Knowing how much you should pay, while not paying it, cannot be considered sustainable” (VOICE, 2019). However, in addition to the FOB minimum price (or better), the cooperative gets a premium of USD 300 per ton for organic cocoa, plus a ‘Fairtrade Premium’ for a ‘Social Fund’ of USD 240 per ton. With this money, projects to improve productivity or social and ecological community projects may be financed. Fairtrade-Organic (FTO) cocoa can thus be exported at USD 2,940, which nearly reaches the USD 3,000, the Ivorian LIRP, although USD 240 of that must be spent communally. (In some exceptions, part of the Fairtrade Premium may be disbursed as cash to cooperative members). The Fairtrade Premium

in Ghana is the only source of income for cooperatives to cover their costs to operate and provide the services to their members to reach target yields and farm resilience, which are equally needed to achieve living incomes (ABOCFA, 2019; (Veldhuyzen, 2019). Fairtrade requires transparency and mandates that contracts be signed by the importer, exporter, but also the producing cooperative (in case the cooperative is not the exporter), so that there is a fair distribution of the export price to the cooperative and its farmers. Fairtrade insists that producers make investment decisions democratically and stimulates gender equality. Pauline Tiffen, the editor of the Journal of Fair Trade, mentions that “quite recently (...) cocoa still felt like it was operating in the 18th century. Until 20 years ago, if you went to any big trade meetings on cocoa, you’d see no women, no people of color.” (Subramanian, 2019). As of Jun. 1, 2020, Fairtrade introduced new requirements for certification, mandating cocoa (and coffee) cooperatives and traders to have commitments in place for new Fairtrade sales volumes in order to be eligible for certification. This decision came as Fairtrade International wishes to prevent FBOs to make unnecessary certification costs if they do not (yet) have a buyer (FLOCERT, 2021a).

**Critical Analysis:** There have been claims by companies on Fairtrade’s lack of transparency, thus spurring the launch of proprietary sustainability programs, while others rebut that this move by (particularly major) firms is to water-down the more rigid Fairtrade standards and retain more of the earnings themselves (Subramanian, 2019). There is also criticism on Fairtrade in that it only allows its own certification body, FLO-Cert, to conduct inspection, thus increasing costs for FBOs that have multiple certifications (e.g., also organic) and would like to combine the inspection for auditing both. Some producer organizations and exporters therefore opt for Ecocert/IMO or Control Union’s fair-trade labels ‘Fair for Life’ and ‘Fair Choice’, respectively, since these agencies work with a host of standards, including Organic, ISO, Rainforest Alliance/UTZ certifications and FairWild. In 2011 there was a rupture between then TransFair USA and FLO, as the United States wanted to allow for private estates to certify Fairtrade as well (‘Hired Labor’), while FLO wanted to keep it for (smallholder led) cooperatives. FTI still prohibits the certification of several key crops from plantations, including coffee, cocoa, sugar, cotton, honey and rice (Jaffee, 2014). Additional criticism came as Fairtrade – in an effort to scale up the participation in its label among larger industry – allowed companies to use the ‘Mass Balance’ principle, which no longer guaranteed that a chocolate bar containing the Fairtrade mark actually contained just Fairtrade-certified ingredients.



## Rainforest Alliance/UTZ

**Standard:** The new Rainforest Alliance (RA) standard was updated, as the standard merged with UTZ and now includes [farm requirements](#) and [supply chain requirements](#) that include in

addition to its traditional four chapters of management, farming, social, and environment issues, two new chapters: shared responsibility (which mandates a sustainability premium for investments at company level, the amount of the premium is however voluntary) and traceability (Rainforest Alliance, 2020a, 2020b). In July 2020, RA introduced premium payments from the first buyer to the producer group/ estates. The weighted average for Africa is EUR 91.68 per metric ton of cocoa. The Rainforest Alliance premium is an additional cash amount paid to producers, above the market price. It is negotiated between the certified group or

producer and the first buyer (Rainforest Alliance, 2021).

**Critical Analysis:** There has been criticism on the voluntary character of the premium and that Rainforest Alliance should incorporate a minimum price to protect farmers against world market prices when these decrease below a certain level (VOICE, 2019).



## Organic and Regenerative Organic Certification

**History:** Organic farming has a long history. “Organic 1.0” was started by pioneers who

observed problems with the direction agriculture was taking at the end of the 19<sup>th</sup> century and beginning of the 20<sup>th</sup> century and saw the need for a radical change. “Organic 2.0” started in the 1970s when the experiences of the pioneers were translated into the first standards. Despite increasing success, certified organic agriculture has not reached 1 percent of global agricultural land, while at the same time there is increasing awareness that organic can be a solution to soil contamination, loss of biodiversity, and climate change. Therefore, in 2017, the overall goal of “Organic 3.0” was established to be the widespread uptake of truly sustainable farming systems and markets based on the principles of organic agriculture. Organic 3.0 provides a roadmap for innovative, inclusive, fair and impactful organic development from farm to final consumer (IFOAM, 2021). Regenerative Organic Certified (ROC) was established in 2017 to focus more on soil health, animal welfare, and social fairness. ROC goes beyond regular organic and Fairtrade certification (both are prerequisites) and is a separate certification, with additional costs. The Regenerative Organic Alliance (ROA) conducted pilot projects in 2019 and revised their framework in 2020. In cocoa, the first company to use ROC is Tradin Organic, which started to certify seven cooperatives under ROC in Sierra Leone in April 2021, based on American clients wanting the certification. The soil and agroforestry activities go well with a Farmer Field School approach, ROC also has an informative video channel for farmers, filmed on location in that country (Anonymous, personal communication, 2021).

**Standard:** The International Federation of Organic Agricultural Movements (IFOAM) lists four main principles for organic farming: Health, Ecology, Fairness, and Care. In view of these principles, organic farming avoids the use of fertilizers, pesticides, animal drugs, and food additives and management is adapted to local conditions, ecology, culture, and scale. Inputs are to be reduced by reuse, recycling, and efficient management of materials and energy, and organic agriculture rejects “unpredictable technologies”, such as genetic engineering. According to USDA, research shows that organic farming practices can improve water quality, conserve energy, increase biodiversity, and contribute to soil health. Becoming certified organic helps producers and handlers receive premium prices for their products (USDA, 2021). USDA, EU, and other national organic regulations describe the standards and how the word “organic” or the organic seal can be used. Organic certification agencies are accredited through IFOAM and are periodically checked for upholding the organic standards as set out by the various governmental institutions. The certification agencies, in turn, inspect the organic supply chain, from farming to retail. Producers, exporters, importers and most recently also retail must go through organic inspection if they wish to be part of the organic value chain.

**Critical Analysis:** Organic certified products are not always cultivated with active, intelligent agricultural practices, such as the application of well-formulated compost and liquid fertilizer, as is the case with the more stringent Regenerative Organic Certification. In the case farmers do not apply regenerative techniques, and simply are ‘organic by default’, the yield will be low, and the question is if these farmers would not be better-off applying synthetic mineral fertilizer. Next, there have been cases of organic certified products not meeting the standards, as demonstrated by elevated residue levels after laboratory analyses that have caused certification agencies to lose their accreditation for particular products or countries. Another point of criticism is one that may apply to various third-party certifications, that there is no certainty the certified products will be sold to a buyer interested in the organic certification and without the certainty of a premium (only in the case of Fairtrade certification is a USD 300 per ton premium for cocoa mandated). FBOs may therefore not always recoup their certification costs by sales.



### ISO 34101

**History:** The ISO 34101 standard is relatively new; it was launched in 2019 as the result of cooperation between the CEN (European Committee for Standardization) and ISO (International Organization for Standardization). The new ISO 34101 standard presents itself as a starting point for producers who would not otherwise be familiar with the concept of growing cocoa beans sustainably and claims to provide them with the right timeframe to comply step-by-step with sustainability requirements. It is also presented as an alternative to certifications such as organic and Fairtrade, which are focused on either the environmental or social aspect, whereas ISO 34101 claims to cover the economic, environmental, and social components of sustainability and also incorporates the specificities of growing and selling cocoa (CacaoForest, 2019).

**Standard:** ISO 34101 includes four key components. The first involves management systems inspired by ISO 9001 (quality) and ISO 14001 (environment) standards. The second defines the selected sustainability criteria, split into three main categories: environmental, economic, and social. The third addresses traceability and how to ensure that a cocoa bean comes from a sustainable farm, in compliance with the criteria from the second part. Participants setting up the standard agreed to apply World Labor Organization protocols as a reference: child labor is tolerated when used to contribute to the family business, when it does not interfere with a child’s education, and when it does not put a child in danger. To help producers make the transition smoothly, the voluntary standard outlines steps for farmers and aims to progress regarding these sensitive criteria. The fourth and final part details the evaluation methodology (CacaoForest, 2019).

**Critical Analysis:** The question arises how much added value ISO 34101 brings to the sector in comparison with UTZ, which set out to combine social and environmental standards a long time ago. The Voice Network and its Cocoa Barometer feel that the new ISO “includes an overly rigid set of constraints that does not allow for essential elements such as requirements for fair payment. Additionally, the standard in essence only covers those elements that are in direct control of the cocoa farmer, whereas many of the necessary prerequisites for sustainability are outside of the control of cocoa farmers. As such, the ISO standard does not come close to providing a sufficiently inclusive definition of sustainability.”



## ARS 1000

**History:** The ARS 1000 was recently developed in a strategic partnership between Côte d'Ivoire and Ghana and formalized in the Abidjan Declaration of Mar. 26, 2018. Regulators of Côte d'Ivoire and Ghana concluded that ISO 34101 did not fully address the concerns of cocoa-producing countries and decided to fill the gaps through the elaboration of the ARS 1000. Therefore, the two countries approached the African Standardization Organization (ARSO) for the harmonization process, involving all African producing countries. Like ISO 34101, ARS 1000 presents itself as an alternative to the existing proliferation of voluntary sustainability programs and third-party certification schemes which, according to the two producing countries, have not had a tangible impact on farmers' revenues or living standards (Sustainable Cocoa Initiative, 2021b).

**Standard:** ARS 1000 is based on ISO 34101. However, certain clauses have been simplified and others have been modified, particularly those that were felt by Ghana and Côte d'Ivoire to have a negative impact on cocoa farmers or could potentially cause confusion vis-à-vis national laws and regulations. Ms. Tanoé, the Head of Standards and Certification of the CCC, speaking also on behalf of COCOBOD during a 'Cocoa Talks' session in Brussels, explained that voluntary initiatives such as Fairtrade and Rainforest Alliance will not be eliminated but will have to meet the requirements set by ARS 1000 and obtain approval from the regulator when establishing criteria that go beyond ARS 1000, appearing to want to protect farmers from impossible standards. CCC also mentioned that VSS need to include costs of training programs and audits. The regulators (CCC and COCOBOD) would grant a license to certification schemes that meet these requirements (Sustainable Cocoa Initiative, 2021b).

**Critical Analysis:** It is not clear how a new certification standard will fix the problems of previous ones. The proposal that all VSS be measured against the ARS 1000 standard (incumbent upon which regulators will extend licenses to operate) feels like a move towards 'one standard'. In a recommendation to COCOBOD, Tropenbos Ghana recommended in 2020 to move to a 'one standard' model that replaces the multiple expensive certifications so that at the end of the day it is more cost-effective for farmers. But the same authors acknowledge that "the inability of certification to reduce cocoa-led deforestation stems from a low promotion of certification standards by Licensed Buying Companies (LBCs) in the case of Ghana, and that farmers are selective in the adoption of the social, economic, and environmental elements of certification standards" (Tropenbos Ghana, 2020). Obviously, a new or one-standard model will not fix these latter problems.

There are marketing issues. Fairtrade, Organic and Rainforest Alliance are recognized labels with companies and consumers; despite Ghana and Côte d'Ivoire's call on the EU "to support the adoption of the Standard by all value chain actors, including European companies and consumers", it is doubtful the consumer will quickly buy into ARS 1000, even if this standard were better than the existing certifications.

CCC advocates regulating price premiums for sustainable cocoa – including those applied by voluntary third-party certification schemes. It is not clear how that would work, as Fairtrade pays a fixed premium, while that of RA is voluntary and to be negotiated between parties. It seems farfetched to mandate VSSs to adjust their standards. During the SCI meeting of Feb. 23, 2021, RA and FT therefore rejected calls for 'one standard', advocating instead for a

continued diversity of choice in implementation models. A cooperative union leader from Côte d'Ivoire echoed this call, mentioning that despite expenses and the differing requirements, VSS certifications of FT, Organic, RA and UTZ have provided premiums that have increased farmer revenue, paid for training to farmers, investments in education, and access to drinking water. It has also improved the governance and the management of its member cooperatives. The union leader called for the continued presence of voluntary standards and certification schemes to allow farmers to take advantage of different market opportunities. (Sustainable Cocoa Initiative, 2021b).

CCC claims that “voluntary certification schemes and sustainability programs have not achieved their stated objectives due to the absence of proper coordination by a regulator”. It was pointed out by representatives of VVS's that certification, whether voluntary or (inter) nationally mandated cannot by themselves be held responsible to achieve the 'end goal' of sustainability such as ending deforestation or raising household incomes: standards cannot address more systemic issues, such as governance, the financial system and implementation mechanisms (read: enforcement). (Sustainable Cocoa Initiative, 2021b).

## Government Regulation Regarding Human Rights

### International Regulation on Human Rights

The Universal Declaration of Human Rights (UDHR) is a milestone document in the history of human rights that was drafted by representatives with different legal and cultural backgrounds from all regions of the world in 1948 in Paris as a common standard of achievements for all peoples and all nations. It sets out, for the first time, fundamental human rights to be universally protected and it has been translated into over 500 languages (UN General Assembly, 1948). In 2011, the United Nations Guiding Principles on Business and Human Rights recognized that companies should undertake “human rights due diligence” measures to ensure their operations respect human rights and do not contribute to human rights abuses. This includes assessing actual and potential human rights risks, taking effective measures to mitigate those risks, and acting to end abuses and ensuring a remedy for any that occur despite those efforts. Companies should also be fully transparent about these efforts.

However, the UDHR is still violated in many nations the world over, the UN Guiding Principles on Business and Human Rights and other international norms for companies are not legally binding. Companies can and sometimes ignore them or take them up half-heartedly and ineffectively (Charter for Compassion, 2016). The idea is that these international declarations and principles inspire nations to pass nationally, legally binding legislation. Below, we look at the principal consumer blocks' legislation regarding human rights in supply chains.

### U.S. Legislation on Human Rights in Supply Chains

The United States does not have a mandatory human rights due diligence requirement in place, but a 1996 amendment to the 1930 U.S. Tariffs Act grants the U.S. Customs and Border Protection Agency (CBP) powers to exclude categories of products from the American market if there is sufficient evidence that they are at significant risk of being produced with forced labor. Companies are then required to demonstrate through due diligence that their imported goods are free from this taint. Examples of these powers put into action over the past few

years: In April 2020, a Hong-Kong-based anti-trafficking NGO filed a petition against a Malaysian palm oil company on the grounds of alleged child labor. It followed two formal petitions to the CBP that sought to halt the importation of palm oil products. Another case involves Malawi tobacco, where British American Tobacco was taken to court. With regard to cocoa, an investigation has opened regarding the Côte d'Ivoire, indicating that companies importing cocoa will need to meet similar due diligence standards in order to maintain U.S. market access (Saunders, 2020).

In addition, the U.S. Trade Facilitation Act allows U.S. Customs to seize imported goods if an importer is unable to provide a certificate proving which measures were taken to ensure that the goods were not produced using forced labor. In April 2019, a coalition of human rights and environmental civil society organizations proposed that the U.S. Congress consider a draft Corporate Transparency Act, which would require disclosure of beneficial ownership for the purposes of addressing corruption, money-laundering human rights, and environmental harm. Regarding U.S. state legislation, the California Transparency in Supply Chains Act, adopted in 2010, requires certain companies to report on their efforts to combat slavery and human trafficking in their supply chains. There are, however, concerns around its effectiveness (Smit et al., 2020).

## EU Legislation on Human Rights in Supply Chains

Early 2021, German government ministers put forward a draft law on corporate human rights due diligence in supply chains. Soon after, the European Parliament made a call to “urgently adopt binding requirements” in the EU to prevent and address adverse impacts on human rights, the environment, and good governance in companies’ supply chains (Kippenberg, 2021). The EU report on due diligence shows that a voluntary approach is not enough. To encourage companies to take action to ensure human rights and reduce environmental impacts in their supply chains, the European Parliament approved an outline proposal for the EU Directive on Mandatory Human Rights, Environmental and Good Governance Due Diligence. This legislation ensures respect for human rights and the environment throughout the entire supply chain.

Many EU member countries already have due diligence legislation. But it is either sector-specific or only covers aspects such as child labor. Also, it is only mandatory in some countries and there is no guiding legislation at the EU level. It is expected that the European Parliament will approve this new legislation in 2022, after which EU member states will be given time to pass it through their national legislative bodies. This means that the new law should be in place from 2023. The draft EU legislation states that the rules apply to companies doing business in the European market, including non-European (cocoa) suppliers. Suppliers may have to take additional measures to prevent harm to human rights, the environment and good governance. A penalty system is set up to better protect the rights of stakeholders in developing countries.

EU-supplying companies must have a due diligence strategy document in which they publicly communicate their approach to due diligence. This must be integrated into their overall business strategy. Companies will have to identify and confirm the business practices of their suppliers and subcontractors. This includes those located outside of Europe. To make sure suppliers follow the rules, importers may ask for specific due diligence documents. These could include contractual clauses, codes of conduct or certification by independent

auditors (CBI, 2021a).

## Critique of the EU Due Diligence Act

A study conducted by Webb & Stanbury (2020) questions how these measures will be implemented, considering the issue of extraterritorial jurisdiction. As they state: “In the case of the potential supply chain due diligence legislation, this begs a range of questions. For example, what will happen when an allegation is raised? How will this be investigated? How will evidence be collected which would be capable of bearing the burden of proof in court? How might witnesses be interviewed, and how would they testify in court? At the other end of the process, if compensation were to be paid, what structures will assure that it is disbursed honestly and fairly?” Webb & Stanbury also questions the message that this approach sends to governments of the global south. They feel that, in taking on the policing of its companies’ supply chains, the EU is saying to those governments “we do not think you have the capability or willingness to effectively police environmental or human rights in your country, so we will do it for you.” The authors feel that the extraterritorial regulation on the part of the EU might just run counter to the need for improving supplier’s countries’ systems of governance. It will serve as an excuse for such governments to do little to change, according to them (Webb & Stanbury, 2020b).

## Government’s Actions towards Sustainable Cocoa Sourcing

In 2020, the European Commission launched an initiative to improve sustainability in the cocoa sector, promising a dialogue that “aims to deliver concrete recommendations to advance sustainability across the cocoa supply chain through collective action and partnerships. The new dialogue will be supported by technical assistance for cocoa producing countries” (European Commission, 2020a). This initiative was critiqued for not mentioning the importance of improving domestic governance and transparency in Ghana and Côte d’Ivoire. Also, the EU was deemed naïve to the challenge, which will be posed by simple market forces if the price of West African cocoa rises, namely that buyers will go elsewhere (Webb & Stanbury, 2020b).

## National Cocoa Platforms

The European Commission has pointed out that the EU is a strong player in multilateral fora like the International Cocoa Organization (ICCO) and does not wish to replicate the multilateral discussions that are ongoing in that forum specifically. Nonetheless, European governments have set up multi stakeholder platforms to deliberate and act towards sustainability in the cocoa supply chain. The Swiss, German, Dutch, and Belgian Initiatives for Sustainable Cocoa ([SWISSCO](#), [GISCO](#), [DISCO](#) and [Beyond Chocolate](#), the latter two being coordinated by IDH) include chocolate manufacturers, cocoa traders, food retailers, the federal government, non-profit organizations and research institutions “to share their responsibility, setting common goals, implementing joint projects, exchanging knowledge and experience, and to tracking progress using an internationally harmonized monitoring system” (GISCO, 2021).

Governments taking part in the platforms appear to take a strategy towards sustainability by giving private sector stakeholders incentives through leveraging private investments with public subsidies via calls for proposals. The thinking is that the CSR departments of major

companies are more easily able to internally convince their CEO's when matching funds are available from the public sector, even though (especially major) companies have sufficient funds of their own to be executing sustainability programs. Next, these sustainability projects serve as a peer pressure mechanism for their competitors to conduct/invest in similar projects, as explained by one key actor in one of the platforms. The challenge, currently, is upscaling these projects to reflect the size of the operations of the companies. It is stressed that the platforms remain voluntary initiatives but are looking to implement some mandatory aspects as well, such as diligent reporting on implementation of "sustainable projects" and beyond. Indeed, 15 out of the 79 companies have not reported or monitored progress towards implementing their commitments, and according to various reports, not a single company is on track to meet 2020 zero deforestation deadlines and need to increase efforts to develop roadmaps, implementation strategies, and systems to monitor and verify progress (Forest 500, 2018; IDH, 2020).

In conclusion, the vision for the platforms seems to be to reach scaled-up responsible sourcing by (first) voluntary and (later) mandatory rules and regulations at both buyer and supply end. It is hoped that the alignment of the various European sustainable cocoa initiatives can create momentum, among others in the form of increased peer pressure and higher consumer awareness. Still little attention is given to (central) EU-involvement and G2G-support to set (stricter) guidelines for the cocoa industry, as well as other commodities, which could bring a level playing field for companies targeting the 500 million EU-consumers. Perhaps, more non-EU countries involved in the cocoa trade, like Switzerland and the UK, will join such regulation (Anonymous, personal communication, July 2021)

### Private Sector Requesting for Regulation

The private sector has actually been asking for stricter regulation at the consuming countries' end, to make a level playing field among all, as well as stricter regulation from governments in supplying countries (The Voice Network, 2021b; & Robin, 2021) Mars Wrigley and Mondelez International.<sup>22</sup> In December 2019, a group of companies (Barry Callebaut AG, Mars Wrigley and Mondelez International), The Voice Network, Rainforest Alliance, and Fairtrade, called on the EU to put in place a mandatory Human Rights and Environmental Due Diligence regulation and in parallel to negotiate bilateral agreements with cocoa origin governments to create the frameworks necessary to achieve this aim and provide financial and technical support to those governments to do so. Since the original publication of this call for an EU Due Diligence requirement, various cocoa and chocolate companies have joined this coalition. In addition to the original industry signatories of Barry Callebaut, Mars Wrigley and Mondelez, companies like Nestlé, Tony Chocolonely and Unilever joined as well (The Voice Network, 2021b) Mars Wrigley and Mondelez International.

Since 2010, Nestlé has been collaborating with the Danish Institute for Human Rights (DIHR) under an innovative partnership aimed at integrating human rights into Nestlé's policies and procedures. As a product of this alliance, Nestlé has developed and implemented a Human Rights Due Diligence Program based on eight pillars, in which human rights impact assessments ("HRIAs") have been central. Under this partnership, the DIHR has conducted research on parts of Nestlé's supply chain. In 2013, Nestlé presented a methodology and findings of seven

<sup>22</sup> Discussion 4-3-2020 with Christine Müller (Kakaoplattform) and Christian Robin (SECO)

human rights impact assessments conducted in country operations of the company. In April 2014, this report was followed by a roundtable facilitated by the DIHR, with around twenty experts on human rights and development from consultancy firms, think-tanks, international organizations and NGOs.

This multi-stakeholder engagement was considered a novel approach to managing due diligence in the supply chain. Similar work was done regarding the company's palm oil operations in Indonesia. However, this engagement towards a human rights-compliant supply chain does not seem to have prevented lawsuits from being filed against Nestlé, which raises questions on the counter-effects of a company's public engagement in due diligence in its supply chain. It has been suggested that companies may fear that the more they publish, the more they will be exposing themselves to possible legal claims (Smit et al., 2020).

## Sustainability Claims by Large Companies

Below summaries have been developed through interviews and online research. A fuller description and more complete critical analysis were beyond the scope of this study.

### Olam International

(Anonymous, personal Communication, 2021); (Olam Cocoa, 2020)

**Traceability:** In 2019–2020, Olam digitally traced 118,287 metric tons of cocoa to farmgate, using an enhanced version of the International Standard for Sustainable and Traceable Cocoa (ISO34101). For this volume, which represents about 10 percent of its total amount of cocoa sourced (one million metric tons), Olam use QR or bar codes on bags, tracking environmental and social sustainability metrics. Any issues were flagged and allowed the company to take targeted action on the ground. In 2020–2021, it was reported that traceable cocoa had increased to 380,000 metric tons. This represents 38 percent of all beans sourced and 58 percent of the 650,000 metric tons sourced directly (with in-country operations). For the 350,000 metric tons cocoa sourced indirectly (FOB imports from smaller countries such as Sierra Leone and Liberia), Olam has suppliers sign its [Olam Supplier Code\(OSC\)](#), and reserves the right to audit the suppliers for compliance.

**Managed Programs:** These 380,000 metric tons were certified under “managed programs”, meaning that customers (such as Nestlé, Mars, Hershey's) invest in meeting sustainability requirements. Apart from the above mentioned traceability, Olam's clients may apply their own sustainability program to the operations (e.g. [Nestlé Cocoa Plan](#), or [Mars' Cocoa for Generation Plan](#), and [Hershey's Cocoa for Good](#)). Clients may also add on third-party certifications, of which UTZ/RA is the most common (Organic and Fairtrade are still small) for marketing toward consumers. Olam's customers may contract third party certification bodies (e.g., Control Union) that audit against their own certification standards and the B2C certifications. Other companies send their own auditors.

**Proprietary Programs:** Olam also offers its proprietary [AtSource](#) program to its clients, which has three levels, from reassurance of compliance of Olam's “Supplier Code” to footprint calculations and ready-for-certification and traceability. A higher level will include consumer-ready stories of real impact and programs co-created with communities. For the 270,000 metric tons of in-country sourced cocoa for which Olam does not (yet) have clients paying for

sustainability standards, Olam claims that it implements its AtSource program anyway, at its own cost. Olam will encourage its customers to buy into this sustainability program.

**Child Labor:** Olam reports to have 183,000 households covered by a child labor monitoring and remediation system (CLMRS), which would represent about 18 percent of the total number of households Olam works with, which it estimates to be over 1,000,000. With training and the help of a smartphone, community leaders or field officers collect social data on communities and individual farming households, identifying children at risk and tailoring Olam’s interventions based on the issues identified. There were some 12,000 cases of child labor identified in 2019–20, of which some 8,000 are in the process of remediation.

**Living Income:** Using benchmarks from various living income studies (Sustainable Food Lab, the Global Living Wage Coalition, the Anker Research Network and the Living Income Community of Practice), Olam is studying the existing living income gaps in their direct cocoa supply chain. Olam is developing its Olam & Farmers Information System (OFIS) to analyze yields, production costs, cocoa income share, and land size to define where barriers lie and tailor its interventions to have reach its goal of achieving a living income for 60,000 farmers in 2024 (6% of current Olam farmers) and 150,000 in 2030 (15% of current Olam farmers).

**Training:** In 2019–20, Olam trained 108,000 farmers (10% of its farmers) on Good Agricultural Practices and 115,000 farmers on deforestation awareness.

**Deforestation:** Olam is a founding member of the Cocoa & Forest Initiative and invested in distributing a mix of forest and fruit trees in Brazil, Côte d’Ivoire, Ghana, and Indonesia since 2018. Olam claims that 100 percent of the AtSource cocoa includes deforestation monitoring. [Olam’s Living Landscapes Policy](#) lays out its ambitions “to create and sustain Living Landscapes, where prosperous farmers, thriving rural communities, and healthy ecosystems coexist”, including plans (but no measurable results or goals) to prohibit fire for land clearance, to get consent from indigenous people, and to safeguard high-carbon stock forests (HCS), and peatlands (although it qualifies the controversial RSPO as a ‘credible certification standard’). Olam distributed 3.3 million cocoa seedlings and 740,000 trees for agroforestry and income diversification. Olam claims to have decreased its biodiversity costs per metric ton of cocoa beans due to fewer trees being lost annually around cocoa farms.

**Carbon Footprint:** Olam achieved 20 and 13 percent reduction in natural capital costs per metric ton of cocoa beans in 2019 and 2020, respectively, mainly due to cutting greenhouse gas (GHG) emissions through investment in clean energy across processing facilities (green electricity, boilers fueled by cocoa shells, solar panels), which is to continue. Natural capital costs have also decreased because of Good Agricultural Practices (GAP) such as pruning, planting shade trees, efficient use of fertilizers, and composting of crop residues. Agroforestry has also contributed, through GHG sequestration by shade trees.

**Critical Analysis:** In 2017, NGO Mighty Earth documented that Olam was among a group of companies that purchased cocoa grown illegally in national parks and other protected forests in Côte d’Ivoire. The report accused Olam of endangering the forest habitats of chimpanzees, elephants, and other wildlife populations by purchasing cocoa linked to deforestation. Olam was notified of the findings of Mighty Earth’s investigation and did not deny that the company sourced its cocoa from protected areas in the Côte d’Ivoire. Between 2011 and 2015, Olam’s palm

oil trade volume grew by approximately 20 times – from 71,000 tons to 1.53 million tons. Despite Olam’s stated commitment to RSPO-certified palm oil, the company shunned transparency as it expanded its palm oil production (see more on palm oil in the Ferrero box). A report released by the NGO Mighty Earth and Gabon-based NGO Brainforest on Dec. 12, 2016, revealed that Olam was operating a secretive palm oil trading operation worldwide, particularly with its third party suppliers in Asia. Olam was accused of endangering the forest habitats of gorillas, chimpanzees, and forest elephants due to widespread deforestation. It was revealed that in Gabon, Olam cut 26,000 hectares (64,000 acres) of forest for palm oil, resulting in a formal complaint against Olam to the [Forest Stewardship Council](#) (FSC) for Olam’s deforestation and for violating FSC policies. (In response to these allegations, on Feb. 21, 2017, Olam suspended further land clearing of forests in Gabon for at least a year and Mighty Earth suspended its campaign), renewing the agreement between Mighty Earth and Olam in 2018. Olam is also under investigation for its rubber plantations in Gabon.

## Barry Callebaut

(Barry Callebaut, 2021a)

Forever Chocolate is Barry Callebaut’s plan to ensure future supplies of cocoa and improve farmer livelihoods. It supports the Cocoa Horizons Foundation in its goal to shape a sustainable cocoa and chocolate future. The company reports that this has included pilots of intercropping, grafting, diversification of income, good carbon practices, and community engagement on topics such as deforestation and child labor. Barry claims that 47 percent of their raw materials, including cocoa, is sourced ‘sustainably’, whereas 37 percent of its products sold contained sustainably sourced cocoa or chocolate.

**Traceability:** To measure the impact of these pilots Barry has partnered with Wageningen University and Research. In its 2019–2020 Sustainability Report, Barry Callebaut reports to have increased the number of farmers with full data to 182,000 which includes the mapping of the geographical location and the size of 277,000 active cocoa farms, covering 72 percent of their direct supply chain in 2019–20. It is not known what percentage of the company’s cocoa beans are directly sourced versus cocoa sourced indirectly (FOB shipments from independent exporters).

**Child Labor:** According to Barry, 42 percent of the farmers the company sources from directly have a child monitoring and remediation program: 40 thousand farmers. An additional near 100 thousand farmers are trained on child labor awareness. The company identified 23 thousand child labor cases in fiscal year 2019–20, of which some five thousand cases are under remediation. Barry estimates that for approximately a third of its in-country sourced cocoa the child labor risk is adequately addressed.

**Living Income:** According to its website, Barry already lifted 143,000 farmers ‘out of poverty’. Although it is not clear how the company defines poverty<sup>23</sup>, it can be assumed Barry uses, just like other major companies, the definitions and country-specific living income calculations according to the Anker methodology. Barry conducted census interviews with some 291,000 cocoa farmer households to gain a better understanding of farmer needs. By 2025, the company plans to lift more than 500,000 cocoa farmers out of poverty,

<sup>23</sup> Requests for interviews to clarify this were unanswered.

**Deforestation:** Barry has mapped 52,000 farms within 25 km of a protected forest area, to monitor deforestation and claims that 34 percent of its sourced beans are demonstrated not to contribute to deforestation. The company distributed two million cocoa seedlings and 1.6 million shade trees.

**Carbon Footprint:** Barry assesses the carbon impact created by their operations, the impact generated by the energy they use, and the impact of their entire supply chain. To accurately account for the amount of land use change (LUC) in their supply chain, meaning the carbon emissions resulting from the transformation of forest land to agricultural land, Barry developed the first carbon footprint assessment tool to evaluate the impacts of land use change and deforestation-driven by cocoa cultivation. The tool has been made publicly available for the cocoa and chocolate industry to use. Barry's concrete interventions included the planting of 1.6 million non-cocoa trees to promote agroforestry systems, increase biodiversity and carbon sequestration, and the distribution of 5,275 cookstoves and solar home systems to cocoa farming communities. Other drivers were the reduction of CO<sub>2</sub> equivalents (CO<sub>2</sub>e) in factories (e.g., through a biochar project which transforms cocoa shells and other cocoa by-products into green energy), and the reduced CO<sub>2</sub>e intensity in dairy products. According to the company, its carbon reduction efforts resulted in a decrease of -8.1 percent of their corporate carbon footprint, from 8.49 million tons to 7.8 million tons CO<sub>2</sub>e, in 2019/20.

**Critical Analysis:** Barry Callebaut was one of the companies accused in 2017 by NGO Mighty Earth regarding the illegal cocoa growing in national parks and other protected forests in Côte d'Ivoire. The report accused Barry Callebaut of endangering the forest habitats of chimpanzees, elephants, and other wildlife populations by purchasing cocoa linked to deforestation. Barry Callebaut was notified of the findings of Mighty Earth's investigation and did not deny that the company sourced its cocoa from protected areas in the Côte d'Ivoire. A follow-up report by Mighty Earth dated Dec. 7, 2018, indicated little to no progress had been made in the year since Barry Callebaut and other signatories had committed to the Cocoa and Forests Initiative.

In 2021, Barry Callebaut was named in a class action lawsuit filed by eight former child slaves from Mali who allege that the company aided and abetted their enslavement on cocoa plantations in Côte d'Ivoire. The suit accused Barry Callebaut (along with Nestlé, Cargill, Mars, Olam, Hershey and Mondelez) of knowingly engaging in forced labor, and the plaintiffs' sought damages for unjust enrichment, negligent supervision, and intentional infliction of emotional distress (Jordan et al., 2020).

## Cargill

(Cargill, 2021)

**Traceability:** In Côte d'Ivoire, 77,320 farmers are included in Cargill's digital Cooperative Management System. This system currently tracks 151,190 metric tons of cocoa beans and consists of a digital interface for cooperatives so that they can track the cocoa beans up to farm level and manage information on inventory, costs and outstanding loans.

**Child Labor:** Cargill claims to work with government, civil society and other partners on a three-fold approach: prevent, monitor and remediate, integrated in a Child Labor Monitoring and Remediation System (CLMRS). Cargill contracts local coaches to visit farms yearly to

monitor child labor in Côte d'Ivoire, Ghana, Cameroon and Indonesia. In 2019, 29 percent of the total farmers (58,800) were monitored by the CLMRS.

**Living Income:** Cargill claims it goes further than increasing farmers' living income: they developed a tool with 25 indicators to help the farmers, although it is not clear how. Cargill realizes that cocoa is, for some farmers, about 70 percent of their income, so they also look for diversification to diminish the risk of dependence on cocoa and work on food crop production, agroforestry and small livestock keeping, although no concrete results or objectives were found.

**Deforestation:** Cargill claims to be in favor of eliminating deforestation from the cocoa supply chain and feels that traceability is the strategy for that: it has reached 72 percent of farmers with GPS mapping in 2018-2019. Cargill also wants to grow more cocoa on less land, and to support farmers to effectively include agroforestry and conservation practices on their farms, but no concrete figures are published.

**Critical Analysis:** Cargill has the same ideals as the rest but publishes little about real results or even concrete objectives; only regarding the mapping of farmers has the company published data. Even when digging into deeper levels of its [sustainability webpage](#), limited quantified data is available.

Cargill was named "worst company in the world" by Mighty Earth in 2019, citing contaminated meat and water, displacing indigenous people for deforestation, financial malfeasance, and child laborers who grow cocoa (Mighty Earth, 2019). Six cocoa farmers allege that they were trafficked as children in the 1990s from Mali to Côte d'Ivoire, where they were forced to work unpaid on plantations and severely physically abused by guards. International Rights Advocates (IRA), which is representing the claimants, alleges that Cargill knew that the farms it was using were accused of exploiting child slaves, yet continued to do business with them. A 2017 Mighty Earth investigation found that cocoa purchased by Cargill and others via a series of third parties had been grown in illegally deforested protected areas in Côte d'Ivoire. Cargill has also been linked to slave-like labor conditions in Brazilian cocoa plantations. (Jordan et al., 2020).

## ECOM

(ECOM, 2021)

**Traceability:** For both coffee and cocoa, ECOM claims to follow the entire product supply chain and know each process to make sure that transparency in the supply chain is guaranteed. From the primary process to the packing with the goal of providing superior service and quality.

**Child Labor:** ECOM reports to support childcare and education for children from the poorest slums, while their families are at work during the day. Traceable supply chains allegedly ensure the absence of child and forced labor. ECOM claims that communities and families are strengthened.

**Environmental Policy:** ECOM lists the efficient use of natural resources, responsible use of water and energy resources and maintenance of air quality, proper recycling or disposal

of waste, promotion of the effective use of resources through ongoing monitoring and training, supporting producers to manage their farms environmentally and productively, and reports that the company work with producers to improve practices to limit pesticides and deforestation.

**Living Income:** ECOM says it collaborates closely with farmers to help them to improve yields, quality and, in turn, their income. ECOM understands that through training, access to markets, inputs and technology, farmers can produce more and better products.

**Critical Analysis:** ECOM lists the same ideals as other companies but publishes no real results or concrete objectives. It is all very descriptive without any quantification. Not even on the mapping of farmers did the company publish any data.

ECOM has been linked in West African countries with working Lebanese agents that do not have much regard for local communities and accept large volumes of cross-border trafficked Ivorian cocoa, much of it of very poor quality (wet) and contaminated with pesticides.

The investigative NGO Repórter Brasil scrutinized the labor conditions on coffee farms in Brazil in 2016 and found evidence of multiple abuses: Advances never paid were discounted from salaries and the employer irregularly subtracted absences from pay slips, even for rainy days, when harvesting was impossible. Because of these practices, some workers were being paid monthly amounts below half of the minimum wage (Braunschweig et al., 2019).

## Mondelēz International

Mondelēz has its own 'Cocoa Life' program that works on sustainability issues and claims to be reaching 188,000 of over 200,000 cocoa farmers the company sources from. The company has a 2025 commitment to source 100 percent of the cocoa needed for Mondelēz International's chocolate brands through Cocoa Life. At the end of 2020, 68 percent of the cocoa for their chocolate brands was sourced through Cocoa Life. Brands by Mondelēz are Cadbury Dairy Milk, Côte D'Or, Milka, Freia, Daim, Suchard, Marabou, Lacta Brazil, Toblerone, Green & Blacks Velvet.

**Traceability:** Mondelēz claims to "work hand-in-hand with the men and women who make their living from cocoa and all the supply chain, focusing on turning cocoa into a business of choice, creating inclusive and empowered communities and educating." No figures are reported.

**Child Labor:** Mondelēz's CLMRS have implemented the CLMRS in 513 communities in West Africa, reaching more than 620,000 people.

**Living Income:** trained 181,257 farmers in Good Agricultural Practices (GAP) and Cocoa Life registered farmers' income is 22 percent higher in Ghana and 8 percent higher in Côte d'Ivoire when compared to non-Cocoa Life farmers. (Again, it is not clear what share of farmers are Cocoa Life-registered.) The company feels it is necessary to consider and address the drivers of farmer income holistically, through sector wide collaboration, coordinated by government leadership. Mondelēz does not set a minimum price but pays "loyalty premiums" to the farmer collectives with which it chooses to work. Cathy Pieters, director of Mondelēz's Cocoa Life program, reports that it is up to them to decide what kind of action plans can be

funded with the money. Mondelez commissions large NGOs to work with these cooperatives in determining and crafting their action plans (Subramanian, 2019). The company supports Village Savings and Loan Associations (VSLA's) with over 3,200 in operation by 2020, 75 percent of the participants being female.

**Deforestation:** Mondelez claims it identifies at-risk areas by mapping 100 percent of the farms registered in their program, but how many that is, and what share that is of total farms is not published. The company has piloted 'Payment for Environmental Services' (PES), where farmers receive payment in return for protecting the environment. A PES scheme for agroforestry was scaled up in Côte d'Ivoire and launched in Ghana and Indonesia. PES contracts were signed with 1,537 farmers in Ghana and Côte d'Ivoire. The company has distributed more than 2.2 million non-cocoa (presumably shade) trees and mapped over 167,000 farms to monitor deforestation. It claims that 82 percent of farmers have changed their practices to reduce climate impact. Again, it is not clear if this is total farmers or just those in their managed program (Mondelez, 2021).

**Critical Analysis:** At the moment Mondelez is facing a scandal because of the use of ethylene oxide, which is used for disinfecting the food and is prohibited in Europe. While consumption of foods containing ethylene oxide doesn't pose an acute risk to health, there is an increased risk if contaminated foods are consumed over a long period of time with officials not certain when contamination started (Whitworth, 2021).

## Nestlé

(Nestlé, 2021)

**Traceability:** In 2019, the Nestlé Cocoa Plan (NCP) covered 109,000 farmers across Côte d'Ivoire, Ghana, Cameroon, Indonesia, Brazil, Ecuador, Mexico, and Venezuela. The company sourced over 183,000 tons from these farmers. It is not clear what the percentage is of the total amount of sourced beans.

**Child Labor:** Nestlé claims to be the first company to introduce a comprehensive Child Labor Monitoring and Remediation System (CLMRS) in 2012. The CLMRS of Nestlé has six steps that include home visits, identification of child labor, database, follow up, remediation through help, and measurement. In 2019, Nestlé found that of the 73,000 children monitored, 18,283 children were involved in child labor (23%).

**Living Income:** For 2020, Nestlé announced it was focusing on creating an income for cocoa farmers. The company wished to support the efforts by the governments of Côte d'Ivoire and Ghana to improve the standards of living for cocoa farmers. Nestlé reported that they were one of the first companies to buy 2020–2021 cocoa with the Living Income Differential (LID).

**Deforestation:** Nestlé claims they do not use any cocoa grown illegally in protected areas in their supply chains. Nestlé cites the Cocoa & Forests Initiative (CFI) of which it is a member.

**Critical Analysis:** Nestlé is currently facing a slavery lawsuit, together with other big chocolate companies in the United States. The lawsuit accuses the companies of aiding and abetting the illegal enslavement of "thousands" of children on cocoa farms in their supply chains, based on testimonies from former child workers, who say they were forced to work without pay on

cocoa plantations in the west African country of Côte d'Ivoire (Just Food, 2021). The Cocoa Barometer points out that in the past decade, Nestlé has made a profit margin of around USD 46 billion, implying it could pay farmers better (A. Fountain & Huetz-Adams, 2020).

## The Hershey Company

(Hershey Co., 2021)

As of January 2020, Hershey claims that 100 percent of the cocoa they sourced for all their products worldwide was certified and sustainable. Its sustainability program is called 'Cocoa For Good', and is, per 2020, applied to 45 percent of all cocoa sourced by the company, reaching 80,000 – 100,000 farmers under the program. Hershey pledges to invest USD 500 million into cocoa communities by 2030 as part of its Cocoa for Good strategy. Hershey, a manufacturer of Kisses, Reese's and other chocolate treats, works with cocoa product suppliers such as Olam and ECOM, which would then implement Hershey's 'Cocoa For Good' program at origin.

**Traceability:** The traceability to the plantation is currently 72.7 percent. It is not clear if this is the share of its global cocoa needs, or of its Cocoa for Good program (45% of global cocoa needs).

**Child Labor:** As of 2020, Hershey's CLMRS found no evidence of forced child labor in their supply chain. The CLMRS includes community facilitators, who are trained members of local farmer groups and their suppliers' staff, who visit every farm to see if there is any child involved. Information about the situation is recorded in a centralized database to design actions in support of children identified in hazardous activities, children and their families receive remediation support from supply chain facilitators and NGO partners or are referred to public services. In 2020, 97 percent of farmers in Côte d'Ivoire and Ghana that were directly sourced to Hershey were covered through CLMRS.

**Living Income:** Hershey feels that since 2018 they have gone beyond their 100 percent certification commitment by supporting broader sustainable livelihood initiatives in Côte d'Ivoire and Ghana. These efforts include improving crop yields, work on land tenure titling, alternative income generation projects on-farm and off-farm, financial literacy training, village savings and loan associations (VSLAs), and gender awareness training.

**Climate Change:** To help meaningfully reduce their impact on the climate, Hershey have announced a new science-based target to cut their absolute greenhouse gas (GHG) emissions, amplifying their response and impact.

**Training:** In 2020, 5,673 community members were trained in alternative income-generating opportunities such as soap making and cassava processing. During the year, 17,527 farmers (21% of all Cocoa For Good farmers) received guidance on crop diversification. In 2020, 16 percent of farmers in Côte d'Ivoire and Ghana were trained on climate-smart cocoa using a curriculum Hershey helped develop.

**Deforestation:** Through measuring annual tree cover loss and monitoring farm locations, in 2020 they found out that 1,628 farmers were in protected areas of which 583 farmers were removed from the Hershey direct sourcing supply chain. Through their partnership with the USAID Integrated Land and Resource Governance (ILRG) Project (2018–2021), Hershey supports

communities in Ghana to clarify and document land rights as well as improve land-use planning practices through agroforestry. Through engagement with ILRG and supplier ECOM in 2020, 622 farmers have obtained land title documentation and 749 certificates registering ownership of shade trees were issued to farmers.

**Critical Analysis:** On their website Hershey states that they support the Living Income Differential (LID) in West African markets, in addition to the premium they pay for certified cocoa. However, the governments of Côte d'Ivoire and Ghana accused Hershey of trying to avoid the USD 400 per ton premium.

## Mars Wrigley

(MARS, 2021d, 2021c, 2021b, 2021a)

Mars Wrigley is a manufacturer that sources cocoa products from major processors, which would implement Mars' sustainability program called 'Responsible Cocoa Program'.

**Traceability:** Mars sources close to 400,000 metric tons of cocoa, which is categorized into three tiers, where tier one (95% of its cocoa) means traceable to a country of origin (suppliers are Albrecht & Dill, Barry Callebaut, Blommer, Cargill, ECOM, General Cocoa Company, Rizek Cacao, Guan Chong, Touton, FC Stone, JB Cocoa, Fuchs & Hoffman and Kennermer Foods); tier two means traceable to a farmer group (59% of sourced cocoa) and tier three means traceable to farm level with polygon mapping (43% of cocoa). Polygon mapping is more accurate than the traditional single global positioning system (GPS) location point and in turn helps protect forests and refine yield estimates. Mars publishes an [interactive map](#) showing its farmer groups that are part of Mars' 'Responsible Cocoa Program'.

**Child Labor:** An estimated of 34,000 households were monitored for child labor, while 134,000 farmers and 1,511 farmer organizations' staff received training in human rights, including responsible labor practices, local labor policies, and practices considered child labor.

**Training:** Mars, together with its partners, supported 50,000 cocoa farmers in Indonesia since 2012 through its Cocoa Development Center (CDC) and the Mars Cocoa Academy in Luwu Raya, South Sulawesi: the cocoa farmers can study modern farming techniques and become 'Cocoa Doctors' that help farmers to increase their cocoa production.

**Living Income:** Mars claims to be the first major manufacturer to support the LID to boost the price farmers receive in West Africa. It is not clear if Mars ignored the negative country differentials that ensued after the implementation of the LID. As is clear from the criticism below, Mars did look at other origins for 'cheaper beans' (as did the rest of the industry). In 2019, 10 percent of the farmers in their cocoa program received their payment digitally.

**Deforestation:** In 2019, 569,744 non-cocoa trees were distributed globally to 36,575 farmers.

**Critical Analysis:** Côte d'Ivoire and Ghana said that Mars (and other companies) had changed its buying patterns to buy cheaper beans to avoid paying the premium aimed at the improvement of the living income of the farmers.

## Ferrero

Ferrero sources 75 percent of their 144 thousand metric tons of cocoa as raw beans which they process in-house at their three processing plants. Ferrero is in the process of assessing and prioritizing all Ferrero suppliers using the due diligence approach, using a Supplier Code and a responsible sourcing assurance questionnaire to all prioritized suppliers to explore, request and collect certifications and standards. The process started in July 2020 and by the end of FY 2020–2021, some 4,200 suppliers will undergo the process. It is not clear from Ferrero's publications how many farmers are in their supply chain in total.

**Packaging:** Ferrero actively tries to increase recycled materials for its packaging and is piloting a project in Paris where shoppers of Loop and Carrefour can purchase a specially designed reusable Nutella jar for which they pay a deposit. Empty jars are collected for washing and returned to the Ferrero plant to be refilled and put back into the loop for repurchase.

**Traceability:** Ferrero claims that almost 100 percent of their cocoa beans are physically traceable from farmer group level to plants. They source cocoa under different sustainability schemes including UTZ, Rainforest Alliance, and Fairtrade. In 2019 and 2020, Ferrero sourced all its cocoa beans, close to 144,000 metric tons, through leading certification bodies and other independently managed standards thus “reaching 100 percent sustainable cocoa target in August 2020”.

**Child Labor:** Ferrero conducted 4,878 awareness raising sessions that reached 54,292 people (39,656 adults and 22,119 children) and 121 child protection cases were successfully closed. In 2019–2020, 93 percent of Ferrero-dedicated farmer groups were covered by the Ferrero CLMRS or an equivalent system, up from 44 percent the previous year.

**Training:** Ferrero's Farmer Field Schools provide training in good agricultural, social and environmental practices and promote access to inputs such as cocoa and multi-purpose tree seedlings and fertilizers. Almost 118,000 farmers were trained in Good Agricultural Practices and more than one million cocoa seedlings were distributed.

**Living Income:** In 2019 and 2020, almost 15,000 people were supported with Income Generating Activities (IGA) and more than 157,000 farmers received a cash premium on top of cocoa market prices. 267 communities in Côte d'Ivoire and Ghana were supported through the Community Development Program and there were 525 active VSLA groups involving around 13,000 members, mainly women.

**Deforestation:** In 2019 and 2020, more than 164,000 ha were covered by deforestation risk assessments, an increase of 26 percent from 130,000 the previous year. Also, 31,000 farmers have been trained in the Climate Smart Cocoa approach, which translates climate science into applications on the ground to end deforestation and promote sustainable livelihoods. Over 700,000 multi-purpose trees were distributed for on-farm planting and there are now 26,000 farmers applying agroforestry, of which almost 19,000 started in 2019. This brings the total area of cocoa agroforestry to 48,000 ha of cocoa agroforestry, an increase of 35,000 ha during 2019 and 2020. Ferrero uses 0.3 percent of the world's palm oil production, still some 220,000 metric tons. Palm oil is associated with large-scale deforestation in Indonesia and Malaysia. Ferrero writes that it is “committed to securing a no-deforestation, no-development

on peatlands and no-exploitation” palm oil supply chain through collaboration with NGOs, stakeholders and suppliers, but does not provide details on actions nor figures on how the company guarantees these promises.

**Carbon Footprint:** Scope 3 emissions are the emissions for which a company has indirect responsibility across their value chain, including raw materials and packaging. In 2019 and 2020, Scope 3 emissions totaled 6,023,579 tons of CO<sub>2</sub>-equivalents and accounted for 91.2 percent of their total carbon footprint. At 61.7 percent, the cultivation and production of agricultural raw materials is the biggest source of Scope 3 emissions followed by packaging at 12.5 percent and logistics product transportation at 6.8 percent. Ferrero mentions that it does not have direct control over many of these activities as it involves many stakeholders, so this part of their carbon footprint remains the most challenging to reduce.

**Critical Analysis:** In the past, farms in Italy were used to plant a diverse mix including olives, grapevines and hazelnuts. In the past few years, Ferrero has been the driver of turning the surrounding valleys into intensive hazelnut farming areas, with monoculture plantations replacing grassy pastures, small farms and rows of vines. Hazelnut trees are planted everywhere and are sucking up all the resources. The problem started when Ferrero decided to reduce their reliance on hazelnuts imported from Turkey and shortened supply chains to source hazelnuts at home in Italy.

Palm oil remains a controversial ingredient in Ferrero products. As many chocolate-spread manufacturers currently offer ‘palm oil free’ products, using alternatives not associated with massive deforestation in Asia, Ferrero seems to stick to palm oil and gives little evidence of deforestation-free palm oil. Like most palm oil buyers, RSPO (Roundtable for Sustainable Palm Oil) membership is used as evidence for responsible sourcing, but this certification has been tarnished throughout the years with scandals. A 2018 study conducted by researchers from the University of Queensland and the ARC Centre of Excellence for Environmental Decisions (CEED), both in Australia, is one of the first to assess how effective RSPO is in achieving its sustainability goals by comparing certified and non-certified concessions. They created a comprehensive map and dataset of RSPO-certified sites in Kalimantan and used the data to assess how effectively these plantations delivered on six of the eight central pillars of the RSPO’s principles and criteria (conservation of biodiversity, responsible development of new plantings, responsible consideration of communities, consideration of social impacts, economic viability, and commitment to best practice.) “No significant difference was found between certified and non-certified plantations for any of the sustainability metrics investigated. (...) Our results suggest that low confidence in the [RSPO’s] mechanisms for improving overall industry sustainability appears warranted” the researchers concluded (Jong, 2018). It is to be noted that other cocoa companies in this report also deal in palm oil: Cargill, Mondelēz, ECOM, Barry Callebaut, Mars, Hershey, Nestlé, Olam and Guan Chong Bernad all either directly source or use palm oil in their products.

The Cocoa Barometer points out that the Ferrero family paid itself an annual dividend of EUR 642 million and that the company, using 135,000 metric tons of cocoa per year “could give every single cocoa farming household it sources from (circa 90,000 farmers producing 1.5 tons per household) a living income for the year (USD 5,500 per household for Côte d’Ivoire), leading to a cost of at most USD 450 million. This would still leave the company around EUR

192 million it could pay out to its owning family – the richest family in Italy” (A. Fountain & Huetz-Adams, 2020).

### **Guan Chong Berhad**

(Guan Chong Berhad, 2021)

Sustainability is often used by companies in a vague, inflationary way, without defining what it actually means, hoping the client will be impressed enough by the many times the word is used, as the following text from the Guan Chong Berhad sustainability webpage illustrates:

“What is Sustainable Cocoa? Cocoa can be defined as responsible when it results from a sustainable cocoa supply chain, from the production of cocoa beans by farmers to the usage of cocoa ingredients by customers. In a sustainable supply chain, the cocoa beans we source and the cocoa ingredients we produce comply with all the sustainability frameworks that we have set forth. By working towards our target of 100 percent sustainable cocoa by 2030, GCB Cocoa will be ensuring the provision of responsible cocoa to the industry.”

Guan Chong mentions the key issues the industry is trying to tackle, including farmer income, human rights, child labor, and protection of the environment, but only in the most superficial way, without any measurable results or even goals the company would have set. When looking at concrete actions by the company in the domain of sustainability, it does list stories of programs directed towards their Malaysian employees, with just one story about a pledge of USD 30,000 to support West African communities in response to COVID-19. There is no specific information on their policy or activities towards deforestation, child labor, living income, traceability, etc.

## Sustainability Key Indicators – Comparing Major Cocoa Companies

|   | Olam                         | Barry                   | Cargill                                      | Mars Wrigley                     | Mondelēz                         | ECOM                  | CGB                   | Nestlé                               | Hershey  | Ferrero  |
|---|------------------------------|-------------------------|--|----------------------------------|----------------------------------|-----------------------|-----------------------|--------------------------------------|--|--|
| Type of company                                 | Beans, cocoa products        | Beans, chocolate        | Beans, cocoa product, chocolate              | Beans, chocolate & confectionary | Beans, chocolate & confectionary | Beans, cocoa products | Beans, Cocoa products | Beans, chocolate & confectionary     | Chocolate & confectionary                                    | Chocolate & confectionary                                    |
| Cocoa beans sourced/ processed (in metric tons) | 1 million                    | 2.1 million (chocolate) | 151,190 metric tons (tracked beans)          | 400,000                          | No number                        | 4 million             | 200,000 (2012)        | 183,000 metric tons of cocoa sourced | No numbers   | 144,000  |
| Total amount of farmers                         | Over 1 million MT (estimate) | No data                 | If 29% = 58,800 (CLMRS), then 100% = 200,000 | 189,594                          | 188,000                          | 800,000               | No data               | 109,000 farmers (2019)               | 83,783 in 2020   | No data  |
| Farmers/ beans under sustainable program        | No data                      | 2.1 million (chocolate) | 73,320 (CDI), 151,191 metric tons cocoa      | No data                          | No data                          | No data               | No data               | No data                              | 17,527 = 17%, 45% of cocoa                                   | No data  |
| Beans directly sourced                          | 65%                          | No data                 | No data                                      | 95% via direct suppliers         | No data                          | No data               | No data               | Only Ecuador                         | Cocoa products and chocolate purchased from large processors | Cocoa products and chocolate purchased from large processors |
| Beans indirectly sourced                        | 35%                          | No data                 | No data                                      | No data                          | No data                          | No data               | No data               | 183,000 incl. Ecuador                |  |  |

|   | Olam                  | Barry                      | Cargill                         | Mars Wrigley                     | Mondelēz                         | ECOM                        | CGB                          | Nestlé   | Hershey                   | Ferrero                   |
|---|-----------------------|----------------------------|---------------------------------|----------------------------------|----------------------------------|-----------------------------|------------------------------|--|---------------------------|---------------------------|
| Type of company   | Beans, cocoa products | Beans, chocolate           | Beans, cocoa product, chocolate | Beans, chocolate & confectionary | Beans, chocolate & confectionary | Beans, cocoa products       | Beans, Cocoa products        | Beans, chocolate & confectionary   | Chocolate & confectionary | Chocolate & confectionary |
| Traceable beans in total supply chain   | 38%                   | No data                    | 43%                             | 100% by 2025                     | 68% via cocoa life               | No data                     | Goal 100% traceable in 2030. | 183,000 metric tons 87,000 farms   | 72%                       | 100%                      |
| Traceable to farm   | 58%                   | 72%                        | 50%                             | 33%                              | No data                          | 38%                         | No data                      | No data  | 100%                      | 96%                       |
| Child Labor Monitoring and Remediation System implemented (of total households) | 18%                   | Mention it, but no numbers | 29%                             | 51%                              | 513 communities                  | Mention it, but no numbers. | Mention it, but no numbers.  | By 2019, they found 18,283 children involved in child labor and they are monitoring 73,000 farmers | 97%                       | 54,292                    |
| CLMRS in direct supply chain  | 28%                   | 42%                        | 58,800 farmers                  | 34,000 farmers                   | 67%                              | Mention it, but no numbers. | Mention it, but no numbers.  | 73,000 farmers   | 97%                       | 54,292                    |
| Child Labor cases reported  | 12,000                | 23,000                     | No data                         | No data                          | No data                          | No data                     | No data                      | 18,283   | No data                   | No data                   |
| Child Labor cases under remediation   | 8,000                 | 5,000                      | No data                         | No data                          | No data                          | No data                     | No data                      | 15,740   | 6,829                     | 121 cases closed          |

|  | Olam  | Barry            | Cargill                         | Mars Wrigley                     | Mondelēz  | ECOM                        | CGB                        | Nestlé  | Hershey   | Ferrero   |
|--|---|------------------|---------------------------------|----------------------------------|---|-----------------------------|----------------------------|---|---|---|
| Type of company                          | Beans, cocoa products                       | Beans, chocolate | Beans, cocoa product, chocolate | Beans, chocolate & confectionary | Beans, chocolate & confectionary                | Beans, cocoa products       | Beans, Cocoa products      | Beans, chocolate & confectionary              | Chocolate & confectionary   | Chocolate & confectionary                         |
| Child Labor awareness training (farmers) | 6,000 (Cameroon) and 210 committees (Ghana) | 95,000           | No data                         | 134,000 farmers, 1,511 FBOs      | 324,953   | Mention it, but no numbers. | 0                          | 593,925 community members educated            | No data   | 54,292 people (39,656 adults and 22,119 children) |
| Living Income achieved 2020              | No data                                     | 143,000 farmers  | No data                         | 10%                              | 22% higher in Ghana, 6% higher in Côte d'Ivoire | Mention it, but no numbers  | Mention it, but no numbers | 40,000 tons of sustainable cocoa              | 83,783 farmers  | 157,000 farmers                                   |
| Living Income goal 2024/25               | 60,000 farmers                              | 500,000 farmers  | 1 million farmers               | No data                          | No data   | No data                     | No data                    | All cocoa sourced through Nestle's Cocoa Plan | No data   | No data   |
| Living Income goal 2030                  | 150,000 farmers                             | No data          | No data                         | No data                          | No data   | No data                     | No data                    | All cocoa sourced through Nestle's Cocoa Plan | No data   | No data   |
| Farmer GAP training                      | 108,000 farmers                             | 72,000 farmers   | 210,000 farmers                 | 155,255 farmers                  | 181,257 farmers                                 | 600,000                     | No data                    | 71,000 farmers                                | 17,527 = 17% of Cocoa For Good farmers (diversification), 16% climate-smart cocoa | 118,000 farmers                                   |

|                                    | Olam                           | Barry   | Cargill                         | Mars Wrigley   | Mondelēz                         | ECOM                       | CGB                        | Nestlé                           | Hershey                       | Ferrero                                       |
|------------------------------------|--------------------------------|---|---------------------------------|--|----------------------------------|----------------------------|----------------------------|----------------------------------|-------------------------------|---|
| Type of company                    | Beans, cocoa products          | Beans, chocolate                                | Beans, cocoa product, chocolate | Beans, chocolate & confectionary   | Beans, chocolate & confectionary | Beans, cocoa products      | Beans, Cocoa products      | Beans, chocolate & confectionary | Chocolate & confectionary     | Chocolate & confectionary                     |
| Deforestation monitoring           | 65% (100% direct supply chain) | 52,000 farms within 25 km of a protected forest | 72% farmers                     | 33%  | 71%                              | Mention it, but no numbers | Mention it, but no numbers | 85%                              | 83%                           | 164,000 ha                                    |
| Deforestation awareness training   | 115,000                        | No data   | No data                         | 36,575 (received trees)  | 246,262 farmers                  | Mention it, but no numbers | No data                    | Over 10,000 farmers              | No data                       | 31,000 farmers                                |
| Shade trees distributed            | 0,74 million                   | 1.6 million                                     | 335,794                         | 569,744  | 2.2 million                      | Mention it, but no numbers | No data                    | 2.8 million                      | 1.26 million                  | 1 million                                     |
| Palm oil free                      | No                             | No  | No                              | No   | No                               | No                         | No                         | No                               | No                            | No  |
| Carbon footprint, yearly reduction | -20% (2019),<br>-13% (2020)    | -8% (2020) and neutral in 2025                  | No data                         | No data  | -20%                             | No data                    | No data                    | No data                          | -8% (2020 compared to 2019)   | -4.2% (2020 compared to 2017-2018)            |
| Sustainability reports             | Cocoa Compass Report           | Forever Chocolate                               | Cargill Sustainability Report   | Sustainable Cocoa Tomorrow, Cocoa for Generations, Supply Chain transparency | Cocoa Life                       | Sustainability webpage     | Good Cocoa and Beyond      | Nestlé Cocoa Plan                | Hershey Sustainability Report | <a href="#">Ferrero Sustainability Report</a> |

# CONCLUSIONS

## Price Formation: Limited Influence of Speculation and Machine Trading

Cocoa prices are overall considered low by many in the sector, particularly when observing that even the increased Fairtrade minimum price does not reach a living income of a cocoa farmer and that there is a slight downward trend in the average (real) value of cocoa since the 1960s. Prices of cocoa still appear to be fundamentally driven by classic supply and demand, which produced large price swings, especially up to the 1990s but also witnessed not too long ago, in 2016, when a considerable drop in global cocoa prices was caused by an 18 percent increase in global cocoa production. Research shows that speculation is secondary to the factors of supply and demand in determining cocoa prices. An often-overlooked point is that speculators play a necessary role in the sector, as they provide the capital that allows traders, processors and manufacturers to hedge any volume at any time and not “sell the market down” or “buy the market up” just based on their own activity. The liquidity provided by investors / speculators allows actors to protect themselves against greater risks in the supply chain: supply and demand, logistics, weather, and government policy. Computerized trading is also shown to have a moderate influence only; research shows it has not driven up cocoa prices above reasonable levels. (Bymolt, Laven, & Tyszler, 2018; Gilbert, 2016; Oomes et al., 2016; Transtrend, 2018; Veldhuyzen, 2019).

## Low Yield, Crop-dependence and Poor Policy drive Poverty more than Market Concentration

Looking further into low farmer income, which perpetuates the cycle of child labor, vulnerability to black pod diseases, natural disasters, and ever smaller plots of land, multinationals are the usual suspect of driving farmer poverty. The asymmetrical power balance between farmers and large companies are described by some to be the reason for low farmgate prices, citing extravagant company share buybacks and family dividends that could have provided farmers a ‘living income’ (A. Fountain & Huetz-Adams, 2020). However, despite deep financial pockets and frequent acquisitions and mergers, other research shows that market concentration by multinationals is ‘moderate’, that their margins are small and risks great. This research suggests that more probable reasons for poverty are oversupply, low yield and lack of diversification (Oomes et al., 2016; Waarts, 2021). Other researchers mention bad policy (citing the LID) and weak or even corrupt governance as main contributors to consistent low levels of investment in education, infrastructure and ensuing poverty (Webb & Stanbury, 2020b). Regarding the trend of market concentration, the cocoa industry indicates that this is tapering off: if there is another shift in the profile of the industry, either upstream (e.g. new plantation model) or downstream (new demand), this may shift prices and value and with-it further concentration. Without these changes, the large processors will hesitate to grow beyond a 20 percent of the market share each, as it would expose them to excessive risk (Anonymous, personal communication, July 2021).

## Multinationals, Sustainability, Health and Specialty Segment Drive the Market

The efficiency of the large companies means that the market is filled with low-priced chocolate products. This could drive the market worldwide, allowing such products to fit to every budget. In the past, cocoa would pass the hands of five to 10 entities before arriving at a processor. Nowadays the supply chain is shortened to maximum two in the freely traded markets, creating efficiency for both suppliers and processors. Sustainability is a key driver for this, as sourcing companies are required to have a stronger presence at origin (Anonymous, personal communication, 2021). Chocolate manufacturers focus on storytelling to emphasize the taste, quality, uniqueness, and the companies' sustainability efforts to compete with other brands on the shelves in supermarkets, and to appeal to changing consumer needs. Consumers are looking for high-quality chocolate that is good for their health and for the environment. Growing awareness about the health benefits of cocoa results in the growth of specialty and organic (dark) chocolate. The pandemic has accelerated online sales of chocolate. The convenience of online shopping, in combination with improved online distribution, will continue to drive growth in the coming years.

### Civil Society Drives Sustainability

With the launching of Max Havelaar (Fairtrade) in 1988, certification became one of the first institutionalized tools organized by civil society to address the issue of poverty reduction. It has been able to raise farmgate prices slightly, but the main impact of certification is that it helps the forming alliances and partnerships needed for the protection of forests, for the implementation of good agricultural practices, and for access to the markets (Veldhuyzen, 2019). Buyers of specialty cocoa pay farmers a better price, often without the need for certification, but is still a niche segment and as such, by default it represents low volumes for a limited audience. In the end, the ultimate driver of change may be the consumer, through buying behavior or by involvement in activist civil society. CSOs have been able to generate court cases regarding human rights or environmental abuses that have forced companies and governments to change their behavior (Mighty Earth, 2019; NL Times, 2021; URGENDA, 2019). Consumers elect governments that might one day create the (global) level playing field cocoa and chocolate companies are calling for. In producer countries there is also the need of civil society to influence sustainability, through pressure to curb government corruption, for more equal wealth distribution and for human and ecological rights.

### The Mainstreaming of Sustainability Seems to Accelerate

While small companies in the business of specialty chocolate involve themselves directly in the communities, developing and applying sustainability standards closely with suppliers, third-party certification has been used by medium-sized companies (e.g., Fairtrade and Organic), often supported by NGOs. In recent years, the large companies have been rolling out their corporate 'managed programs', addressing social and ecological issues for ever larger shares of the cocoa supply – sometimes monitored by themselves, but increasingly outsourced to third-party auditors. This leads to social and ecological governance being partly taken over by companies in countries like Ghana, Côte d'Ivoire and Ecuador. Every year there is a higher percentage of farmers (or cocoa sourced) that fall under some sort of sustainability program: Olam indicates that for all its in-country sourced cocoa (65 percent of all its globally sourced

cocoa) it has sustainability programs implemented (FY 2020/21). For 38 percent of its globally sourced cocoa, it has client-paid (e.g., Nestlé, Mars, Hershey) sustainability programs (up 8% from the year before). These sustainability programs all have some traceability component, monitor deforestation, have a CLMRS, are reducing their CO<sub>2</sub> footprint, and do surveys on livelihoods. The major companies offer add-ons of certifications such as Rainforest, Fairtrade or Organic, that their clients may use towards their consumers (Anonymous, personal communication, 2021; Olam Group, 2020). In interviews, FBOs welcome strict social and ecological guidelines from buyers towards them beyond regulation just on food safety (Farmer groups, personal communication, 2021).

## The Importance of Good Policy

In the meantime, consumer country governments will start to incorporate social and ecological elements into the regulatory framework (e.g., U.S. Tariffs Act, California Transparency in Supply Chains Act and EU Due Diligence Act). Just like food safety issues, human rights policy may no longer be voluntary (CBI, 2021a; Saunders, 2020; Smit et al., 2020). Producer countries are developing at their own pace and may need time to build the strong institutions that some of the consuming countries built over many centuries. But the population may grow impatient with the corruption and populist policies of its governments, resulting in structurally insufficient investments in rural and metropolitan economies. Illicit financial flows alone cost Africa USD 89 billion per year (3.7% of its GDP) (UNCTAD, 2020). Cooperative and financial governance is still lacking in producer countries, while illegally trafficked contaminated beans enter the organic supply chain in some countries. When working capital from buyers or banks goes missing, when cocoa is being stolen from trucks on their way to port, with impunity to boot, it creates an insecure environment that prevents international companies from investing and forming partnerships. This then leaves farmers with few options: even if they have the chance to meet interested international buyers, the low managerial capacity of FBOs will drive farmers back in the hands of monopolist traders with little eye for community development. The role of Cooperative Departments to train farmers is clear.

Failing to include marginalized communities in West African countries in quality-oriented value chains create feeding ground for militant groups that are already in the cocoa producing countries of Nigeria, and Cameroon, at the border of Guinea, Ghana and Côte d'Ivoire (Africa Center for Strategic Studies, 2020; Raaij, 2013). The lack of investment in rural communities by producing country governments is made easy by NGOs that step in and take over what should be the government's job. At the same time, there are reports that NGOs' countless 'multi-stakeholder dialogues', and 'collaborations' also fail to gain traction in achieving real change on the ground. Donor organizations' activities may lead to well-intentioned initiatives with unintended consequences, such as the failure of the (NGO-advocated) LID (Webb, 2020; Webb & Stanbury, 2020b), the unknown one-size-fits-all certification model (ARS) being proposed (Sustainable Cocoa Initiative, 2021b), or the countless donor-funded projects that will fall apart once the donor leaves without an exit-strategy. Below are three suggestions regarding cocoa policy.

### **Recommended Policy: Increase Yield and Limit Land – Declare Forests Off-limits**

High yield and diversification of income seem to be drivers of higher income for cocoa farmers

(Oomes et al., 2016). At the macro level, this might seem contradictory, as higher yield means more cocoa planting, which in turn means declining world market prices with surpluses, reducing again the farmer's income. Rather than implementing an OPEC-system or a buffer stock fund to keep prices up, as Fountain and Hütz-Adams have suggested (A. C. Fountain & Hütz-Adams, 2017), the solution to keeping prices high may lie in limiting the space for agriculture, starting with placing forest areas off-limits for further crop cultivation. Innovation in agriculture would then be stimulated, with a vision for cocoa to have climate-change resilience in regenerative (agroforestry) systems with highly productive cultivars. The limited space will keep the cocoa price relatively high, but the effort must be worldwide to avoid the free-rider problem. Research suggests that if clearing of protected forest areas for cocoa growing is prevented effectively in the future, increases in cocoa prices will be related to the price of land as the limiting factor. Formal land property rights will be important, but so will seeing the cocoa sector in context with the rest of the agricultural sector (Boysen et al., 2021) at least partially. Poverty, in turn, is considered to be the root of further sustainability issues. To raise the value share and price accruing to their farmers by leveraging their collective market power, the two biggest cocoa producing countries Côte d'Ivoire and Ghana jointly announced in 2019 the cocoa Living Income Differential (LID).

### **Recommended Policy: Transition to Fewer (advanced) Farmers**

Governments should design policies for agricultural communities to create employment opportunities in other sectors, as the rural population will need a minimum, viable, size to cultivate cocoa and make a proper living. The creation of these job alternatives in the industrial and service sectors need to be supported by education, (transport and electronic) infrastructure, and fiscal policy by local and (inter)national governments. As the case of Indonesia illustrates, having more realistic alternatives means that farmers can opt out of cocoa, which likely is one of the reasons why cocoa prices in that country are higher (Oomes et al., 2016). For those staying in agriculture, it is imperative to continue strengthening FBOs in their capacities to differentiate cocoa varieties, to improve quality, and to access credit (FAO & BASIC, 2020). Good governance, innovation in breeding and processing, climate-change resilience, and international marketing will make agriculture interesting for young entrepreneurial-minded people.

### **Develop Judicial Processes, Especially in Countries of Origin**

Buying companies call for the creation by governments of a level playing field in the cocoa sector, but this proves to be extremely difficult. Following the era of voluntary sustainability schemes, consumer country governments are starting to introduce mandated due diligence on human rights along the supply chain, as mentioned above. Many welcome this, others alert us that this may run into practical enforcement problems and that it bypasses the institutions that should be in charge to make the real changes: the producing country governments. In the case of supply chain due diligence, the focus should be on supporting the development of good judicial process in origin countries, even if working on good governance in producer countries is not media or politically friendly and involves years of resources (Webb & Stanbury, 2020b). A 'non-tolerance' policy by the EU on child labor in cocoa, for instance, only means children will work in other sectors. Mandating non-tolerance on child labor should encompass all sectors and have CLMRS systems – much is developed in the last few years by the International Cocoa Initiative and multinational companies (Barry Callebaut, 2021a; Cocoa

Initiative, 2017). Similarly, monitoring of deforestation can be carried out with consumer country technology, but it is recommended that producing countries carry out punitive actions against violators, and only as a last resort through EU or U.S. import bans.

### **Demand that Donors Have an Exit Strategy**

In 2010 the World Bank supported the creation of cooperatives together with an apex export organization in Sierra Leone (Rural Private Sector Development program). This worked well, as cooperatives supplied the cocoa, which was professionally exported to a Japanese buyer by professional staff in Freetown. In 2015 the WB program ended, but as the export staff had been salaried up to the WB's exit, the export staff left the organization in search for new donor-salaried projects. The cooperatives had not been trained to take over the export activities, did not have access to credit and were not able to conduct the marketing activities as no budget had been created during the five-year project to sustain the operations. The cooperatives were left to their own devices and were stuck with cocoa they could not sell (Personal conversations with six cooperatives in Sierra Leone, 2021). The case is emblematic of donor organizations developing projects without any clear exit-strategy that ensures the sustainability of a well-intentioned project. Governments in producing countries should be keen to demand such exit strategy from donors wishing to operate in a producing country and monitor that this strategy be adhered to as the project comes to an end. If not, it is better that donor organizations be denied access to operate in producing countries and let the sector develop itself through native grass-roots entrepreneurial efforts, supported by national and local government.



# ACTIONABLE RECOMMENDATIONS

## Recommendations to Increase Farmer Income

- At the micro level of the individual cocoa farmer, the most effective way to achieve a 'living income' from cocoa is to **increase the productivity of cocoa farming**. It is estimated that there is still ample scope to raise cocoa productivity through increasing cocoa-specific knowledge, cocoa-specific training, cocoa-specific inputs, and cocoa-specific finance (Oomes et al., 2016).
- Supplying countries should **stimulate competition**, reducing barriers to market entry for companies that want to buy cocoa, especially in cases where excessive market concentration among local cocoa traders leads to even lower farmgate prices (Oomes et al., 2016).
- In chocolate/cocoa consuming countries, companies could **voluntarily report what prices they pay to cocoa farmers**. Chocolate companies can potentially increase demand for chocolate that pays farmers a better price, as Tony's Chocolonely shows (Oomes et al., 2016a; Tony's Chocolonely, 2021).
- Governmental bodies should **mandate sourcing of only cocoa that has managed sustainability programs**. The extra costs required in this process should be transferred to the consumer. This should be agreed upon internationally – just like the corporate tax law proposed by G20 in June 2021.
- **Differentiate beans at origin**. Ghana separates the small, flat or cluster beans from its higher quality. The Dominican Republic distinguishes between 'Hispaniola' (dried and cheaper cocoa, suitable for producing butter) and 'Sanchez' cocoa (well fermented, suitable for making chocolate). Both serve different markets. The bargaining power for farmers, FBOs and exporters is higher when they align with the needs of the buyer, increasing the quality and the price.
- Since using cocoa pulp in new products is becoming a trend, and several small and larger companies are sourcing this ingredient, it could be interesting for FBOs to look into to the **possibilities to offer** not only the cocoa beans but also the **cocoa pulp in order to increase and diversify their income and markets**. Cocoa pulp is highly perishable and requires adequate handling to ensure quality and food safety. Local investments would be required to set up such a supply chain and safeguard compliance with regulatory and buyer requirements.

## Recommendations to Improve Human Rights

- Producing countries should adopt and **implement due diligence acts** for their supply chains. In that respect, consuming country governments can involve and inspire

producing countries with their regulation (e.g., EU Due Diligence Act, UK Modern Slavery Act, U.S. Harkin-Engel Protocol) (Whoriskey, 2019).

- At (supra)national level, mandate **'zero-tolerance' for child labor only if addressing all sectors, not only cocoa**, and only if addressing parallel policy towards poverty reduction, together with producing countries' legislation and enforcement.
- Investment in **awareness in (West African) countries regarding female genital mutilation (FGM)** (UNFPA, 2017).
- Create incentives for more **presence of women in boards and management** in cooperatives and exporters in producing countries, but also in the boards and upper management of traders and manufacturers in consuming countries.
- Ensure that **all sustainability approaches are tailored to include women** (A. Fountain & Huetz-Adams, 2020).
- Put more **focus on the Trader Code of Conduct**, to ensure multinationals change their practices too, not just farmers (A. Fountain & Huetz-Adams, 2020).

## Recommendations to Reduce Deforestation

- Implement **mandatory due diligence reporting by companies** on implementation of "sustainable projects" and beyond. To illustrate the need for reporting, in the Cocoa Forest Initiative, for example, 15 out of the 79 companies have not reported or monitored progress towards implementing their commitments (IDH, 2020).
- Introduce **mandatory sustainable sourcing requirements for public procurement** across the EU (IDH, 2020) and the US.
- Sourcing from priority areas and using jurisdictional sourcing like **Verified Sourcing Areas**. Environmental and economic benefits are not necessarily at odds (IDH, 2020).
- **Governments should develop sustainable sourcing roadmaps** to guide industry efforts. Analysis shows that achieving sustainable sourcing can save up to half a billion tons (500 metric tons) of CO<sub>2</sub> equivalents over the next 12 years (IDH, 2020)
- **Enhance traceability and transparency** along the entire value chain (IDH, 2020) with (supra)national legal action as backup: With the support of traceability technology and satellites, strictly monitor the supply movement and deforestation, and take punitive action (preferably by producing country governments) against non-compliant actors. The ARS-standard that Ghana and Côte d'Ivoire adopted could be a start of this process.
- **Introduce sustainability requirements for financial investments** in agricultural and commodity production activities (IDH, 2020).
- The sustainable initiatives on cocoa **should partner up with sustainable initiatives on other commodities, to lobby for EU and U.S. legislation on zero-deforestation** for (all)

commodities, including punitive actions if non-compliant (much like the Climate Legislation now being proposed in the EU parliament). Involve the producer country governments in these processes.

- **Be careful with promises of higher prices promoted by NGOs and governments (certification, LID).** Such promises may lead to considerable extra planting of cocoa trees, with resulting deforestation (Sustainable Cocoa Initiative, 2021a; Webb & Stanbury, 2020b).
- To prevent cocoa farming from continuing to act as a driver of deforestation in warmer climates, governments and supply chain actors should **discourage forest frontier dynamics** and should help cocoa farmers adapt to environmental change by adopting more intensive and diversified farming practices (Francois Ruf et al., 2014).

### Recommendations to Empower (Ex-)Farmers

- Governments (foremost) and (international) civil society need to support the **development of cooperatives in their capacity of governance, finance, export quality and logistics, and marketing.** Training is needed to increase cocoa farmers' internal governance, bargaining power and options in the market, including the evaluation of what varieties, certifications and processing methods can bring most impact to communities.
- **Farmers can also group informally to be empowered.** Gaia's own research in the Dominican Republic shows that when farmers group themselves into associations (not necessarily formal, like coops), it also increases their bargaining power and market options. It also makes buyers more competitive through efficiency (De La Rosa et al., 2021).
- At the microlevel of the individual cocoa farmer, increase the productivity of cocoa farming through increasing **cocoa-specific knowledge, cocoa-specific training, cocoa-specific inputs, and cocoa-specific finance** (Oomes et al., 2016).
- Cocoa consuming countries should **facilitate the development of diversification strategies of cocoa producing countries through private sector and financial sector development, as opposed to sector-specific development.** The type of support could range from financial support to capacity building support to farmers, SMEs, financial institutions, or national governments. Review cocoa specific programs, because these may increase the dependence of farmers on cocoa (Hütz-Adams & Hegger, 2018; Oomes et al., 2016).
- Diversify in a 'dual transition' whereby the farmers that remain in cocoa would become (much) more productive, while many other **cocoa farmers will transition to other crop cultivation but also economic activities in industry and services.** Such a transition would require significant improvements in farmers' access to information, training, infrastructure, and finance (Oomes et al., 2016a; Tony's Chocolonely, 2021).
- Producing country governments should create an **agricultural development strategy**

for those staying in cocoa (or other crops, animal husbandry), **and an industrial and service sector development strategy** for those moving away from agriculture. All three sectors will require high investment in education and (electronic) infrastructure. It's these enabling environments that consuming countries can support developing.

- As a cocoa or chocolate company, **always separate commercial from caritative work**. Use the premiums obtained as leverage for donor money to implement larger projects. The social and economic challenges and needs are endless, and it will be impossible to solve them in the short term, but what can be done is to assist farmers to help themselves (Nikkels, personal communication, July 2021). **Donors should not give money**. At most matching funds but focus on training and matchmaking with markets.

## Recommendation to Increase Youth Participation in Agricultural Programs

- Policymakers should **deliberately design programs for categories of youth** concerning their aspirations. This will ensure that youths are engaged in activities in line with their preferences, ensuring full utilization of their potentials.
- **Formal skill training on cocoa value chain activities** is recommended. Official accreditation of skill and training (where certificates are issued) will allow the youth in the cocoa sector to work as professionals, which will, in turn, help them to command better wages, increase yields and have better livelihoods (Mabe et al., 2020).
- In line with a recommendation by (Haggblade et al., 2015) **role models in the agricultural value chain should connect with youth** as they can show them a wide range of professional opportunities in modern agribusiness and commercial agriculture (Mabe et al., 2020).

## Recommendations to Empower Producer Country Governments

- **Listen to what exactly it is that producer country governments want to develop** and support these development goals as consumer countries, to empower producer country governments, which are at the same time are held responsible by their own people for the lead they take.
- **Involve producer country governments in due diligence supply chain legislation passed in the United States, Europe** and other consuming regions. Work together to have similar legislation on both sides, coordinating penal codes for violators.
- **Require stricter control on middlemen by the companies that employ them**. Large companies work with agents and sub-agents that buy the cocoa from farmers. Particularly the sub-agents cut corners on quality (accepting contaminated cross-border cocoa, for instance) and payment to farmers. Certification premiums often end up in the pockets of these middlemen.

- **Guard the borders** to prevent contamination of the domestic cocoa supply chain with trafficked beans. Set up systems to track and trace cocoa entering a neighboring producer country.
- **Support Apex Marketing bodies** that can export for multiple coops. Strengthen training of cooperative governance and business management.
- **Set up a National Export Promotion Agency or other Business Support Organizations (BSO).** Trade fairs are important to visit, developing a country's image and branding of (differentiated) cocoa.

## Recommendations to Move Industry and Retail towards Sustainability

- **National Cocoa Platforms should intensify contact with the CSR departments of cocoa companies;** even though (especially large) cocoa buyers have sufficient funds, their CSR departments are able to convince them internally it is better to invest in projects when matching funds are available from the public sector.
- National Cocoa Platforms should continue to **initiate projects that serve as a “peer pressure” mechanism for companies to carry out/invest in projects.** Upscale these projects to reflect the size of operations of the actors.
- Make the threshold to join important forums lower for cocoa producing and chocolate making SMEs. To join the World Cocoa Foundation comes at a membership price of around EUR 20,000 a year. The International Cocoa Initiative (ICI) is also more directed toward the big industry.
- **More collaboration between small and medium sized companies** is needed, supporting them with knowledge, people on the ground and financial support to move them towards sustainability. Large companies have made important investments in CLMRS and traceability – can this be shared?
- **Develop a common language on traceability and make data publicly available.** The sector is working on “**Interoperability**”, taking the example of the grains company Gavantes where trade houses have come together to share information. All info should be in the same format, assurance on the various sustainability aspects could then be shared with one click of a button, instead of all companies setting up their own monitoring system (Olam, personal communication, 2021).
- Ensure that sustainability standards are subject to **fair, transparent and independent third party audits** and verification (A. Fountain & Huetz-Adams, 2020).
- To grow the market for high quality cocoa beans, it is important that **mainstream supermarkets offer** different types of **chocolates from higher-end segments**, so that consumers have more exposure to these products, thereby increasing awareness and purchasing options.

## Recommendations for Soil Health and Climate-Resilience

- **Training of farmers in 'regenerative agriculture'**, including solid and liquid organic composting, planting shade trees, maintaining an agroforestry system, to become resilient to climate-change, increase productivity and quality.
- **Support reforestation projects** to create healthy micro-climates, retain water in the soil and prevent erosion.
- **The promotion of agroforestry** is a good way to combine both food security initiatives and climate-smart agriculture.
- Due to its crucial importance for the future of the cocoa sector, **research on climate resilient plants needs to be coordinated on a regional and global level** to combine forces and accelerate progress (Hütz-Adams et al., 2016).
- **Cross-border initiatives should be set up to coordinate coping with the impacts of climate change**, for instance among the governments of the Mano River Union delta. Data gathering and research should also include data on deforestation (Hütz-Adams et al., 2016).
- Look at **tolerance to high temperatures in cocoa breeding programs**, the promotion of **shade trees** in cocoa farms (Schroth et al., 2016).
- Ensure the **elimination of the use of highly hazardous pesticides** in cocoa production and promote other alternatives including integrated pest management and agroforestry systems (A. Fountain & Huetz-Adams, 2020).

## Recommendations for Local Grinding and Chocolate Making

- Industrial policies should promote **functional upgrading** of Ivorian and Ghanaian grinders via subsidized credit lines and measures to support the transfer of know-how (Grumiller et al., 2018).
- Côte d'Ivoire and Ghana should promote chocolate manufacturing for the local, regional and—potentially—African market, as the manufacturing of chocolate products (incl. branding) is the segment with a high share of value added in the cocoa value chain (Grumiller et al., 2018).
- Develop a market parallel to the upscaling of chocolate manufacturing – **chocolate production should grow in line with local and regional demand.**
- The promotion of chocolate consumption should **target urban consumers with middle class lifestyles and increasing purchasing power**, since cocoa products are luxury products. Marketing campaigns and public procurement programs could support local consumption.
- Regarding West Africa, chocolate manufacturers should particularly focus on the local and regional market as these can **take advantage of being protected by a 35 percent**

**common external tariff (CET) for chocolate product** imports (WTO, 2017) (Grumiller et al., 2018).

- Include **chocolate products in school cafeterias** to introduce young people to cocoa products (Grumiller et al., 2018). These products should be high in cocoa content, low in sugar, for maximum health and cocoa farmers' benefits.
- Carry out **R&D to develop products suitable for different regional tastes and the hot climate** (Grumiller et al., 2018).
- **Invest in a skilled labor force** necessary for chocolate manufacturing.
- The marketing of chocolate products, where farmers participate in value creation of chocolate manufacturing, could be assisted by the **creation of a new certification model**<sup>24</sup> (Grumiller et al., 2018).
- Start a campaign to **instill pride of purchasing nationally produced food items**. The campaign Peru launched around 2010 was very successful in stimulating the consumption of national products. Instilment of national pride can be used to counter the status of consuming imported products.

## Recommendations Regarding Growth in Consuming Countries

- **The organic segment offers a good opportunity for growth.** There is a clear move towards healthier products, not only in the chocolate sector, but for many other product segments. Organic products are seen as healthier because of the restrictions on synthetic inputs such as pesticides and fertilizers in production. The price of organic chocolate is higher, as are the returns that the farmer gets: in case of double certification (Fairtrade + Organic) an exporter will receive an organic premium of USD 300 (part of which will go to farmers) and a Fairtrade premium of USD 240, which is to be spent by the cooperative, according to its members' decision in the General Assembly.
- **Try to participate in the growing specialty segment.** Multinationals are also finding their way into this niche segment because it offers more opportunity for marketing the farmers, the brand, and the cocoa origin, as well as higher margins. However, the segment is small, consisting of more than 1,000 bean-to-bar makers, most of them buying less than 200 metric tons a year (C. Martin, personal communication, Sep. 2021).
- **Medicinal, nutraceutical or 'functional' chocolate may provide growth,** as well as chocolate with a **high percentage of cocoa content (over 80%)**. An increasing public is interested in the positive impact of cocoa on the brain and body, such as the reduction of the risk of heart disease and stroke, and cocoa has anti-inflammatory properties (Ludovici et al., 2017).

<sup>24</sup> Amigos International launched its 100 percent PICO (Produced In Country of Origin) Ecuadorian roasted coffee (Escoffee - 2004) and chocolate bars (Ananda Chocolate - 2009) in the EU. This new certification was to convince consumers that not 25 percent in the case of Fairtrade-Organic but 53 percent of the value of the product stayed in the country of origin. It had limited success, for a variety of reasons (Kruft & Bais, 2016).

- **Chocolate with good stories will do better.** A good, unique story is appealing for buyers that need to sell a product that is more expensive than the cheaper chocolate found in the supermarket. Buying companies can support cooperatives to set up a good marketing strategy, including the use of social media and a good website. There is a real opportunity for chocolate brands to communicate more about the story of the farmers and the cocoa on the packaging. Focusing on these unique selling points makes it possible for a brand to move away from competition solely based on price, which is something that for the specialty chocolate market is already harder to achieve due to their higher price.
- In the case of specialty chocolate makers, a lot of emphasis is placed on sourcing the beans, but less so on derivatives. **The quality and sustainability of cocoa paste, butter and powder could be embraced to grow sustainability consciousness** in the derivative sector.
- **Build trust with clients to grow premium and fine flavor cocoa sales.** There is a lot of good cocoa on the market; competition is fierce. The relationship between buyers and suppliers is based on trust, personal connections, and develop around common principles (organic, reforestation etc.), and take time to develop. Suppliers are recommended to sell a small portion to the premium or fine flavor segment, and a bigger volume to a bigger market, which requires a good quality for a lower price, but in a larger volume.

## Recommendations for Reaching Consumers about Sustainability

- Consuming country governments should **invest in consumer education regarding sustainable choices** and not leave it just to (a minority of small, responsible) companies.
- Consuming country governments should have **incentive schemes to lower marketing costs for specialty chocolate makers.** Specialty chocolatiers pay farmers a relatively high price but have difficulty growing their audience. When ascertained that such specialty or certified company pays a to-be-determined farmgate price, the subsidy would allow the company to gain market share vis-à-vis large companies.
- Consuming-country governments could **give consumers the right to request information from governments on payments to communities** or even require companies to provide this information (Oomes et al., 2016). The press will then name and shame.
- Many countries in the world are starting to use color codes indicating the health level of a product (Consumentenbond, 2019). **A color code system could be used on cocoa products, relating to farmgate prices** (and other sustainability indicators).
- Private sector participants, such as **supermarkets, should be drivers of sustainability,** not waiting for consumers to ask for certified products but implement it proactively (Kakaoplattform, 2021). Retailers should increase their influence in sharing stories around cocoa farming. Chocolate is a very accessible product that can be shared in promotional activities in retail for a larger audience than just chocolate festivals.

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