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Dominican Republic Cocoa Supply Case 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)

Date: 15 November 2021

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Introduction

Cocoa plays an essential role in the Dominican Republic. It was introduced into the island of Hispaniola at the end of the sixteenth century and, since then, has continued to be an important crop among small-scale farmers.

The efforts to promote cocoa production in the Dominican Republic over the past decade led to expansion of the sector and of exports, both in terms of volume and value. During the decade 2010-2020, Dominican cocoa exports witnessed a growth of 40%. The main exported products were cocoa beans (95%), cocoa butter 2% and other cocoa products representing 3% of the total volume (CONACADO, 2020).

Although the role of the Dominican Republic in the global cocoa market context is small, the country is a major player in the organic cocoa sector. In addition, the Dominican Republic's strategic geographic location has made it an important commercial link between Europe, North America and the rest of Latin America.

In the Dominican Republic, more than 80% of cocoa producers are smallholder-farmers, whose income fluctuates along with international prices and exchange rates. On occasions, farmers and farmer-based organizations lack market insights, preventing them from taking full advantage of market opportunities. Public information on, for example, value-adding activities is often outdated or narrowly focused on specific global markets or segments. This information often fails to present research-backed data as well, and it is concentrated in the hands of a few industry actors.

While past studies have demonstrated to benefit the cocoa sector, this research project expects to provide further insights by focusing on the Dominican Republic's value chain and its actors. It will investigate price structures and dynamics within different marketing channels, revealing the main factors affecting pricing and value to farmers and farmer-based organizations, as well as presenting other data related to the Dominican cocoa sector such as intercropping and climate resilience activities, as well as purchasing practices. In addition, throughout the report, several comments made by the producer during the survey are displayed to bring their voices into each of the findings.

This research project seeks to provide up-to-date research to better equip stakeholders in the Dominican Republic's cocoa sector to make informed business decisions and investments as they navigate through market dynamics and assess various value and profit-generating alternatives in different marketing channels.

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 Kruft (Amigos International), Katty Sanchez Amiquero and Omar Caraballo.

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 and Jaume Martorell Mir.

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, Ana Tavarez and Amable Espina.

The data collection for the survey would not have been possible without the commitment and engagement of a team of field technicians coordinated by Santiago Rivas and Omar Caraballo. Hobi Sanchez, Joan Manuel Heredia, Ana Digna Rodriguez, Heriberto Paredes, Nayrobis Vasuqez, Carlos Collado, Ignacio Adames, Jairon Almonte, Lidia Mejia, Juan Carlos Rodriguez and Juan Cuello, were responsible for conducting a survey that yielded 172 respondents across all cocoa regions in the Dominican Republic, which was essential to enrich this study.

Key experts in the Dominican Republic, Abel Fernandez, Commercial Manager CONACADO and Altair Rodriguez, Agroforestry expert and cocoa producer, have also guided and helped the research team contextualize the findings of the 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 conducted between April and September 2021, from the inception to the finalization phases.

Project Objective

To determine market opportunities for cocoa-producing organizations and small and medium-sized enterprises in the Dominican Republic that will allow them to improve their positioning and make informed long-term decisions and investments.

Specific objectives

- To provide the industry background and historic overview of the Dominican Republic industry.
- To assess the evolution and current position of the Dominican Republic supply relative to global, regional, and local demand for market segments in volume and value; 15-20 years' historic growth and five year potential for growth.
- To describe the Dominican Republic's cocoa value chain.
- To determine the number, size and concentration of each stakeholder group and typology.
- To identify untapped market opportunities for the Dominican Republic based on the opportunities identified in global and regional markets, derived from the global market study.
- To assess the commercial decision-making process among stakeholders at production level.
- To assess the provided value by each current and potential marketing channel.
- To determine current and potential investments that would be required at each level of the value chain to take advantage of market opportunities.
- To assess selling and purchasing procedures and requirements, contract negotiation power dynamics among Dominican stakeholders, and between Dominican stakeholders and international buyers.
- To provide recommendations to address key challenges that prevent actors from ownership over a more sustainable approach to cocoa sourcing.

Research methodology

The research methodology was 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, in-depth semi structured interviews, focus groups, sector roundtable, and a quantitative cross-sectional study design (the survey).

Details on each data collection method are shown in Table 1:

Table 1. Data collection method, process and outcome

Data collection method	Process	Outcome
Literature review	The search strategy for the bibliography includes all accessible and relevant documents from cocoa-related organizations and companies published between 2000 and 2021. Main sources for data collections were: • Bibliographic databases e.g. Scopus, Web of Science, ABI/ INFORM, EconLit, AGRIS, Google Scholar, Harvard HOLLIS, WorldCat and/or AgEcon. • Companies websites including their annual and sustainability reports • 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, SICACAO, among others. • Market studies related to the cocoa industry, e.g. SEO, KIT, CBI, etc. • Other institutional documents: laws, regulations, public decrees, and standards, among others. • Chocolate associations in countries: Example in Spain: PRODULCE (industry) and Asociacion Bean to Bar and in France CHOCOLAT: LE SAVIEZ-VOUS Carte 2021 • Dominican Institutional stakeholders: Ministerio de Agricultura, Comision Nacional de Cacao, IDIAF, CEDAF, among others.	Data from 430 papers, articles and publications was analyzed and contextualized. Comprehensive spreadsheets were designed to ensure all relevant information from each document was captured.
Semi-structured Interviews	Judgmental/purposive and snowball sampling techniques were used to select the interviewees. 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. The snowball sampling design was chosen so the final participant selection could benefit from the interviewees´ existing networks. Anonymous quotes from the interviews will be given for illustrative and explanatory purposes. Data obtained from the interviews was analyzed using deductive thematic content analysis in comprehensive spreadsheets.	• 62 in-depth semi-structured interviews covering all actors in the value chain globally. • 39 in-depth semi-structured interviews covering all actors in the value chain in the Dominican Republic. See the complete overview of stakeholders interviewed in the Appendix.

Focus groups with private and institutional stakeholders in the Dominican Republic	Judgmental/purposive and snowball sampling techniques were used to select a minimum of eight participants in each focus group. Participants were heterogeneous groups that included members and management of a cooperative, cocoa specialists from governmental organizations, technicians or extension field officers, local processing companies, exporters, NGOs, financial institutions, among others. See the complete overview of the participants of each focus group in the Appendix. The participants were chosen based on the definition of the different typologies, concentration and relevance to farmer organizations; and the industry experts were selected based on their expertise relevant to the chapter outline. The focus groups were recorded, transcribed, and the main themes identified. Previous consent was sought from participants for this. The identified themes were classified according to the chapters of the case study.	Three heterogeneous focus groups with members and management of a cooperative, cocoa specialists from governmental organizations, technicians or extension field officers, local processing companies, exporters, NGOs, financial institutions, among others were organized. See the complete overview of the participants in Annex. The aim of this activity was to collect insightful information on value chain analysis, cocoa production and value provided in each marketing channel as well as challenges and opportunities faced by the participants.
Sector roundtable	Producers' association recruited its members to attend and provide insights into the challenges faced and day-to-day operations.	One sector roundtable with 13 producers was conducted in Hato Mayor del Rey
Producer survey	The objective of the survey was to obtain information on the typology of the producers in the Dominican Republic, selling procedures, price negotiations, commercial, decision-making process, production and commercialization cost structure, types of benefits in different production systems, and profit margin. Producers were randomly chosen and stratified considering the diversity of respondents in terms of the municipality, gender, age, size of the plantation, production system (agroforestry, intercropping, etc.), production volume, and certifications among other parameters. Coordination with local leaders in the selected municipalities prior to the survey enabled its execution. The survey tool was developed in XLSForm markdown language and deployed on digital tablets running Open Data Kit software. The standard questionnaire used for the farmers' survey can be found in the Appendix.	The survey yielded 172 producers. Sample size considered a yield of 95% Confidence Intervals (CI) for overall proportions with margin errors of 7.5% (Select Statistical Services) taking into account a non-response of 9% percent. The survey was conducted in all cocoa producing regions. In each region, the most relevant municipalities and communities were identified and validated with project stakeholders and local leaders in the Dominican Republic. Full sample size indicated in the Annex. Anonymous quotes from the producer survey will be given for illustrative and explanatory purposes to bring 'the voice of the farmer' throughout the report.

Glossary

CBI	Centrum ter Bevordering van Import uit ontwikkelingslanden (Center for the Promotion of Imports from developing countries)
CEDAF	Centro para el Desarrollo Agropecuario y Forestal
CIF	Cost Insurance and Freight (Incoterm)
CNC	Comisión Nacional de Cacao (National Cocoa Commission)
CONACADO	Confederación Nacional de Cacaocultores Dominicanos
CSR	Corporate Social Responsibility
DOL	U.S. Department of Labor
DOP	Dominican Pesos
DR	Dominican Republic
EU	European Union
EUR	Euro
FAO	Food and Agricultural Organization
FBO	Farmer Based Organization
FCC	Federation of Cocoa Commerce
FCCI	Fine Cacao and Chocolate Institute
FCIA	Fine Chocolate Industry Association
FLO	Fairtrade Labelling Organization
FUNDOPO	Fundación Dominicana De Productores Orgánicos
FOB	Free on board (Incoterm)
GDP	Gross Domestic Production
GRI	Global Reporting Initiative
GIZ	German Agency for International Cooperation
GTZ	German Technical Cooperation Agency
IADB	Inter-American Development Bank
ICCO	International Cocoa Organization
IDH	Internationale Duurzame Handel (Sustainable Trade Initiative)
IDIAF	Instituto Dominicano de Investigaciones Agropecuarias y Forestales
IESC	International Executive Service Corps
ITC	International Trade Center
LATAC	Latin America and Caribbean
LIRP	Living Income Reference Price
NGO	Non-Governmental Organization

RFA	Rainforest Alliance
REDD+	United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation
STD	Standard Deviation
UDHR	Universal Declaration of Human Rights
UN Comtrade	Statistics database of international trade of the United Nations
UNCTAD	United Nations Conference for Trade and Development
UNFCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USD	United States Dollars
UTZ	Utz
WB	World Bank
WCF	World Cocoa Foundation

Key terms and definitions

Sanchez Cocoa	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	Well-fermented and dried cocoa beans. It was noticed that fermentation led to increased local value-addition from the implementation of additional post-harvesting processes.
Wet beans	Cocoa beans that have been harvested, separated from the cocoa pod in preparation for fermentation, which are still covered in pulp.
Quintal	Local conversion – 1 quintal (qq) equates to 50 kg of dry cocoa beans (plural: quintales) *Note: 'Quintal' is a unit measure that can be used for other crops as well where normally 1qq equates to 45.36 kg. Specifically to DR, 1 qq equates to 50 kg of dry cocoa beans.*
Tarea	In the Dominican Republic the size of a plot of land is declared in "tareas" which equates to 628.86 m^2 | 1 ha = 15.9 *tareas*.
Actor	Refers to any individual/organization involved in the cocoa value chain (producer, intermediary, exporter, processor, etc.).
Cocoa/Cacao	Cocoa, also referred to as cacao, are both correct terms. For this study, cocoa has been used.

Contents

Dominican Republic's position in the cocoa industry

Dominican cocoa industry background and historic overview

The genetic birthplace of cocoa is the Orinoco and Amazon region in South America. There is some controversy 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). In 1595 cocoa was introduced into the Dominican Republic and, since then, a series of events have occurred shaping it into the sector as it is known today.

Timeline: Dominican Republic's cocoa sector	
1595-1643	**Introduction of cocoa in the Dominican Republic** Cocoa was introduced by the Spanish into the Dominican Republic circa 1595 (Ferreiras, 2020). Crops started to be produced commercially circa 1643 (DR Cocoa Foundation, n.d.) Many of the Spaniard trade ships stopped over in the Dominican Republic on their journey to other colonies. Cocoa beans were dropped on the land and water of the area.
1880s	**The beginning of the Dominican cocoa industry** The Dominican cocoa industry first emerged in the 1880s. Cocoa was introduced as an alternative to tobacco, a crop experiencing sharp price declines at the time. Cocoa was an interesting alternative, since it is also produced as a smallholder crop, and its production was relatively sustainable. Cocoa has been a major source of income for farmers (Siegel & Alwang, 2004).
1887 - 1911	**The impact of the La Vega – Sánchez Railway** The La Vega-Sánchez Railway was an important element in the development of the cocoa industry in the Dominican Republic, as well as to the various economic, social and demographic changes affecting the Northeastern region of the country at the end of the 19th century and beginning of the 20th century. Up until the 19th century, the transportation of cocoa from the Cibao zone to the port of Puerto Plata was mainly done by using droves of pack animals due to the lack of roads and bridges. The inauguration of the La Vega-Sánchez in 1887 significantly improved the transportation of cocoa beans, turning it into the main export product from the Dominican Republic's Northeastern region. Between 1888 and 1911, the volumes of cocoa beans transported through the La Vega-Sánchez Railway rose from 385 tonnes to 11,521 tonnes (Hernández Polanco, 2005).
1915	**Cocoa exports increase sharply** While exports of tobacco from the Dominican Republic decreased, cocoa exports grew sharply in this period. From 121,000 kg (2,420 quintales) in 1880, exports grew to 688,850 kg (11,777 quintales) in 1889, 655,350 kg (13,107 quintales) in 1905, and 1,011,150 kg (20,223 quintales) in 1915 (Hernández Polanco, 2005).

1916–1924	**US Military occupation** The military occupation of the Dominican Republic by the United States led to a level of modernization of the government by dismantling local and regional caudillos, associated with the high prices of export products. This allowed dynamism in agricultural and commercial activities of the country and set guidelines for the construction of highways and bridges. The railway was no longer the only form of internal communication (Hernández Polanco, 2005).
1930–1959	**Growth of agricultural sector** There was a general increase in agricultural production in the country; during this time, Dominican agriculture was mainly dependent on sugar, coffee, cocoa, and tobacco. The strong focus on these crops, which accounted for 85% of total exports, led the national economy to be highly dependent on the international market. The Dominican economy and well-being of its population were put at risk in the 1950s as a result of steep demographic growth. In addition to a large number of small producers, the government encouraged the creation of cooperatives through the creation of the National Federation of Cooperatives (NFC), which rose from 6,000 in 1952 to 7,000 in 1959. This facilitated farmers' access to credits and other services at a lower cost. Despite the important progress made, the program only benefited a small group of wealthy farmers (Cordero, 1959).
1960s	**Agrarian Reform Program** An Agrarian Reform Program was launched in the 1960s, through the establishment of the Instituto Agraria Dominicana (IAD), as a means to settle landless farmers on unused lands. The reform did not have a major impact on the national land distribution situation, and some of the land has not been legally titled. These circumstances left many farmers without legal land titles, thus impacting their access to financial services until present days (Siegel & Alwang, 2004).
1962–1966	**Cultivation of Trinitario cocoa varieties** In 1962–1966 the first hybrid crosses improved cocoa that had originated in Trinidad and Tobago and the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), Turrialba, Costa Rica (Sofreco and Ecocaribe 2001), was introduced to the Dominican Republic.
1972	**Focus on cocoa genetics** Establishment by the Dominican Republic Institute for Agriculture, Animal Husbandry, and Agroforestry Research (IDIAF) of a cocoa germplasm collection at the Mata Larga Experiment Station in San Francisco de Macoris (World Cocoa Foundation, 2012).
1979	**Hurricanes David and Frederic** Hurricane David hit the Dominican Republic in August 1979, followed by hurricane Frederic in September 1979. The hurricanes are estimated to have affected 23% of the country's population – mainly in rural areas. Over 6% of the total cocoa production area in the country was completely affected and nearly 30% was partially affected, amounting to a loss of USD 18.4 million (Comisión Económica para América Latina, 1979). The destruction caused by these hurricanes represented the starting point of a period of changes in the Dominican Republic's cocoa sector. This in turn influenced the government's policies and the international community's support of the sector (Ferreiras, 2020).
1982	**Organic cocoa production** The age of organic cocoa production in the Dominican Republic began in 1982, with the establishment of the first demonstration plot in Río Limpio, Loma de Cabrera, which set the basis for the Centro Regional de Estudios de Alternativas Rurales (CREAR) (FAO, 2001)

1985	**GTZ program (Germany)** This year marked the launching of a project supported by the Agricultural Secretary and the *Deutsche Gesellschaft für Technische Zusammenarbeit*, the German Agency for Technical Cooperation (GTZ), named "Mejora de la elaboración de cacao en la República Dominicana". The project was a milestone in the development of the cocoa sector in the Dominican Republic (IICA, n.d.).
1985	**Creation of cocoa farmers unions (*bloques cacaoteros)*** The main cocoa farmers' association, CECA, was active in the period between 1984 and 1985. It was founded in 1949 and ended its activity in 1985 to be replaced by a new association. Founders were conscious that the objective had to pass through direct exporting to the international markets to avoid traditional structures controlled by few companies (OXFAM, n.d.).
1987	**Foundation of CONACADO** The foundation of the Confederación Nacional de Cacaocultores Dominicanos (CONACADO) was the result of the successful alliance of small and medium-sized cocoa farmers and the support of the Department of Cocoa and GTZ. The main objective of the initiative was to improve the quality of the Dominican cocoa by increasing processing skills and improving the storage infrastructure and processing in order to guarantee their position within the most demanding markets (CONACADO).
1989	**Assessment of potential for organic cocoa production** "Plantaciones Tropicales" is the first commercial exporter of organic products to Europe and the United States. Later, began exporting cocoa, coffee, coconut oil, oils, and coconuts (FAO, n.d.).
1990-1991	**Beginning of organic certification of cocoa farms and first organic cocoa exports** The Dominican economic crisis of the late 1980s and the state policy responses reoriented organic agriculture toward the export market within the context of the broader promotion of non-traditional exports. The Dominican government established legal and economic incentives to promote the development of new exports to compensate for the declining earnings of historically dominant commodities like sugar. Unlike the declining prices of traditional commodities such as sugar, Dominican organic exports encountered relatively uncompetitive and lucrative international markets. Organic export production was, in this period, estimated to be two to three times more profitable per hectare than traditional agro-export production. Some organic exporters hired foreign agencies to monitor, certify, and label their products. In subsequent years, the widespread adoption of organic certification to differentiate commodities and ensure access to organic premiums became the norm. In the '90s, there was an increase in the production of cocoa and it became institutionalized with the support of mainstream donors, businesses, and government agencies (Raynolds, 2008). In 1991, the Dominican Republic realized its first organic cocoa bean exports, at 25 tonnes.
1998	**Hurricane George** Hurricane George hit the Dominican Republic in September 1999, causing serious damage to cocoa plantations. Many producers were unable to deliver cocoa to exporters or repay loans (Siegel & Alwang, 2004). It was estimated that 25,708 hectares out of the 110,943 hectares of cocoa production were impacted by the hurricane, causing a loss of 9,349 tonnes and DOP 175.8 million. It is estimated that the total losses in terms of exports were DOP 540.0 million (Comisión Económica para América Latina, 1998). The devastation caused by Hurricane George has had a significant impact on the Dominican cocoa industry. The post-Georges rehabilitation efforts focused on replanting the country's less-affected cocoa trees with an improved hybrid variety. (Siegel & Alwang, 2004).

2004	**Hurricane Jeanne** The area affected by the hurricane was 27,500 ha; the yield affected was 0.4 ton/ha. There was direct damage production of 11,000 tones valued at DOP 19.3 million (Comisión Económica para América Latina , 2004).
2007	**Alliance for Cocoa/Alianza por el Cacao** The Alliance for Cocoa between the government and the UNDP (United Nations Development Programme, 2017). The successes achieved by producers during the first years of production motivated them to prioritize the development of the cocoa sector from 2014 onwards. Continued support of the sector by the Ministry of Agriculture and the UNDP led to the formal incorporation of the National Cocoa Platform (Rios, Lecaro, & Rehpani, 2017).
2008	**Dominican Republic recognized as fine flavor cocoa producer** In 2008, the Dominican Republic was officially recognized as an exporter of fine flavor cocoa. ICCO's Ad-hoc Panel of experts on fine or flavor cocoa recommended a share of 40% in total Dominican exports (ICCO, 2008).
2011-2017	**Cooperative Development Program (CDP)** The Development Program was started by CONACADO, funded by the United States Agency for International Development (USAID), and supported by the U.S. company Equal Exchange. The purpose of the project was to help the cooperative increase productivity, ensure high quality and strengthen the capacities of the cooperative. Productivity was considered low among CONACADO's producers. The average for productivity was 436 kg/ha. In the demonstration plots, the productivity of members increased to 2,104 kg/ha in 2017. As a result, the members decided to invest part of their Fairtrade Premium into expanding the project to other branches and members of the cooperative (Fairtrade International, 2017).
2013	**International recognition of "Dominican Cocoa" origin** In 2013, the indication or designation of origin "Dominican Cocoa" received international recognition, and some exporters began marketing organic Hispaniola under this brand mark (Rios et al., 2017).
2014	**Action Plan for Sustainable Cocoa/Plan de Acción - Plataforma Nacional para una Producción Sostenible del Cacao en República Dominicana 2015 – 2025** On May 12th, 2014, the Dominican Republic's Minister of Agriculture and UNDP held a meeting, which reinforced the country's commitment and interest to revitalize its cocoa sub-sector. The institutions agreed to create the National Cocoa Platform within the National Cocoa Commission, and to draft the Action Plan for Sustainable Cocoa (Plan de Acción - Plataforma nacional para una producción sostenible del cacao en República Dominicana 2015–2025, 2014) (UNDP, 2014). The objectives of the action plan are to improve quality, and to create better technical assistance to producers. It includes sector policy-related actions regarding producer support, research and marketing support, as well as other responsibilities of the private and public sector actors (Plan de Acción - Plataforma nacional para una producción sostenible del cacao en República Dominicana 2015 – 2025, 2014).
2015	**Exporting Quality Program (*Exporta Calidad*)** The Exporta Calidad Program (PEC) aims to improve the value chains of cocoa, avocado, pineapple, oriental vegetables and greenhouse vegetables to increase the quantity and quality of exports, as well as local sales. The program is funded by the United States Department of Agriculture (USDA) and executed by the American non-profit organization International Executive Service Corps (IESC) together with Florida A&M University (FAMU), Global Cold Chain Alliance (GCCA) and the Center for the Development of Agriculture and Forestry (CEDAF, 2015).
2021	**Inauguration of CONACADO Agroindustrial processing plant** The installation of the plant seeks to increase the volume of the export of cocoa derivatives (CONACADO, 2021).

Dominican Republic's cocoa supply

Cocoa bean production

According to FAOSTAT (2018), cocoa is the largest crop cultivated in the Dominican Republic in terms of land use. The production and marketing of cocoa in the Dominican Republic has gained strong momentum since 2000, with significant support from the private sector and international cooperation (Rios et al., 2017).

Cocoa bean production in the Dominican Republic, in terms of harvested area, has increased from 125,600 hectares (*2,000,000 tareas*) in 2002 to 172,700 hectares (*2,750,000 tareas*) in 2020. Especially steep growth was registered in the periods between 2004 and 2005 (+22%) and between 2019-2020 (+15%) (Viceministerio de Planificación Sectorial Agropecuaria - Departamento de Economía Agropecuaria y Estadísticas, 2021).

It is estimated that cocoa represents 13% of the forest cover in the Dominican Republic, being planted in the wettest regions that have over 1,800 millimeters of rain per year (Batista, 2009). It is in these regions where most national rivers are born; cocoa plantations protect 42 river basins (Inter-American Development Bank, 2015) (Estrella, 2016).

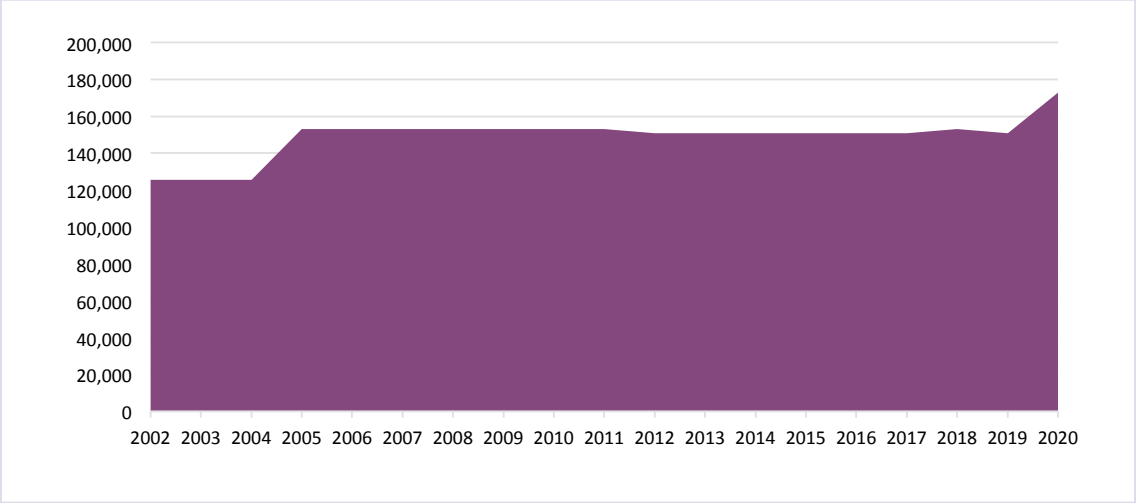


Figure 1. Cocoa bean production, in harvested areas, in hectares, 2002 – 2020 in DR. Source: Superficie Sembrada y Cosechada, Volumen de Producción y Rendimiento por Tarea de Cultivos Agrícolas, 2002 – 2020, Viceministerio de Planificación Sectorial Agropecuaria - Departamento de Economía Agropecuaria y Estadísticas (2021).

The cocoa harvest in the Dominican Republic is seasonal; the peak of production takes place between April and June (Batista, 2009; Estrella, 2016). Just over half of the cocoa produced by the Dominican Republic has traditionally come from the northern part of the country, while the remaining production has taken place in the central and eastern regions. It was estimated that the North East zone also concentrates the largest number of producers (75%) and cultivated area (77%) in the country (Batista, 2009). The province with the most production is Duarte where the municipality of San Francisco de Macorís is located; it is known as the largest cocoa producer in the country. This is followed by the provinces of El Seibo and Monte Plata (Rios et al., 2017).

Table 2. Production of cocoa per region in DR

Region	Production (in tareas)	Production (in ha.)
North-East	1,481,682	93,187
East	296,000	18,500
Central	248,256	15,516
North	232,000	14,500
North-Central	102,000	6,375

Source: Batista, 2009

In addition to the traditional production areas, there has been an increase in cocoa production and harvesting in other regions of the Dominican Republic. In 2019, the Ministry of Agriculture declared the Southern region, including Barahona, Pedernales, Jimaní and La Descubierta, as well the North West region, including Dajabón, Santiago Rodríguez and Valverde, as cocoa-producing regions through Resolution No. 2019-63 (Ministerio de Agricultura, 2019). During this study, it was revealed that Barahona alone has approximately 600 producers, accounting for a total production output of 400 metric tons (*8,000 quintales*) annually. (Ministerio de Agricultura de la República Dominicana, 2019).

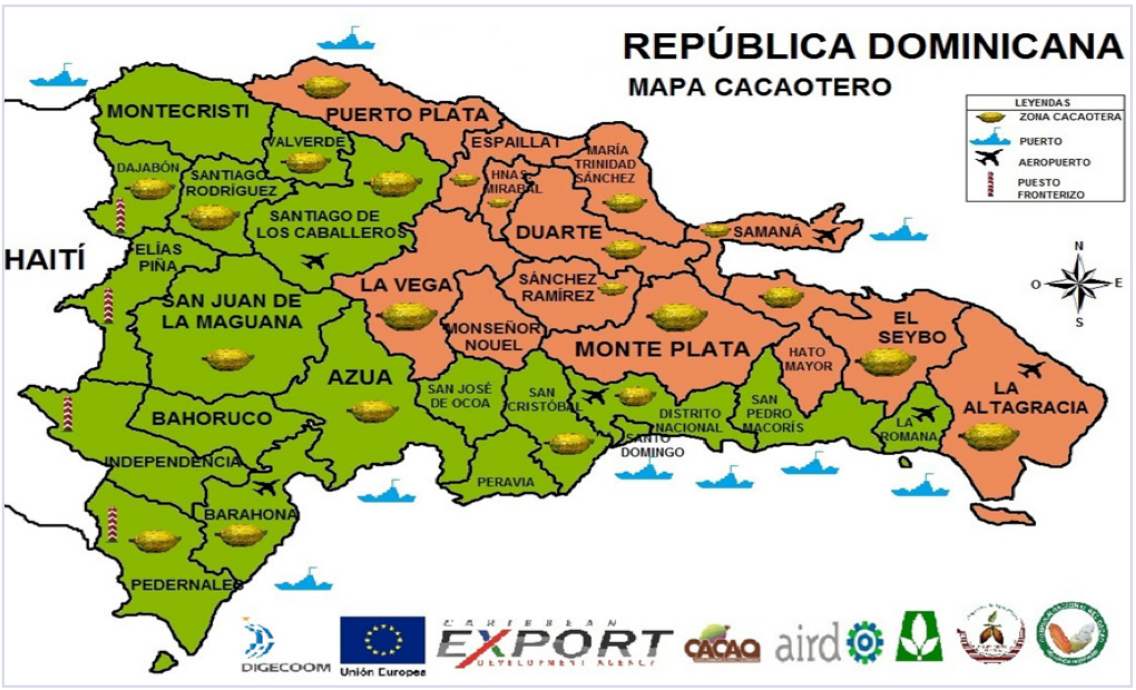


Figure 2: Cocoa growing regions in the Dominican Republic (Ministerio de Agricultura de la República Dominicana, 2019)

The map shows in green the new areas where cocoa is being produced, the brown area depicts where it was traditionally produced. It also shows the ports, airports and land border posts with Haiti (Ministerio de Agricultura de la República Dominicana, 2019).

It is estimated that the total cocoa production in the Dominican Republic reached a volume

of 85,628,020 kg in 2020 (*1,712,560 quintales*), having increased from 50,119,550 kg in 2002 (*1,002,391 quintales*) (Viceministerio de Planificación Sectorial Agropecuaria - Departamento de Economía Agropecuaria y Estadísticas, 2021). The Dominican Republic was the 10th largest global producer of cocoa beans, and 5th in Latin American and the Caribbean in 2019, according to FAOSTAT data (Food and Agriculture Organization of the United Nations, 2020). However, FAOSTAT data overreported on Colombia's total production in 2019, at 102,154 metric tons, when official figures report approximately 60,000 metric tons (Silva Mora & Ardila Parrado, 2019). As such, the Dominican Republic is the 9th largest producer worldwide, and 4th in the Latin American and Caribbean region in 2019 – behind Ecuador, Brazil, and Peru.

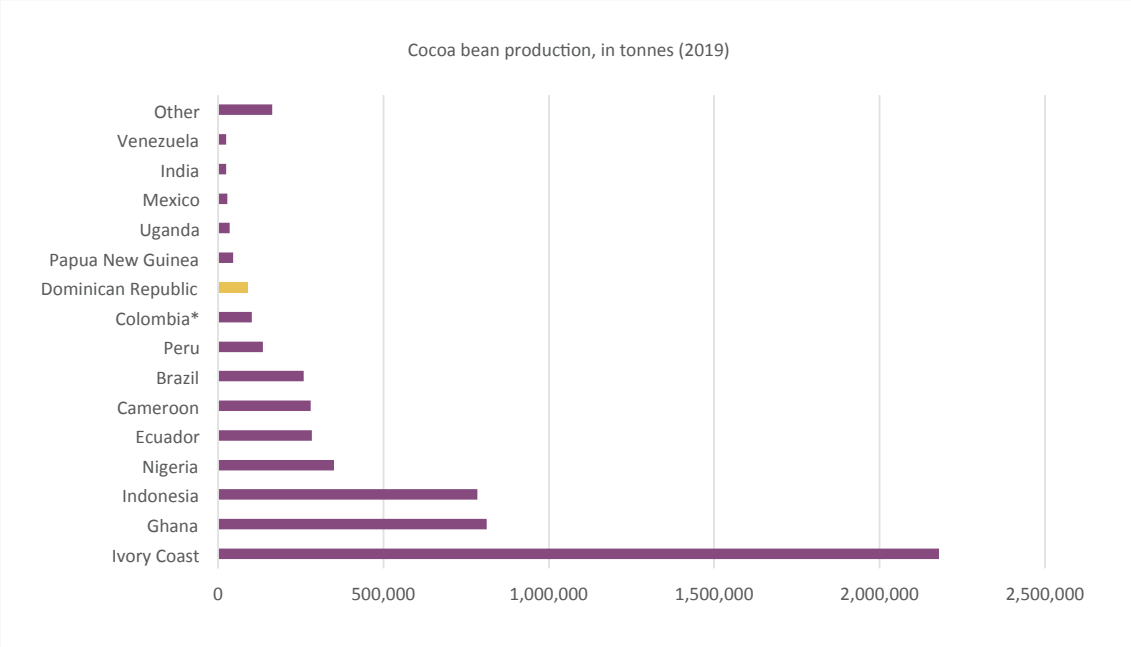


Figure 3. Cocoa bean production, in metric tons, 2019. Source: FAOSTAT 2021
*Colombia's production is lower, at around 60,000 metric tons in 2019.

Between 2002 and 2020, the Dominican Republic's production yield fluctuated heavily, ranging between 226 kg/ha in 2005 and 620 kg/ha in 2018, but generally registering long-term growth in the period 2002-2020 (Viceministerio de Planificación Sectorial Agropecuaria - Departamento de Economía Agropecuaria y Estadísticas, 2021). Note that previous studies estimated yields to vary between 250 kg and 1,500 kg/ha amongst different regions within the Dominican Republic. Central regions were estimated to reach the highest yield levels, followed by the East and the North-East (Berlan & Bergés, 2013).

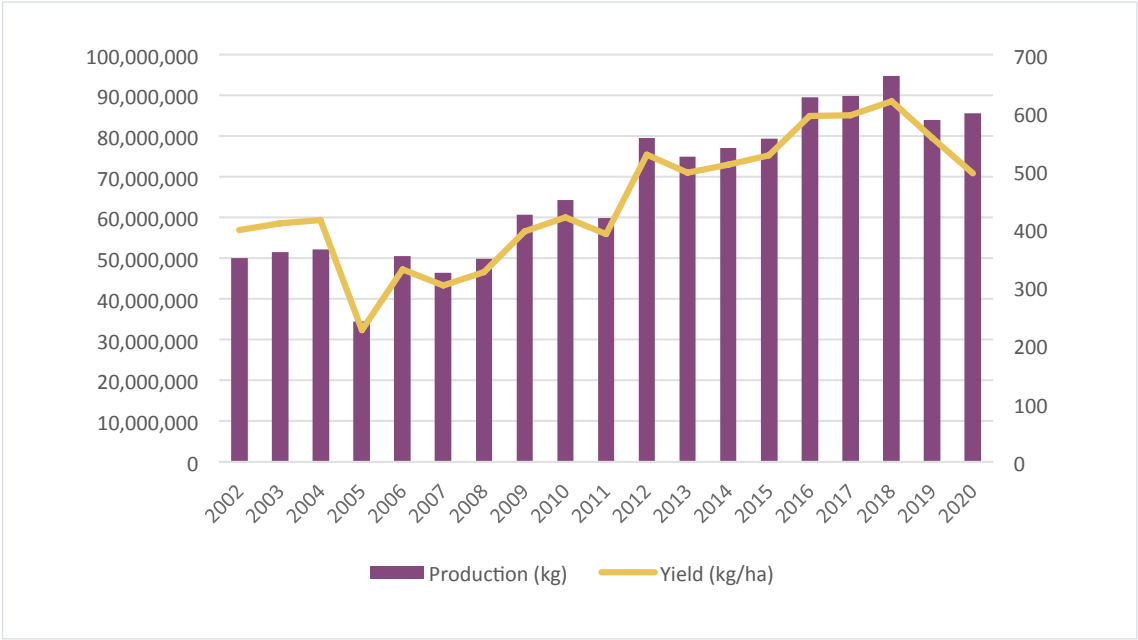


Figure 4. Cocoa bean production, in production volume, in kg, and yield, in kg per ha, 2002-2020 in DR. Source: Superficie Sembrada y Cosechada, Volumen de Producción y Rendimiento por Tarea de Cultivos Agrícolas, 2002 – 2020, Viceministerio de Planificación Sectorial Agropecuaria - Departamento de Economía Agropecuaria y Estadísticas (2021)

The time series analysis of the yield detected one major anomaly in the 2002-2020 period: due to Hurricane Jeanne (2004) (Berlan & Bergés, 2013), average yield dropped from 415 kg/ha in 2004 to 226 kg/ha in 2005. Between 2004 and 2005, production volumes dropped from 52,138 metric tons to 34,555 metric tons. Another drop in both production and productivity can be detected between 2010 and 2011, following a period of heavy drought – as revealed by Dominican sector stakeholders during the study. Similar drops in production and productivity have also been observed in periods that are not included in this analysis, the main one being Hurricane George (1998), one of the worst environmental disasters to have ever affected cocoa plantations (Berlan & Bergés, 2013).

The Dominican Republic's production yield is one of the highest worldwide but is considered low relative to its potential (Rios et al., 2017). Data from FAOSTAT (2021) indicates the average yield of some of the world's main cocoa-producing countries compared to the Dominican Republic. Among the largest producers in Latin America and the Caribbean, Peru has the highest yield, at an average of 1,043 kg/ha in 2019. According to FAOSTAT data, the Dominican Republic and Sierra Leone reached similar yields in 2019, at 600 kg/ha and 589 kg/ha. The lowest yields from the selected countries were registered by Venezuela and Costa Rica, registering yields of 295 kg/ha and 124 kg/ha, respectively. The world's largest cocoa-producing countries, Cote d'Ivoire and Ghana, registered yields of 456 kg/ha and 549 kg/ha in 2019.

The FAOSTAT data for the Dominican Republic might vary slightly from the data presented by the Viceministerio de Planificación Sectorial Agropecuaria - Departamento de Economía Agropecuaria y Estadísticas (2021) in the previous section. However, FAOSTAT data was used to safeguard consistency with the data from other cocoa-producing countries.

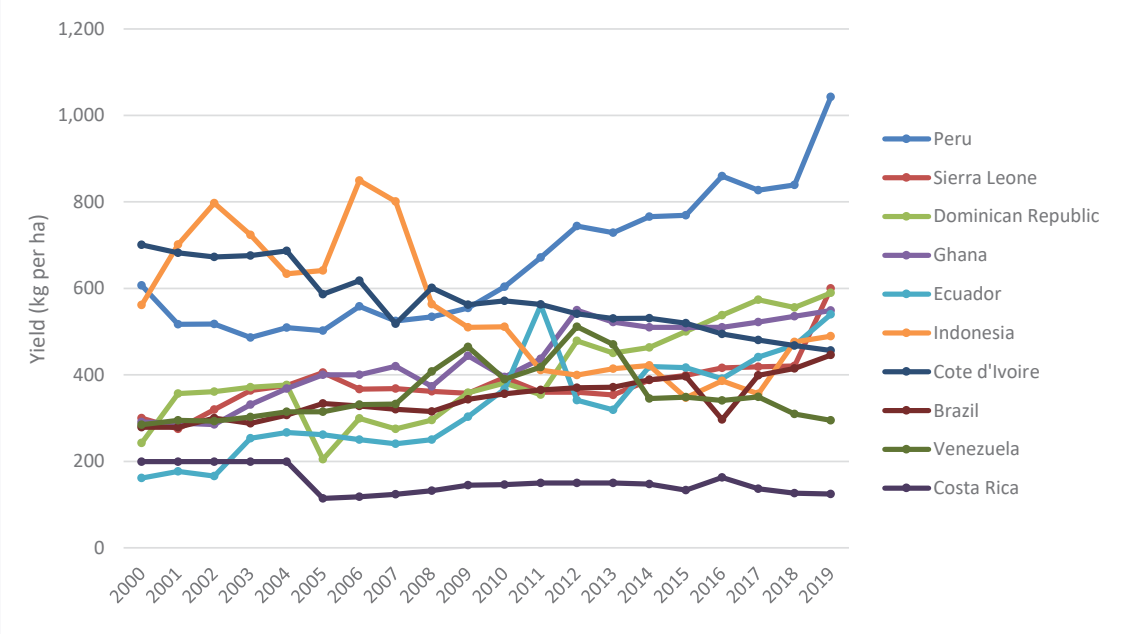


Figure 5. Cocoa production yield in selected global and regional cocoa-producing countries, in kg/ha, 2000-2019. Source: FAOSTAT, 2021

Production of certified cocoa beans

The production and marketing of cocoa in the Dominican Republic has gained strong momentum since 2000, with significant contributions from the private sector and international cooperation. This has especially promoted the cocoa value chain for certified organic, which represents a significant proportion of cocoa for export (Rios et al., 2017). The other main third-party certification schemes in the cocoa sector, Fairtrade and Rainforest Alliance have also been successfully implemented in the Dominican Republic, and account for a large share of the country's cocoa production. The Dominican Republic plays a significant role in the production and exports of certified cocoa.

Organic certification

The Dominican Republic has the largest organic cocoa production area worldwide, at nearly 90,000 hectares in 2019. According to FIBL (2020), around 3.1 percent of the global cocoa production area was under organic management in 2018 and has increased significantly in recent years. The largest areas are in the Dominican Republic, Sierra Leone, Congo (DRC) and Peru.

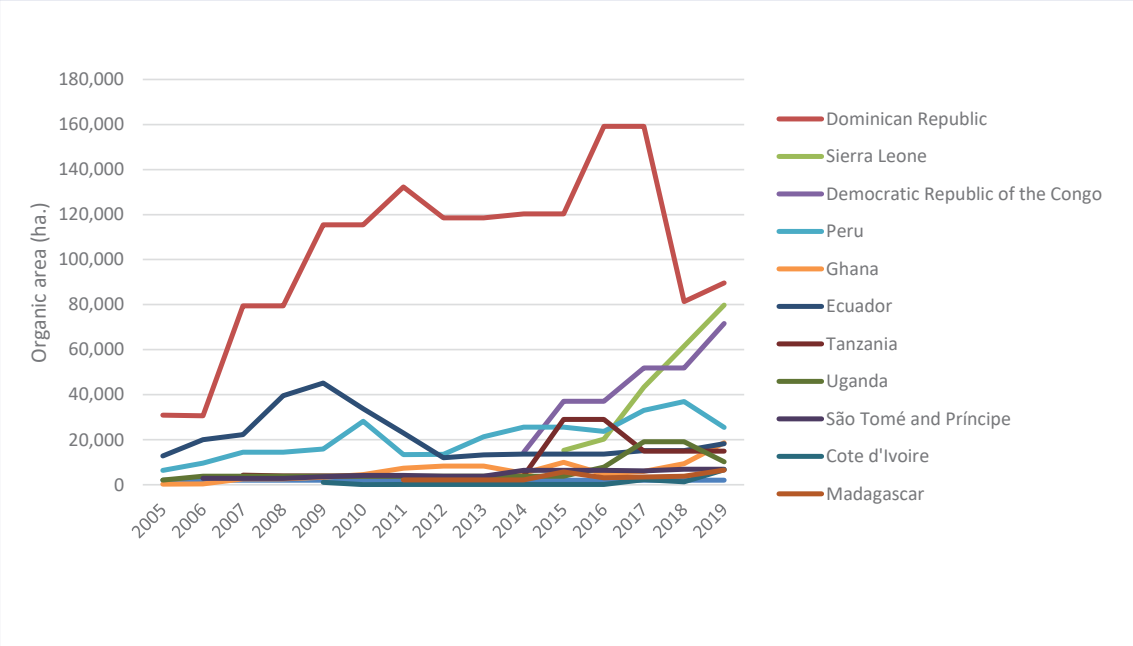


Figure 6. Production of organic cocoa in main organic cocoa-producing countries, in hectares (ha.), including conversion area, 2005-2020. Source: (FiBL Statistics, 2021)

Several factors contributed to the growth of organic production in the Dominican Republic, such as the availability and high market demand, particularly in Europe; the high price premiums; environmental concerns; the investments from international players and NGOs; among others (Rikolto, 2020).

Exact and up-to-date figures on the production volume of organic-certified cocoa worldwide are not readily available. The International Trade Centre's (ITC) Publication *The State of Sustainable Markets 2019* (Willer et al., 2019) indicates that global organic cocoa bean production is estimated at 131,860 metric tons in 2017, accounting for 2.5% of the total production of cocoa beans. These figures are in line with the recent figures published by the EU through the Traces platform (TRACES, n.d.).

Europe is the main market for organic-certified cocoa worldwide. According to Traces, the EU imported around 74,000 metric tons of organic cocoa beans in 2019 (i.e., the selected countries in Table 3 below account for 89% of total organic cocoa bean imports), accounting for around 3% of total cocoa bean imports by the EU. The Dominican Republic is the largest supplier, followed by Peru, Sierra Leone, Congo (DRC), and Uganda. These are also the largest producers of organic cocoa beans in terms of organic area (in hectares) (CBI, 2021).

Table 3. Imports of organic cocoa beans by the EU, representing 89% of total organic cocoa imports, in 1,000 metric tons

Producing Country	2018 imports (1,000 metric tons)	2019 imports (1,000 metric tons)	Change (%)	Share (%, 2019)
Dominican Republic	27.1	24.2	-10.4	36.9
Peru	15.5	12.9	-17.0	19.6
Sierra Leone	7.7	11.2	45.4	17.0
Congo, Democratic Republic of	9.9	5.7	-42.4	8.6
Uganda	5.1	3.2	-36.3	4.9
Total	**74.1**	**65.8**	**-11.3**	**100**

Source: Traces, in EU Agricultural Market Briefs (European Commission, 2020)

Fair Trade

The Dominican Republic is among the largest producers of Fairtrade-certified cocoa worldwide. In 2019, the country was the third largest producer in certified area, at 62,103 hectares, according to Fairtrade International data – only behind Cote d'Ivoire and Ghana. In terms of certified production, the Dominican Republic is the fourth largest producer worldwide, having Peru as the largest producing country in the Latin American and Caribbean region. Peru also ranked higher than the Dominican Republic in terms of certified volume sold in 2019, behind Cote d'Ivoire; the Dominican Republic was the third largest producing country worldwide, at 13,254 metric tons sold – just above 60% of its total certified production.

Table 4. Fairtrade International-certified cocoa beans, in production area, certified and sold production, in 2019

Country	Certified area (ha.)	Certified production (tons)	Certified volume sold (tons)	% production sold as certified
Cote d'Ivoire	952,457	462,890	188,351	41%
Ghana	275,697	84,473	6,777	8.0%
Dominican Republic	62,103	21,482	13,254	62%
Peru	37,195	24,976	17,318	69%
Ecuador	15,408	7,923	6,060	76%
Honduras	1,322	*	*	N/A
Colombia	939	320	*	N/A
Nicaragua	531	87	*	N/A
Rest of World	27,167	16,481	1,737	11%
Total Volume	**1,372,820**	**618,633**	**233,497**	**38%**

*Data included under "Rest of World"
Source: Fairtrade Top 7 Products Dashboard, 2021 (FairTrade International, 2021)

Table 5. The customer database of FLO-CERT reveals that 12 producer organizations and traders are Fairtrade-certified in the Dominican Republic *

Name	Function according to FLO
CONACADO Agroindustrial	Producer
Asociación Cacao Cultores Juan Cruz de Guaranal	Producer
JOSE PAIEWONSKY E HIJOS, S.R.L	Trader
Fundación Dominicana de Productores Orgánicos (FUNDOPO)	Producer
Cooperativa de Ahorros, Créditos y Servicios Múltiples de Productores Exportadores e Importadores (COOPCANOR Inc)	Trader
Roig Agro-cacao	Trader
DOMINICAO S.R.L	Trader
Asociación Dominicana de Campesinos Productores Orgánicos (ASODOCAPRO)	Producer
Cooperativa Agropecuaria y Servicios Múltiples San Juan Bautista	Producer
CAGEMI SRL	Trader
Yacao, S.R.L	Trader
Cooperativa de Productores Agropecuarios (COOPROAGRO)	Producer

Source: (FLOCERT, 2021) - *though two of them reportedly have had their certifications suspended

Rainforest Alliance

The Dominican Republic is also among the largest producers of Rainforest Alliance-certified cocoa worldwide. In 2020, the country was the third-largest producer in terms of certified production volume, at 21,715 metric tons, and in terms of sold production, at 7,117 metric tons. In both cases, the Dominican Republic was only behind Cote d'Ivoire, Ghana, and Ecuador. Only around 33% of the Dominican Republic's Rainforest Alliance-certified production was sold as certified in 2020, which is a low share compared to other large producers like Cote d'Ivoire (72%) and Ecuador (59%).

Table 6. Rainforest Alliance-certified cocoa beans, in the production area, certified and sold production, 2018 - 2020

Country	Certified production (tons)			Sold production (tons)			% production sold as certified
	2018	2019	2020	2018	2019	2020	2020
Cote d'Ivoire	245,124	248,359	191,759	131,442	136,956	137,250	72%
Dominican Republic	22,429	21,144	21,715	5,967	11,757	7,117	33%
Ecuador	26,057	29,456	21,260	8,369	8,288	12,638	59%
Ghana	85,959	117,519	76,854	19,852	42,518	26,528	35%
Indonesia	18,861	9,529	8,983	11,132	1,039	895	10%
Nigeria	3,795	5,461	1,545	N/A	N/A	N/A	N/A
Papua New Guinea	1,058	1,527	1,252	*	*	*	N/A
Peru	3,964	3,295	1,532	*	*	*	N/A
Other	6,685	3,127	3,015	6,433	2,010	1,577	52%
Total Volume	**413,932**	**439,417**	**327,915**	**183,195**	**202,568**	**186,005**	**57%**

Source: The Rainforest Alliance 2020 Annual Report (Rainforest Alliance, 2020a)
*Data included under "Other"

Four groups in the Dominican Republic had Rainforest Alliance-certified cocoa production in 2020, the largest one, both in terms of production area and volume, was FUPAROCA, a foundation linked to Rizek Cacao. Some of the other main stakeholders in the Dominican cocoa sector are included in the list: Roig, CONACADO and BIOCAFCAO.

Table 7. Rainforest Alliance-certified operators in the Dominican Republic

Name	Total ha.	Production ha.	Production volume kg
Fundación Para La Asistencia Social, Recuperación Y Manejo Orgánico De Plantaciones Cacaoteras, Inc. (FUPAROCA)	15,547	13,133	11,425,900
Roig Agro-Cacao S.A	6,220	5,881	4,958,432
CONACADO Agroindustrial	3,362	3,358	2,684,490
BIOCAFCAO. S. A.	2,862	2,842	2,075,267

Source: List of Certified individual farms and groups, Chain of Custody Operations, 2020 (Rainforest Alliance, 2020b)

Exports of cocoa beans

Dominican exports of cocoa beans are analyzed herewith according to the statistics provided by ITC Trademap, calculated from the data of the Dominican Republic's National Statistics Office. Additional data from the National Cocoa Commission is also used to analyze the breakdown of export per cocoa bean type, as well as revealing other data not available on the database of ITC Trademap. The HS code used to analyze Dominican exports of cocoa beans is 180100.

HS CODE*	DESCRIPTION
180100	Cocoa beans, whole or broken, raw or roasted

The Dominican Republic is the 8th largest exporter of cocoa beans worldwide (in terms of value), considering both producing countries and re-exporters such as the Netherlands as part of this ranking. In Latin America, the Dominican Republic is only behind Ecuador. In 2020, the country exported a total volume of 64,685 metric tons of cocoa beans at a value of USD 181 million, according to ITC Trademap statistics. In 2002, the Dominican Republic was the 7th largest exporter of cocoa beans, but at a much lower volume of 40,805 metric tons, at USD 61 million.

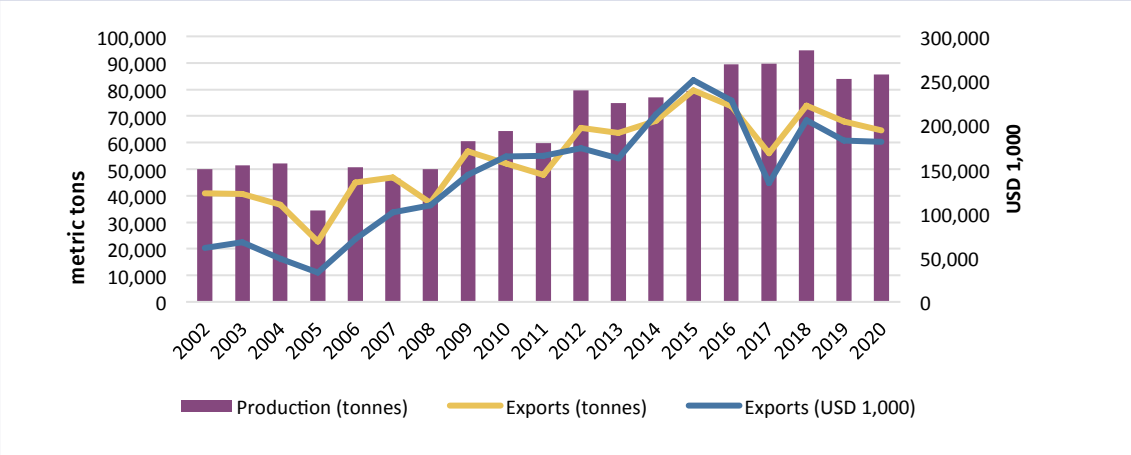


Figure 7. Cocoa production and exports from the Dominican Republic, in USD 1,000 and in metric tons, 2002-2020. Source: ITC Trademap and Viceministerio de Planificación Sectorial Agropecuaria - Departamento de Economía Agropecuaria y Estadísticas (2021)

Since 2002, there has been a clear shift in the orientation of the Dominican Republic's cocoa bean exports. In 2002, North America accounted for 74% of total Dominican exports, compared to a 24% share for Europe and 2% for the Latin America and the Caribbean region. In 2020, only 29% of total Dominican cocoa bean exports were destined to North America, compared to a much higher share of 55% to Europe, 4% to Latin America and the Caribbean and 12% to the Asia and Pacific region.

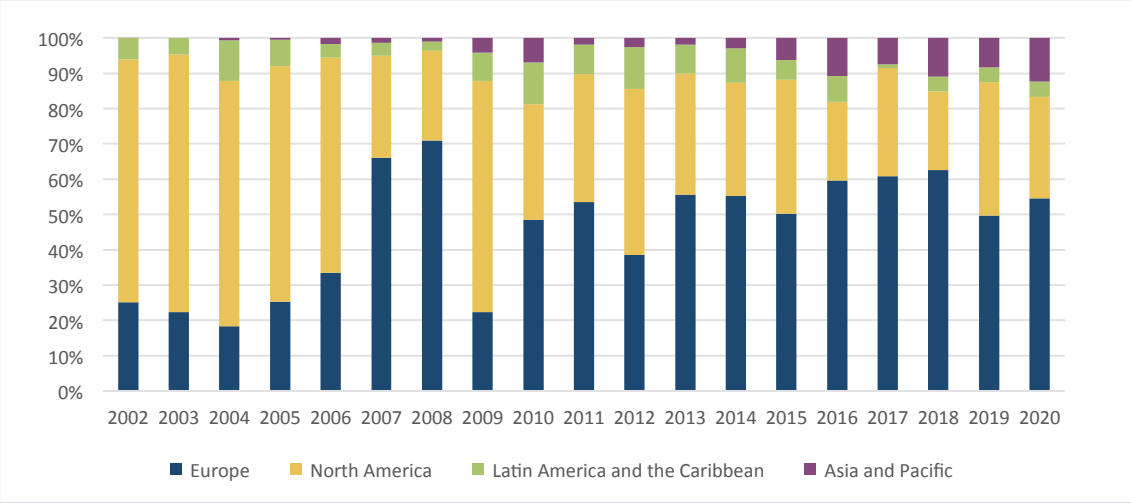


Figure 8. Cocoa bean exports from the Dominican Republic, in % per regional destinations, in value, 2002-2020. Source: ITC Trademap, 2021

The shift in exports from North America to Europe, and increasingly Asia, is also associated with the changes in the different types of cocoa beans that are exported by the Dominican Republic. The country's National Cocoa Commission reports on the exports of Cacao Sanchez, Cacao Sanchez Orgánico, Cacao Hispaniola and Cacao Hispaniola Orgánico; data are available per cocoa year, and since 2005.

In 2005, exports of the unfermented Cacao Sanchez accounted for 65% of total cocoa bean

exports in terms of volume, compared to a share of 16% for Cacao Hispaniola, and 16% for Cacao Hispaniola Orgánico. In 2020, Cacao Sanchez still retained an important share of total Dominican cocoa bean exports, at 46% of the total volume exported, compared to a much higher share of Cacao Hispaniola Orgánico, at a 30% share[1]. Interestingly, the share of Cacao Hispaniola (conventional) decreased, accounting for only 8% of total Dominican exports in 2020 – due to a marked increase in organic certification for Cacao Hispaniola in this period, catering for a specific market demand particularly in Western Europe.

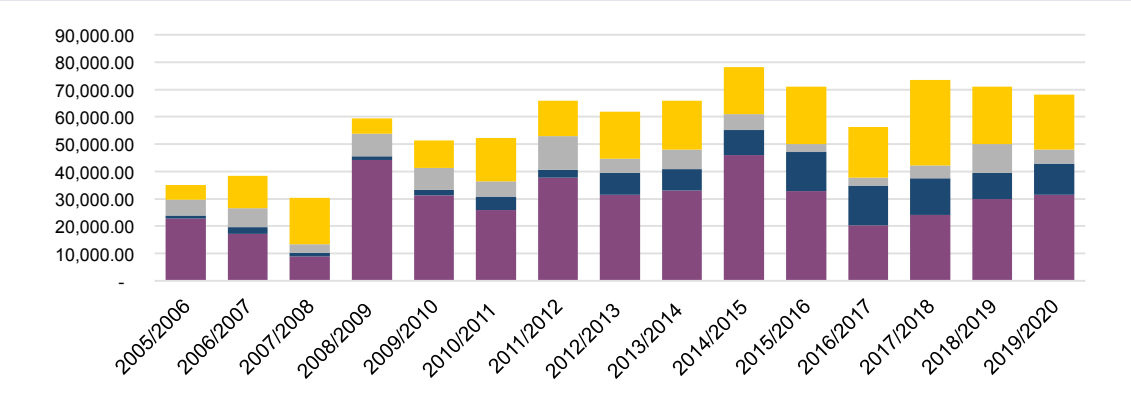


Figure 9. Cocoa bean exports from the Dominican Republic, per product type, in metric tons, 2005-2020
Source: Comisión Nacional de Cacao, 2021

In 2020, the main destinations for Dominican exports of cocoa beans were the United States, with a share of 29% in total exports, followed by the Netherlands (25%) and Belgium (12%). Indonesia, which consolidated its position as a destination for the Dominican Republic's cocoa beans in recent years, accounted for 10% of total exports. Spain is also an important destination, at 7% in 2020.

Table 8. Main destinations for the Dominican Republic's cocoa bean exports, in metric tons (volume) and USD 1,000 (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Cocoa bean exports from the Dominican Republic (DR)	73,712	55,949	73,890	67,853	64,685	227,941	134,338	205,014	182,597	181,164	-
Main destinations:											
United States	15,779	17,655	17,561	26,939	19,788	48,755	41,182	45,452	68,802	51,910	29%
Netherlands	19,408	14,077	16,440	16,453	15,392	62,295	33,916	47,175	47,260	45,553	25%
Belgium	12,574	9,498	15,512	7,547	7,459	38,880	22,557	44,921	20,708	21,778	12%
Indonesia	2,999	1,517	3,502	3,604	6,552	7,843	3,900	8,406	10,124	17,323	10%
Spain	6,116	3,022	4,118	4,496	4,769	17,691	6,233	10,509	10,949	12,683	7.0%

Source: ITC Trademap, 2021

[1] The remaining percentage refers to other cocoa products accounted within the CNC yearly exports (Butter, powder, chocolate, etc.)

The Dominican Republic holds a strong regional position as the second largest cocoa bean exporter in Latin America and the Caribbean, accounting for 15% of total exports from the region – only behind Ecuador, which accounted for 66% of total exports, in terms of value. The Dominican Republic is followed closely by Peru, at 12% of total exports. Venezuela and Colombia are also important exporters of cocoa beans in the region, but at much lower shares of 2.6% and 2.3%, respectively.

Table 9. Main exporters of cocoa beans in Latin America and the Caribbean, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Cocoa bean exports from Latin America and the Caribbean (LATAC)	**392,834**	**430,760**	**456,790**	**436,973**	**478,110**	**1,148,544**	**953,956**	**1,101,378**	**1,093,172**	**1,236,702**	-
Main exporters:											
Ecuador	227,214	284,546	294,063	270,944	323,399	621,970	589,750	665,177	657,272	816,392	66%
Dominican Republic	73,712	55,949	73,890	67,853	64,685	227,941	134,338	205,014	182,597	181,164	15%
Peru	61,913	58,238	60,101	58,607	53,685	201,569	148,705	154,902	150,792	145,747	12%
Venezuela	8,279	8,708	10,695	18,038	11,573	30,828	25,366	28,093	46,331	32,134	2.6%
Colombia	10,449	11,876	7,056	9,116	11,148	31,580	27,326	16,780	22,784	28,423	2.3%

Source: ITC Trademap, 2021

In a global context, the Dominican Republic is also among the largest cocoa bean exporters, at a share of 1.9% of total cocoa bean exports. The country was the eighth largest exporter in 2020. The largest global exporter is Cote d'Ivoire, at nearly half of total global exports in terms of value, followed by Ghana (12%) and Ecuador (8.8%). African suppliers Cameroon and Nigeria are also among the largest cocoa bean exporters worldwide.

Table 10. Main global exporters of cocoa beans, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Global cocoa bean exports	**2,998,924**	**3,332,990**	**3,776,616**	**3,730,231**	**3,731,399**	**8,742,959**	**8,151,557**	**8,856,852**	**8,766,364**	**9,318,799**	
Main exporters:											
Ivory Coast	1,055,636	1,510,082	1,525,594	1,619,957	1,629,294	3,067,554	3,540,983	3,245,320	3,575,751	4,370,922	47%
Ghana	581,375	573,334	843,641	643,643	513,081	1,886,219	1,642,052	2,437,194	1,851,960	1,434,615	15%

Ecuador	227,214	284,546	294,063	270,944	323,399	621,970	589,750	665,177	657,272	816,392	8.8%
Cameroon	263,746	221,667	218,793	308,146	311,703	669,606	403,021	420,454	661,054	755,256	8.1%
Nigeria	N/A	N/A	148,419	166,569	127,612	243,945	176,227	256,168	248,809	279,499	3.0%

Source: ITC Trademap, 2021 (*2015 data)

Data obtained in Table 10 was used to calculate the value of cocoa exported per metric ton. Figure 10 compares the average cocoa price per country.

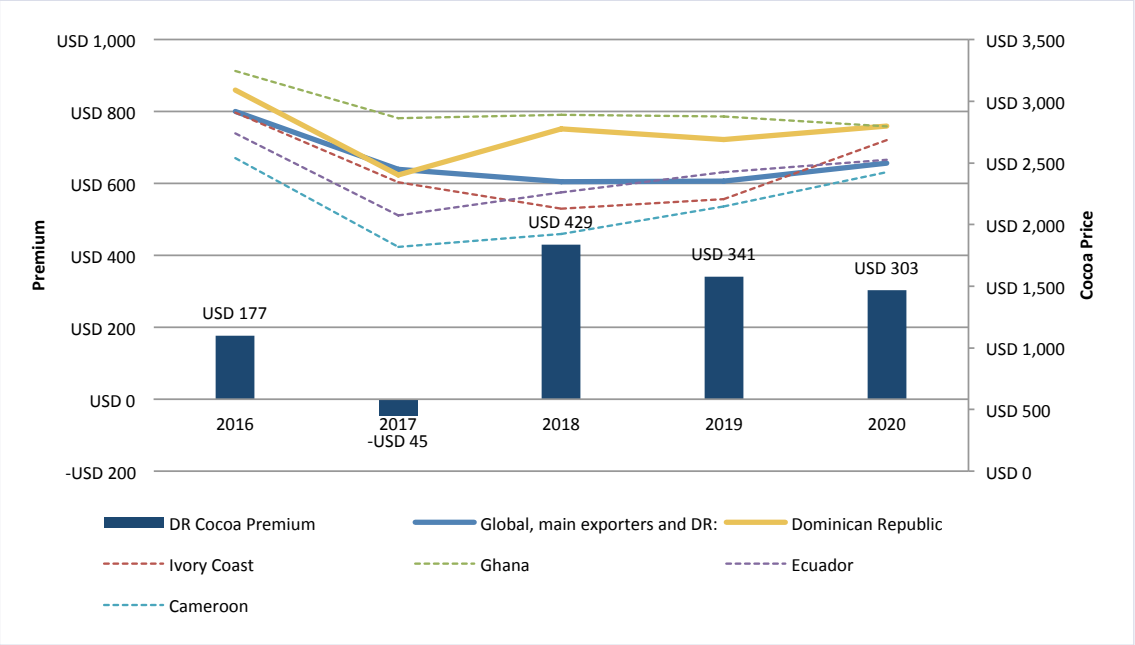


Figure 10. Comparison of average cocoa price per country and DR market premium from 2016 to 2020 – Source: Own elaboration based on FAOSTAT

In Figure 10 on average Dominican Republic cocoa has been sold at a premium for the last five years, except for 2017, where the average discount was USD 45 per metric ton. Dominican cocoa is more valuable compared to major competitors, except for Ghana, which had more market appreciation than DR.

Fine flavor status and exports

The current share of total Dominican exports of cocoa beans considered to be fine flavor by the International Cocoa Organization (ICCO, 2019) is 60%, according to the panel decision in 2019. The original assessment document indicates a decision of fine flavor status at 40% of total exports (ICCO, 2021), consistent with the previous assessment in 2015, since the experts noted that the dossier lacked economic and sensorial information related to the pre-fermented Sanchez cocoa (Hoy, 2020). In general, only cacao Hispaniola has been traditionally included in ICCO's classification of fine flavor cocoa exports from the Dominican Republic. Nonetheless, the pre-fermented cacao Sanchez, which goes through a 1-2 day fermentation process, was finally considered in the final panel decision. The product is sold at a higher value to an US-based customer and is used in its chocolate bars. Pre-fermented Sanchez is currently exported by independent Dominican traders (Personal communication with sector expert, Oct 2021).

Cocoa derivatives and finished products

According to the statistics of the Dominican Republic's Ministry of Industry, Trade and MSMEs, the country has 38 companies active in the processing of cocoa, chocolate and confectionery (Ministerio de Industria Comercio y Mipymes República Dominicana, n.d.). Out of this total, only seven companies are large, 9 are small-sized and 22 are micro enterprises. These industries are responsible for processing cocoa beans into derivatives and finished products, both to be consumed domestically and exported.[2]

In addition to the grinding statistics provided by ICCO, the Dominican Republic's supply of cocoa derivatives and finished products are analyzed in this section in relation to its size and position on the international market. As such, the supply statistics are mainly based on trade data derived from the International Trade Centre (ITC) Trademap, calculated from the data from the Dominican Republic's National Statistics Office. The trade statistics provide data based on the following HS codes for the different cocoa derivatives and finished products:

Table 11. HS Code for cocoa derivatives and finished products

HS CODE*	DESCRIPTION
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

*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).

[2] In the Dominican Republic, Law No. 187-17 defines MSMEs as any unit of economic exploitation, carried out by a natural or legal person, in agricultural, industrial, commercial or service activities, rural or urban, that responds to the categories of classification according to the number of employees and the volume of their sales. This law modified Law 488-08, which classified MSMEs according to the parameters of number of employees, total assets, and gross income generated annually.

Cocoa derivatives

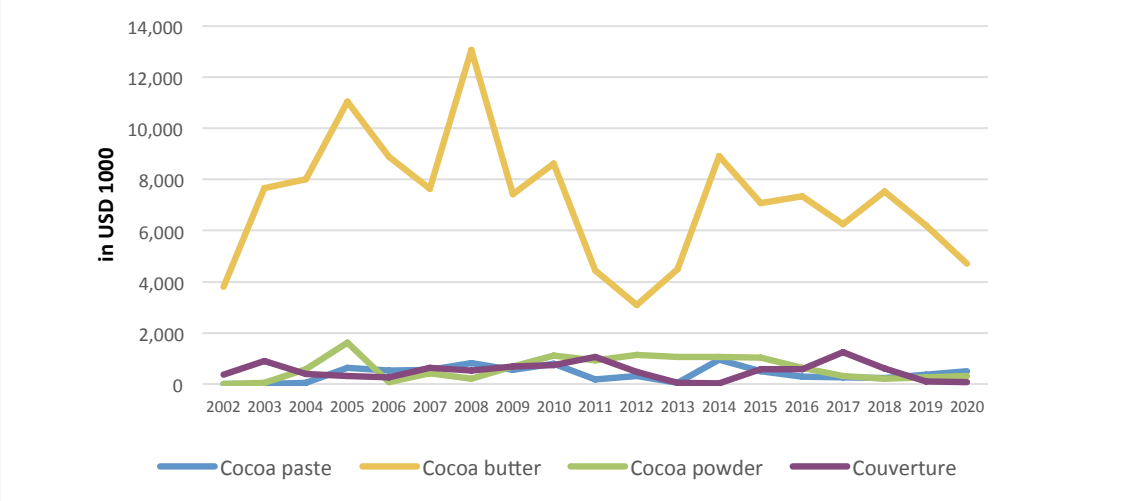


Figure 11. Cocoa derivative exports from the Dominican Republic, per product, in USD 1,000, 2002-2020.
Source: ITC Trademap, 2021

By far, the main exported cocoa derivative of the Dominican Republic is cocoa butter, both in value and volume, as can be seen in Figure 11 and Figure 12. There has been a steady decline in Dominican cocoa butter exports since 2005, when it reached its volume peak. The remaining derivatives that the Dominican Republic produces are less important in terms of value and volume exported when compared with cocoa butter.

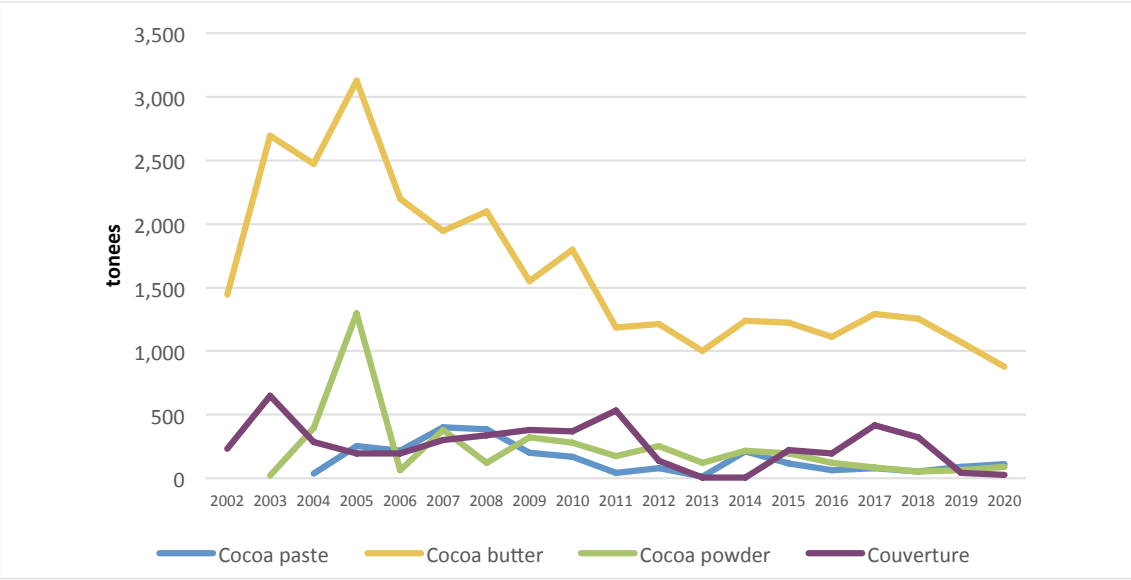


Figure 12. Cocoa derivative exports from the Dominican Republic, per product, in metric tons, 2002-2020
Source: ITC Trademap, 2021

Cocoa paste/liquor

The Dominican Republic exported 109 metric tons of cocoa paste in 2020, at a value of USD 506,000, having Germany, Singapore, and Italy as the main destinations, in terms of value.

Germany accounted for more than half of the Dominican Republic's cocoa paste exports in 2020.

Table 12. Main destinations for the Dominican Republic's cocoa paste exports, in metric tons (volume) and USD 1,000 (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Cocoa paste exports from the Dominican Republic (DR)	**63**	**78**	**55**	**89**	**109**	**291**	**263**	**229**	**363**	**506**	-
Main destinations:											
Germany	0	60	40	35	60	0	212	172	160	276	55%
Singapore	10	0	0	5	15	47	0	0	25	76	15%
Italy	1	6	0	0	10	6	19	0	0	57	11%
Trinidad and Tobago	5	0	0	0	12	2	0	0	0	54	11%
USA	14	12	14	7	11	67	32	54	25	43	8.5%

Source: ITC Trademap, 2021

The main destinations for the Dominican Republic's cocoa paste exports have changed drastically over the years. Exports were only registered as of 2004, when North America was by far the main destination for Dominican exports. In the period 2007-2012, Latin America became an important export destination (particularly Guatemala); in 2011, the region accounted for the entirety of Dominican cocoa paste exports. As of 2013, the Asia Pacific region became an important export destination as well, initially due to Dominican exports to New Zealand and Singapore, and in more recent years to China. The participation of Europe fluctuated through the period 2002-2020, with peaks of exports to the Netherlands in the period 2005-2010. In recent years, most exports destined to Europe have reached Germany.

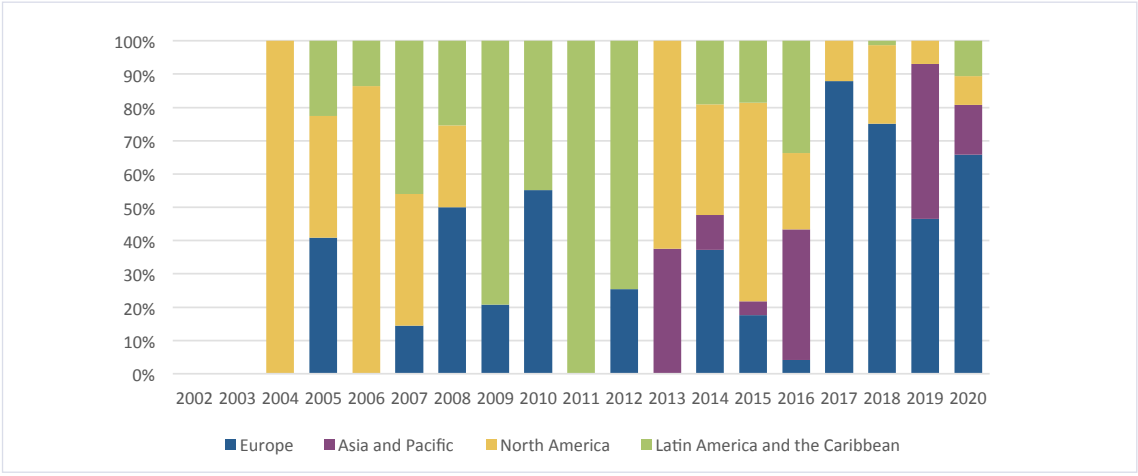


Figure 13. The main destinations for Dominican Republic's exports of cocoa paste, in % per regional destinations, in value, 2002-2020. Source: ITC Trademap, 2021[3]

The Dominican Republic is the fifth largest exporter of cocoa paste in the Latin America and

[3] No data were registered for 2002 - 2003

Caribbean region, but its exports only account for 0.4% of total exports from this region. The main exporter, Ecuador, is also the main cocoa-producing country in the region and accounted for 64% of total Latin America and Caribbean cocoa paste exports, followed by Brazil and Peru. Colombia is also integrated in this list, with a share of 4.3% in the region's total exports.

Table 13. Main exporters of cocoa paste in Latin America and the Caribbean, in metric tons (volume) and USD 1,000 (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Cocoa paste exports from Latin America and the Caribbean (LATAC)	**15,357**	**22,632**	**22,775**	**32,399**	**32,054**	**97,014**	**70,569**	**73,246**	**86,982**	**115,350**	-
Main exporters:											
Ecuador	2,415	7,796	9,759	13,353	20,653	48,614	25,831	33,473	46,993	73,439	64%
Brazil	7,804	7,059	6,831	8,110	5,650	29,466	26,360	24,671	24,805	20,295	18%
Peru	3,189	1,157	1,759	3,822	3,973	10,313	4,976	5,830	9,310	15,222	13%
Colombia	1,636	1,760	1,636	1,413	1,429	7,284	7,325	6,002	5,061	4,957	4.3%
Dominican Republic	63	78	55	89	109	291	263	229	363	506	0.4%

Source: ITC Trademap, 2021

In a global context, the Dominican Republic is a minor exporter of cocoa paste, accounting for 0.01% of global exports. The main exporters, Cote d'Ivoire, the Netherlands, and Ghana, have large-scale cocoa grinding activities performed by multinationals that focus on the bulk market.

Table 14. Main global exporters of cocoa paste, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Global cocoa paste exports	**758,734**	**926,394**	**945,833**	**985,445**	**1,120,301**	**2,925,490**	**3,076,804**	**2,887,265**	**2,973,306**	**3,644,395**	-
Main exporters:											
Cote d'Ivoire	179,418	206,320	195,299	219,408	351,631	683,009	641,732	560,958	623,046	1,090,169	30%
Netherlands	126,910	171,433	158,597	158,319	189,796	516,073	618,551	536,392	530,853	671,266	18%
Ghana	133,340*	125,480	139,794	150,550	147,546	463,302*	407,389	396,371	409,589	424,382	12%
Germany	108,866	84,921	91,426	89,416	77,709	422,551	274,644	303,991	288,305	277,927	7.6%
France	40,714	44,861	38,087	51,636	48,215	175,922	169,974	137,838	184,318	189,549	5.2%

Source: ITC Trademap, 2021 (*2015 data)

Cocoa butter

Table 15 shows that during the last five years, the Dominican Republic has shifted its main

cocoa butter buyer from the United States in 2016 (369 metric tons exported in 2016) to The Netherlands (536 metric tons exported in 2020). The Netherlands accounts for 59% of the total cocoa butter exports of DR, 22% goes to the United States, and Germany appears as an interesting new venture with 17% of total cocoa butter exports. Trinidad and Tobago and France also are markets which registered imports of Dominican cocoa butter; French imports from the Dominican Republic declined drastically over the last five years.

Table 15. Main destinations for the Dominican Republic's cocoa butter exports, in metric tons (volume) and USD 1,000 (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Cocoa butter exports from the Dominican Republic (DR)	**1,224**	**1,111**	**1,292**	**1,257**	**1,072**	**7,355**	**6,255**	**7,534**	**6,193**	**4,699**	-
Main destinations:											
Netherlands	352	220	620	863	536	2,204	1,138	3,551	4,876	2,761	59%
USA	369	412	202	37	221	2,591	1,830	1,388	156	1,041	22%
Germany	0	15	113	91	108	0	92	852	692	822	17%
Trinidad and Tobago	5	0	0	0	12	34	0	0	0	73	1.6%
France	340	520	320	80	0	2,209	2,409	1,714	456	1	0.02%

Source: ITC Trademap, 2021

Figure 14 shows an interesting shift in cocoa butter's main destinations during the last 20 years. The share of European imports of cocoa butter from the Dominican Republic increased significantly, while North America's role decreased from 70% in 2002 to just over 20% in 2020.

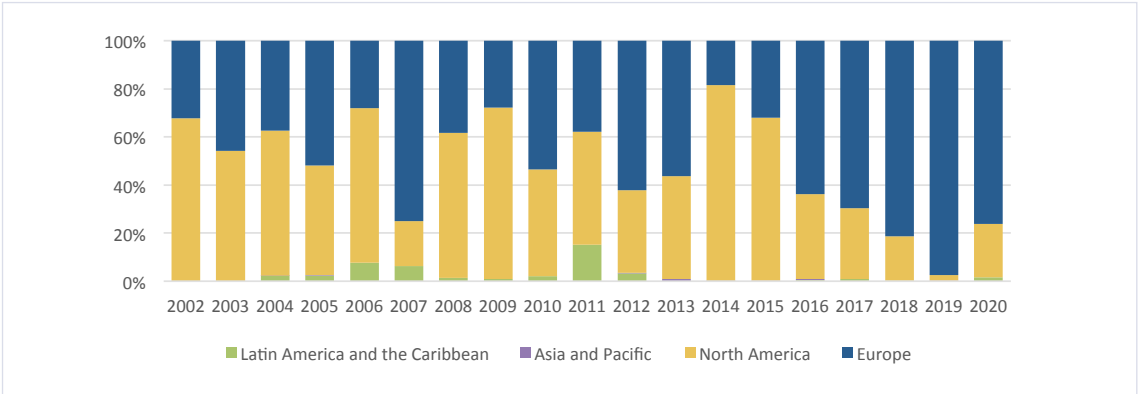


Figure 14. Cocoa butter exports from the Dominican Republic, in % per regional destinations, in value, 2002-2020. Source: ITC Trademap, 2021

Table 16 shows cocoa butter export data (volume and value) for Dominican Republic's main South American competitors from 2016 to 2020. Brazil commands the total share of cocoa butter exports with 23,762 metric tons exported in 2020 (51%), followed by Peru (25%), Colombia and Ecuador (9.5% each). The Dominican Republic accounts for 1.8% of total cocoa butter exports in the region and is the fifth largest exporter.

Table 16. Main exporters of cocoa butter in Latin America and the Caribbean, in metric tons (volume) and USD 1,000 (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	*2017*	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Cocoa butter exports from Latin America and the Caribbean (LATAC)	**55,882**	**58,536**	**50,131**	**47,760**	**47,022**	**363,162**	**323,469**	**294,627**	**274,009**	**259,383**	-
Main exporters:											
Brazil	30,721	30,481	21,435	20,484	23,762	199,609	175,638	123,243	119,243	133,048	51%
Peru	8,258	9,305	10,458	14,968	11,999	54,455	50,761	64,941	86,392	65,913	25%
Colombia	3,590	3,166	3,724	3,833	4,682	23,735	17,199	21,764	21,060	24,628	9.5%
Ecuador	6,320	7,054	5,914	5,066	4,363	41,850	37,477	35,444	28,501	23,664	9.5%
Dominican Republic	1,111	1,292	1,257	1,072	877	7,355	6,255	7,534	6,193	4,699	1.8%

Source: ITC Trademap, 2021

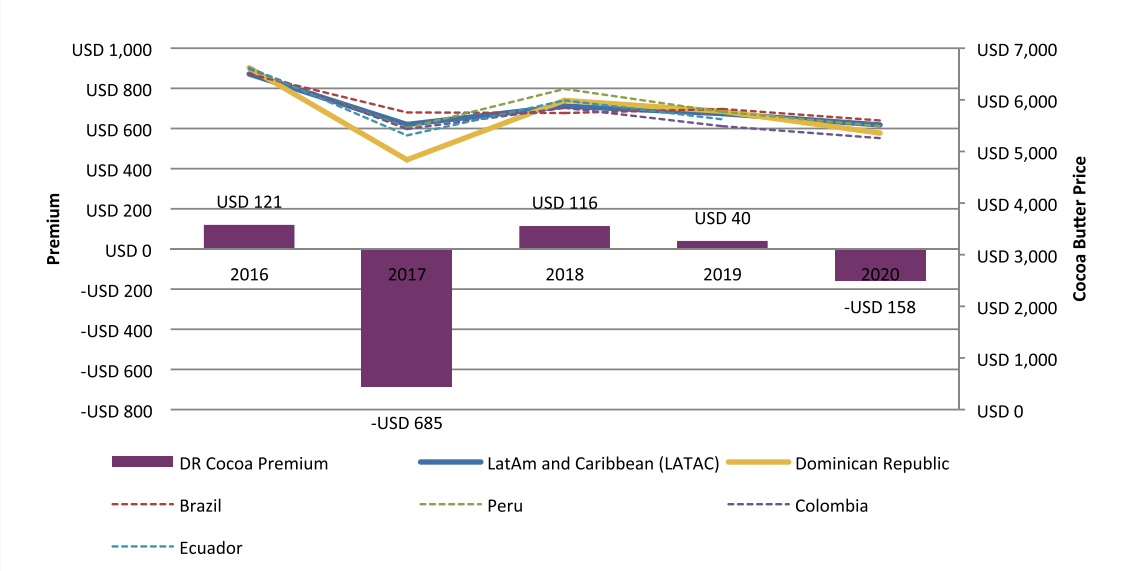


Figure 15. Comparison of the average cocoa butter export price per country in Latin America and the Caribbean (LATAC). Source: ITC Trademap, 2021

Figure 15 shows a comparison of cocoa butter export price for LATAC countries. Dominican cocoa butter does not seem as valuable as cocoa beans for international markets, and in most cases during the last five years it is sold at discount or almost zero premium when compared with its regional competitors.

Table 17 shows volume and value of major cocoa butter exporters compared to the Dominican Republic. The Netherlands has a 27% share of total cocoa butter exports worldwide, with 256,292 metric tons in 2020. Indonesia is the second largest exporter with 14%, Malaysia (10%), Cote d'Ivoire (8.2%) and Germany (8.1%) are also important exporters. The Dominican Republic accounts for only 0.1% of global cocoa butter exports.

Table 17. Main global exporters of cocoa butter, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Global cocoa butter exports	**851,484**	**956,041**	**1,018,605**	**1,048,636**	**988,013**	**5,326,705**	**5,301,260**	**5,434,311**	**5,644,229**	**5,712,292**	-
Main exporters:											
Netherlands	251,080	259,083	260,268	270,112	256,292	1,652,479	1,626,772	1,536,260	1,569,463	1,559,359	27%
Indonesia	109,504	135,875	155,025	144,985	144,490	697,860	681,062	824,048	785,448	790,990	14%
Malaysia	85,490	79,288	89,242	124,589	110,181	501,628	378,927	390,904	613,366	599,335	10%
Cote d'Ivoire	81,686	87,642	86,963	83,526	83,062	441,067	426,113	393,927	373,613	469,752	8.2%
Germany	75,615	70,420	82,467	89,979	76,086	495,472	422,218	493,788	520,118	463,376	8.1%

Source: ITC Trademap, 2021

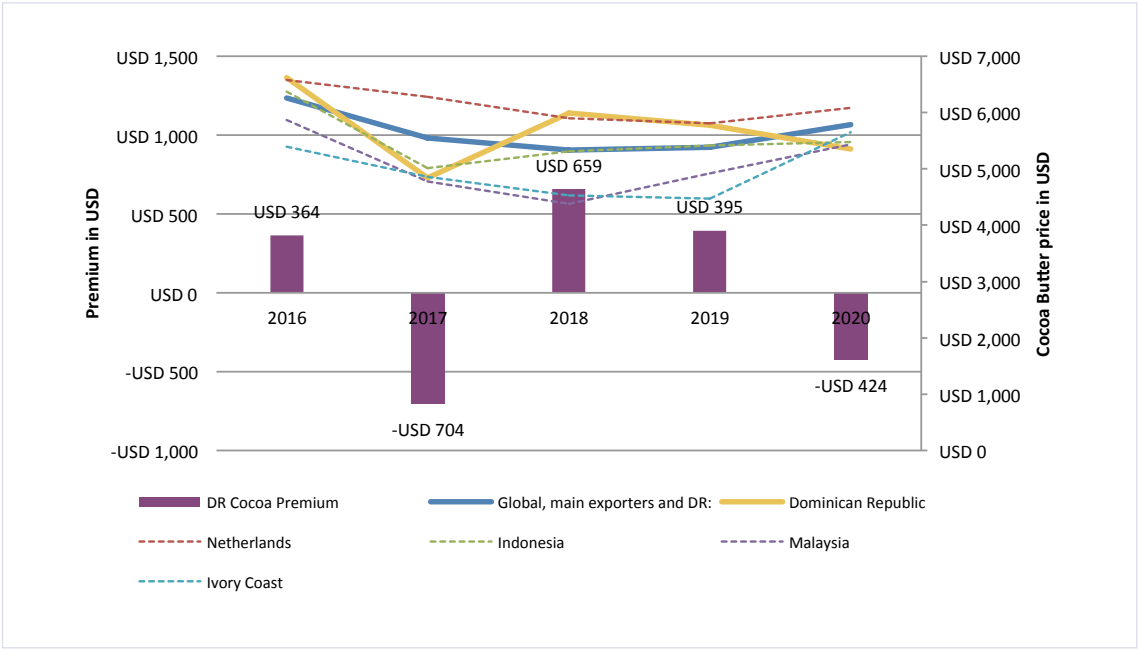


Figure 16. Comparison of the average cocoa butter export price per major exporters.
Source: ITC Trademap, 2021

Cocoa powder

Table 18 shows that, during the last five years, the Dominican Republic's export destinations for cocoa powder have remained consistent, with the United States as the main market. The country accounted for 65% of Dominican exports in 2020, and Trinidad and Tobago accounted for 28%. Interestingly, Russia and Serbia, to a lesser extent, emerged as destinations for Dominican exports of cocoa powder in this period. Haiti is a smaller destination market as well.

Table 18. Main destinations for the Dominican Republic's exports of cocoa powder, Dominican Republic and its main export destinations, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	*2017*	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Cocoa powder exports from the Dominican Republic (DR)	**124**	**83**	**54**	**64**	**91**	**632**	**306**	**204**	**247**	**325**	-
Main destinations:											
United States	61	61	21	24	74	328	172	85	81	211	65%
Trinidad and Tobago	14	9	6	10	13	75	66	42	73	91	28%
Russia	0	1	0	1	1	0	7	0	8	11	3.4%
Serbia	0	0	0	1	1	0	0	0	4	5	1.5%
Haiti	7	0	0	0	0	22	9	1	3	3	0.9%

Source: ITC Trademap, 2021

Since 2002, there has been a clear shift in Dominican exports of cocoa powder to Latin America as the main destination towards North America; Europe's position fluctuated heavily in this period.

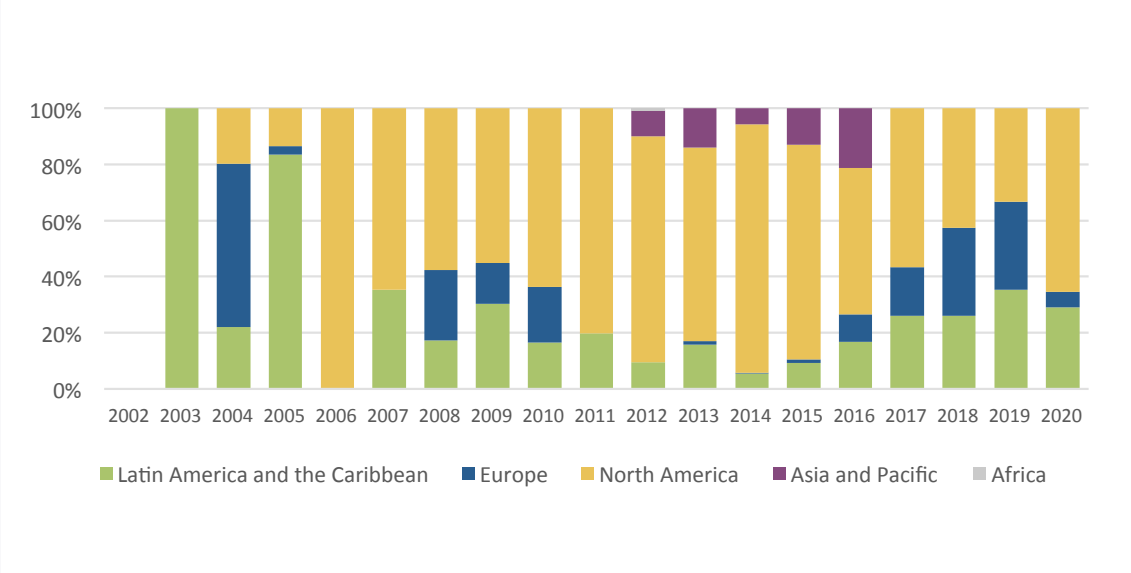


Figure 17. Cocoa powder exports from the Dominican Republic, in % per regional destinations, in value, 2002-2020. Source: ITC Trademap, 2021[4]

In the Latin American context, the Dominican Republic plays a small role in cocoa powder exports, at only 0.6% of total exports from this region. Brazil, the main player, accounted for nearly half of total exports, followed by Peru and Uruguay.

[4] No data were registered for 2002

Table 19. Exports of cocoa powder, Latin America and the Caribbean, main exporters and the Dominican Republic, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Cocoa powder exports from Latin America and the Caribbean (LATAC)	**34,529**	**36,427**	**37,373**	**40,736**	**42,636**	**104,233**	**99,905**	**92,707**	**96,285**	**101,294**	-
Main exporters:											
Brazil	22,062	22,361	21,167	21,814	20,505	66,156	62,230	54,105	54,439	49,946	49%
Peru	3,380	3,900	4,596	6,008	8,129	12,161	13,373	12,562	15,170	21,077	21%
Uruguay	2,115	1,957	2,587	4,873	7,979	5,551	4,402	4,762	8,728	14,778	15%
Ecuador	4,945	5,691	6,258	5,568	3,836	13,440	12,196	13,597	11,791	9,643	10%
Colombia	947	1,012	810	1,186	1,153	3,267	3,261	2,665	2,945	3,235	3.2%

Source: ITC Trademap, 2021

Having a large-scale cocoa-processing industry, the Netherlands is the biggest producer of cocoa powder, accounting for 28% of global exports, followed by Malaysia and Germany with 12% and 11% respectively. In the case of cocoa powder, the Dominican Republic's contribution to global exports represents only 0.01% of global exports.

Table 20. Main global exporters of cocoa powder, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Global, main exporters and DR:	882,923	967,611	1,029,428	1,017,499	1,074,556	2,388,193	2,366,186	2,271,015	2,285,628	2,535,023	
Netherlands	246,406	279,918	282,899	298,219	287,101	692,508	714,463	676,282	689,869	721,705	28%
Malaysia	133,725	133,086	144,332	158,580	145,008	298,556	270,829	225,910	275,292	294,597	12%
Germany	97,466	100,020	117,579	118,822	109,128	274,425	252,642	274,484	266,946	276,580	11%
Indonesia	74,415	80,071	89,806	87,707	106,523	163,906	152,185	146,102	141,318	194,321	7.7%
Spain	65,944	77,097	81,691	82,408	77,157	157,968	169,692	157,548	154,427	165,965	6.5%

Source: ITC Trademap, 2021

Couverture (industrial chocolate)

Covertures from the Dominican Republic have two main export markets: the Unites States and Haiti. The Unites States is the main and largest market, accounting for 90% of the Dominican Republic's coverture exports. Exports from the Dominican Republic to Haiti accounted for 10% of total exports.

Table 21. Main destinations for Dominican Republic's couverture (industrial chocolate) exports, in metric tons (volume) and USD 1,000 (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Couverture (industrial chocolate) exports from the Dominican Republic (DR)	**193**	**415**	**322**	**42**	**28**	**590**	**1245**	**611**	**103**	**78**	**-**
Main destinations:											
USA	188	414	321	42	27	562	1236	595	94	70	90%
Haiti	1	1	1	0	1	8	6	11	5	8	10%

Source: ITC Trademap, 2021

The figure below depicts the strong importing position of the Unites States compared with the rest of the world. During the last two decades (from 2002 to 2020) exports from the Dominican Republic to the Unites States have surpassed 80% on average.

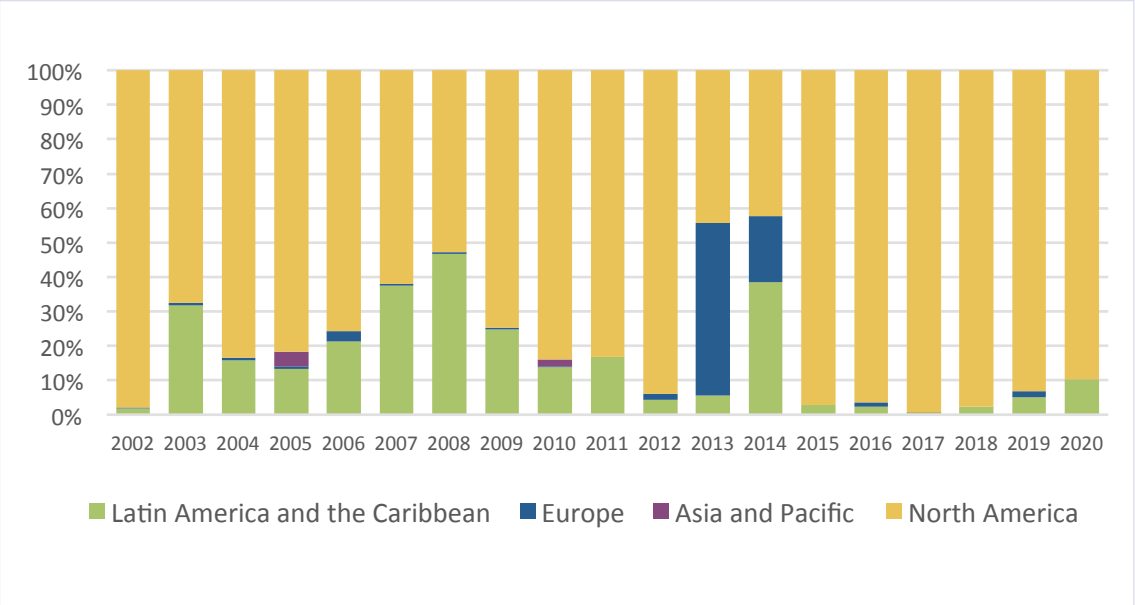


Figure 18. Couverture (industrial chocolate) exports from the Dominican Republic, in % per regional destinations, in value, 2002-2020

Source: ITC Trademap, 2021

When comparing the Dominican Republic's export values to the main competitors in the Latin American region, it can be observed that the Dominican Republic's share accounts for only 0.1% of coverture exports from Latin America. Mexico leads coverture exports with 81% of total LATAC exports, followed at a distance by Colombia (6.5%), Argentina (5.1%), and Brazil (2.5%).

Table 22. Main exporters of couverture (industrial chocolate) in Latin America and the Caribbean, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Couverture (industrial chocolate) exports from Latin America and the Caribbean (LATAC)	**24,999**	**29,087**	**23,245**	**33,960**	**28,208**	**90,520**	**129,533**	**108,093**	**174,084**	**132,951**	-
Main exporters:											
Mexico	18,500	20,986	14,730	25,793	21,474	66,656	100,540	76,684	143,762	108,232	81%
Colombia	1,526	2,198	2,766	2,261	2,118	6,663	9,231	11,494	9,328	8,595	6.5%
Argentina	1,547	1,479	1,555	1,582	1,458	6,963	6,814	7,218	7,606	6,801	5.1%
Brazil	1,541	1,409	1,407	2,096	1,698	3,189	3,049	2,775	3,895	3,291	2.5%
Ecuador	284	384	505	607	349	2,239	2,634	3,840	4,441	2,655	2.0%

Source: ITC Trademap, 2021

Lastly, when comparing the Dominican Republic's volume and export levels globally, it can be observed that it only represents a negligible 0.002% of global coverture exports. The main global exporters of coverture are Belgium (27%), followed by Canada (12%) and Germany (7.3%).

Table 23. Main global exporters of couverture (industrial chocolate), in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	*2018*	*2019*	*2020*	*2016*	*2017*	*2018*	*2019*	*2020*	% total exports in value
Global exports of couverture (industrial chocolate)	**1,310,635**	**1,392,785**	**1,367,283**	**1,455,389**	**1,403,339**	**4,182,072**	**4,447,594**	**4,576,010**	**4,741,879**	**4,846,109**	-
Main exporters:											
Belgium	344,492	343,149	341,557	387,391	373,094	1,217,248	1,207,612	1,197,690	1,303,568	1,318,070	27%
Canada	207,062	209,534	216,837	218,757	231,099	575,937	564,165	536,293	557,536	597,391	12%
Germany	108,844	121,223	119,989	116,757	114,359	334,932	363,375	363,619	344,368	355,835	7.3%
France	81,482	82,139	77,117	77,837	72,555	311,625	311,038	296,355	290,940	278,822	5.8%
USA	90,453	93,320	88,904	92,868	84,111	301,013	312,765	285,963	304,065	277,975	5.7%

Source: ITC Trademap, 2021

Finished consumer products

Table 24. HS Code for finished cocoa consumer products

HS CODE	DESCRIPTION
180610*	Cocoa powder, containing added sugar or other sweetening matter
180631**	Chocolate and other food preparations containing cocoa; in blocks, slabs or bars, filled, weighing 2 kg or less
180632**	Chocolate and other food preparations containing cocoa, in blocks, slabs and bars, weighing less than 2 kg
180690**	Chocolate and other food preparations containing cocoa, in containers or immediate packings, weighing less than 2 kg

*HS code 180610 may also include bulk products.

**The aggregation of HS codes 180631/32/90 will be used to classify chocolate and other consumer products containing cocoa due to their weight reference. Some products classified under these HS codes may also consist of couverture (industrial chocolate) or other bulk products.

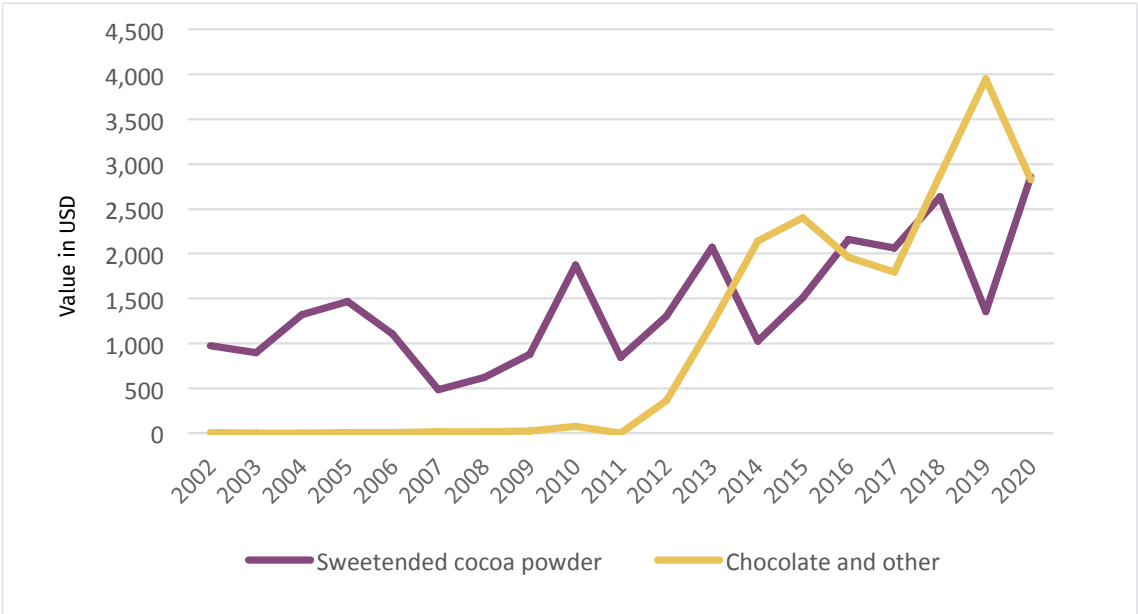


Figure 19. Exports of cocoa preparations as finished consumer products from the Dominican Republic, per product, in USD 1,000, 2002-2020

Source: ITC Trademap, 2021

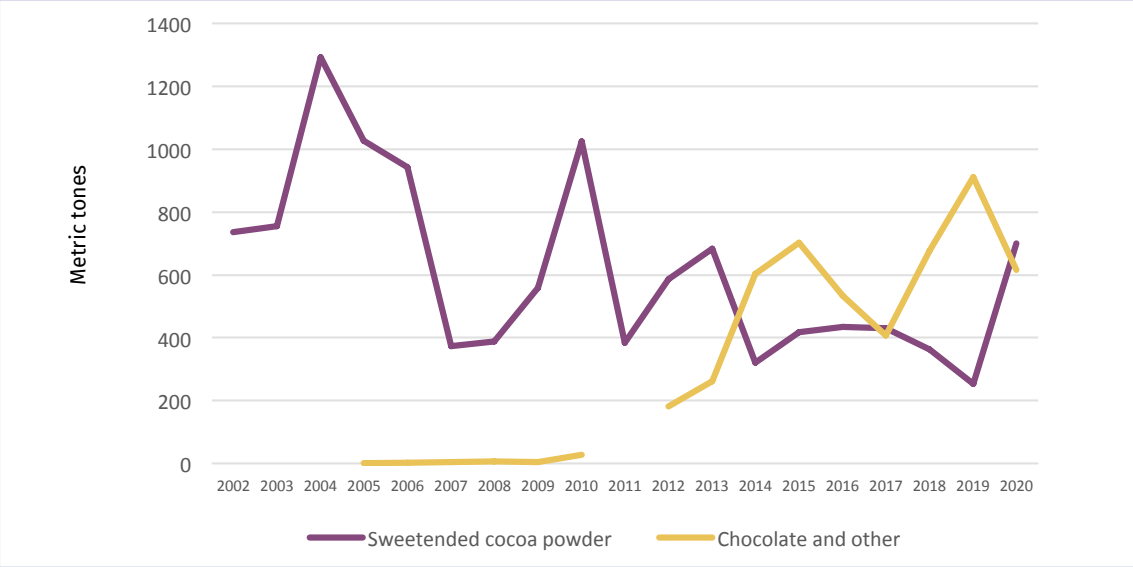


Figure 20. Exports of cocoa preparations as finished consumer products from the Dominican Republic, per product, in metric tons, 2002-2020

Source: ITC Trademap, 2021

Sweetened cocoa powder

Sweetened cocoa powder exports from the Dominican Republic have been increasing in volume and value from 2016 to 2020. The Unites States is the main importer of sweetened cocoa powder from the Dominican Republic, accounting for 59% of the value exported. The remaining exports are destined to Latin America, especially to Haiti, which accounts for 39% of the Dominican Republic's exports.

Table 25. Main destinations for the Dominican Republic's exports of sweetened cocoa powder, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Sweetened cocoa powder exports from the Dominican Republic (DR)	**435**	**431**	**363**	**253**	**701**	**2,160**	**2,061**	**2,630**	**1,352**	**2,859**	**-**
Main destinations:											
United States	278	239	176	136	529	1,228	1,031	691	451	1,688	59%
Haiti	133	162	157	99	161	685	746	1,579	770	1,123	39%
Trinidad and Tobago	5	15	10	9	8	22	74	43	36	32	1%
Russia	0	2	1	2	2	0	7	11	14	7	0.2%
Netherlands	0	0	0	0	0	0	0	1	0	3	0.1%

Source: ITC Trademap, 2021

The figure below shows the U.S. dominance remaining the biggest importer of the Dominican

Republic's sweetened cocoa powder, except for periods 2010-2011 and 2018-2019, when it was surpassed by exports to Latin American destinations, mainly Haiti.

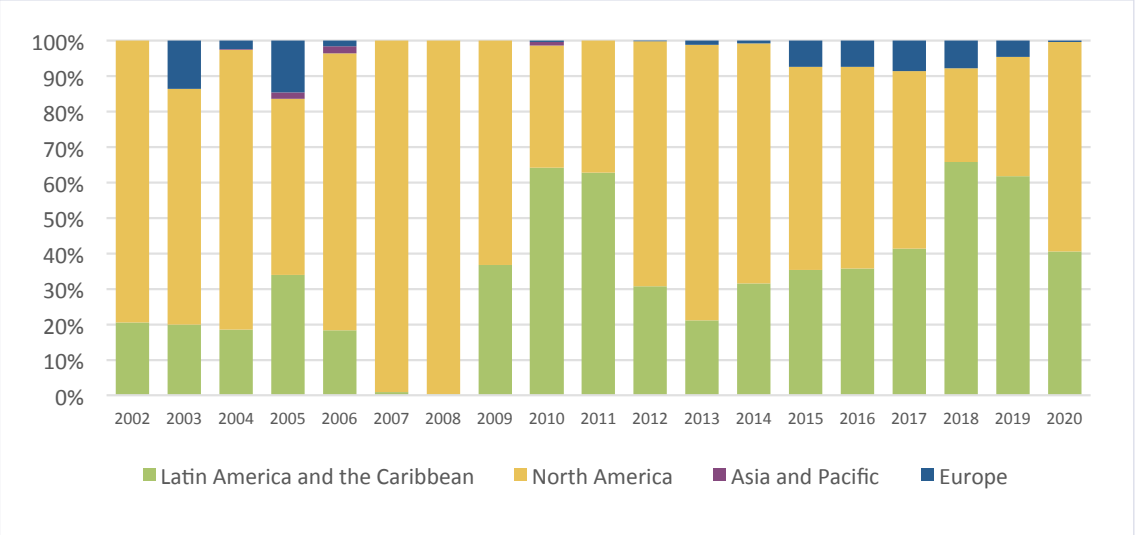


Figure 21. Sweetened cocoa powder exports from the Dominican Republic, in % per regional destinations, in value, 2002-2020. Source: ITC Trademap, 2021

When comparing the Dominican Republic's sweetened cocoa exports with the Latin American region, it can be observed that the Dominican Republic ranks at second place with 7.3% of the total value exported, while Mexico is the main exporter with a significant share of 81% in total exports.

Table 26. Main exporters of sweetened cocoa powder in Latin America and the Caribbean (LATAC), in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Sweetened cocoa powder exports from Latin America and the Caribbean (LATAC)	**73,393**	**N/A**	**67,531**	**71,673**	**53,727**	**60,777**	**54,695**	**51,217**	**52,351**	**39,196**	**-**
Main exporters:											
Mexico	70,568	66,670	64,870	68,601	50,911	52,996	46,297	43,504	44,342	31,721	81%
Dominican Republic	435	431	363	253	701	2,160	2,061	2,630	1,352	2,859	7.3%
Guatemala	1,276	1,614	1,004	1,122	1,151	2,067	2,937	1,695	2,032	2,105	5.4%
Costa Rica	233	317	292	315	371	563	844	681	713	786	2.0%
Brazil	153	136	140	107	144	496	506	432	357	391	1.0%

Source: ITC Trademap, 2021

Nonetheless, when comparing globally, the Dominican Republic plays a very small role, accounting for only 0.8% of global exports. Germany is the main global exporter of sweetened cocoa powder, with 13% of total exports, followed by South Korea with 10%, and by Mexico in

third place with 9.2% of global exports of sweetened cocoa powder.

Table 27. Main global exporters of sweetened cocoa powder, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Global exports of sweetened cocoa powder	**200,817**	**203,127**	**216,945**	**227,788**	**193,478**	**398,288**	**395,024**	**417,662**	**428,358**	**346,133**	-
Main exporters:											
Germany	19,149	18,153	17,293	17,260	17,093	53,954	49,915	49,898	43,421	43,686	13%
South Korea	26,574	30,726	30,188	31,649	32,459	31,726	34,801	32,414	32,901	36,019	10%
Mexico	19,149	18,153	17,293	17,260	17,093	52,996	46,297	43,504	44,342	31,721	9.2%
Ireland	996	1,176	1,330	1,800	1,694	26,258	23,574	27,702	34,326	28,445	8.2%
Malaysia	5,756	13,361	20,470	26,052	17,451	16,137	25,243	29,709	33,647	25,192	7.3%

Source: ITC Trademap, 2021

Chocolate and other

For the category of chocolate and other, the Dominican Republic's exports are mainly directed to the U.S. market, at 65% of total exports. The second export market for the Dominican Republic's chocolate (and other) is Panama (7.4%), followed by Haiti (6.4%), the Netherlands (5.5%), and Belgium (3.9%). The total volume of chocolate and other preparations from the Dominican Republic was 615 metric tons in 2020.

Table 28. Main destinations for the Dominican Republic's exports of chocolate and other cocoa preparations, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Dominican Republic (DR)'s exports of chocolate and other cocoa preparations	**533**	**408**	**676**	**912**	**615**	**1,958**	**1,795**	**2,877**	**3,950**	**2,828**	-
Main destinations:											
United States	344	266	478	668	425	1,225	1,215	1,883	2,864	1,834	65%
Panama	0	0	0	0	15	2	0	0	0	210	7.4%
Haiti	19	22	51	17	8	145	243	571	396	180	6.4%
Netherlands	0	3	0	0	13	0	5	0	0	155	5.5%
Belgium	0	0	0	0	11	0	0	0	0	110	3.9%

Source: ITC Trademap, 2021

For the last 15 years, the Unites States has been the main importer of chocolate and other preparations from the Dominican Republic. Total export volumes of chocolate and other

preparations from the Dominican Republic were 615 metric tons in 2020, of which 425 metric tons (65%) were exported to the U.S. market. The role of Europe increased significantly from 2019 to 2020, when two new destination markets for the Dominican Republic's chocolate (and other) exports emerged: Netherlands and Belgium, together accounting for nearly 10% of total Dominican exports.

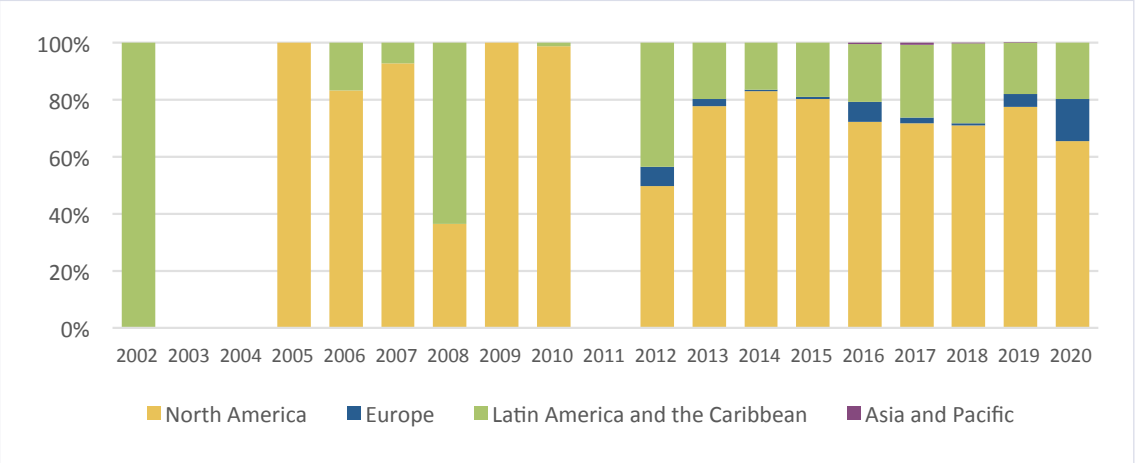


Figure 22. Exports of chocolate and other cocoa preparations from the Dominican Republic, in % per regional destinations, in value, 2002-2020. Source: ITC Trademap, 2021[5]

Nonetheless, when comparing the Latin American region, the main exporter of chocolate and other preparations is Mexico, accounting for 62% of the exported volume, followed by Brazil, Argentina, Colombia, and Peru with 13%, 9%, 5%, and 3% respectively. The volume exported from the Dominican Republic in 2020 was 615 metric tons, at a value of USD 2.8 million, accounting only for 0.4% of the region's total exports.

Table 29. Main exporters of chocolate and other cocoa preparations in Latin America and the Caribbean, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Latin America and the Caribbean (LATAC)'s exports of chocolate and other cocoa preparations	**198,865**	**207,271**	**208,173**	**193,594**	**189,663**	**853,782**	**843,963**	**910,913**	**805,565**	**729,253**	-
Main exporters:											
Mexico	125,012	132,144	117,850	120,429	120,806	508,900	498,256	492,009	480,867	452,690	62%
Brazil	25,201	23,925	41,166	25,263	27,006	89,247	93,423	157,033	97,997	93,453	13%
Argentina	12,120	12,583	11,785	10,230	8,569	82,567	92,929	104,947	83,440	64,185	9%
Colombia	11,363	12,373	11,986	11,596	10,887	64,060	47,788	49,488	44,288	39,807	5%
Peru	2,516	3,251	3,830	4,301	4,257	13,680	16,796	20,839	23,774	24,020	3%

Source: ITC Trademap, 2021

[5] No data were registred for 2003, 2004 and 2011

In Europe, Germany is the main exporter of chocolate and other preparations, accounting for a volume of 771,721 metric tons (USD 4.5 billion), equivalent to 20% of global exports in 2020. Poland with 8.1%, Italy with 7.9%, the Netherlands with 7.3%, and Belgium with 5.2%. When comparing the Dominican Republic's contribution to global trade, the country accounts for only 0.01% of total exports.

Table 30. Main global exporters of chocolate and other cocoa preparations, in metric tons (volume) and USD thousand (value), 2016-2020

	in tons (volume)					in USD 1,000 (value)					
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	% total exports in value
Global exports of chocolate and other cocoa preparations	4,128,243	4,018,560	4,309,013	4,541,923	4,164,627	21,427,005	22,329,996	23,684,209	23,899,875	22,830,660	-
Main exporters:											
Germany	694,981	723,342	751,146	775,901	771,721	3,993,602	4,280,721	4,564,787	4,568,067	4,466,810	20%
Poland	283,364	263,102	300,141	307,514	336,147	1,455,179	1,375,645	1,566,799	1,643,275	1,843,309	8.1%
Italy	199,380	225,654	232,789	258,337	N/A	1,366,246	1,689,521	1,759,458	1,817,662	1,813,041	7.9%
Netherlands	352,362	359,604	361,474	376,052	355,183	1,682,846	1,751,773	1,823,894	1,838,051	1,678,009	7.3%
Belgium	189,164	N/A	177,519	191,992	182,189	1,258,143	1,324,662	1,287,363	1,239,569	1,180,962	5.2%

Source: ITC Trademap, 2021

Fermenation center in Reserva Zorzal Cacao. Photo taken by: Gustavo Ferro

Dominican Republic's cocoa value chain

Mapping of Dominican Republic's cocoa value chain

The global cocoa value chain is complex and comprises all activities related to cocoa production, cocoa trade and processing, chocolate manufacturing and other industries, marketing, and retail (Figure 23). The global cocoa supply chain includes cocoa production, trade of cocoa beans, manufacturing of cocoa derivatives and finished consumer products, and the distribution and marketing of those products. Cocoa derivatives are cocoa nibs, cocoa paste (liquor), cocoa press cake, cocoa butter, cocoa powder, and couverture (industrial chocolate). Finished consumer products include chocolate in its many forms, as well as various food and beverages, cosmetics, and health products. The chocolate industry is estimated to absorb approximately 90% of the global cocoa demand (Rios et al., 2017), and is, therefore, the focus of this analysis.

The complexity of the global cocoa value chain is reflected in the Dominican Republic. The cocoa value chain in the Dominican Republic is not just a linear sequence of activities and associated actors; instead, the research has shown intertwined and overlapping relationships amongst them. On occasions, one actor performs more than one role in the value chain and at different levels and processes of this chain, thus interacting in a multidirectional network of product and capital flow.

Through the chain mapping exercise, several actors in the Dominican Republic cocoa scene were identified in the core value chain as well as in the wider environment under which the system operates: Enabling environment and support services (Ferro et al, 2018). This chapter focuses on the core value chain and describes each actor found therein, as well as their relationships with other actors.

Drying tunnel in Okö-Caribe. Photo taken by: Gustavo Ferro

An approximate visual representation of the Dominican Republic's cocoa value chain is shown in Figure 23:

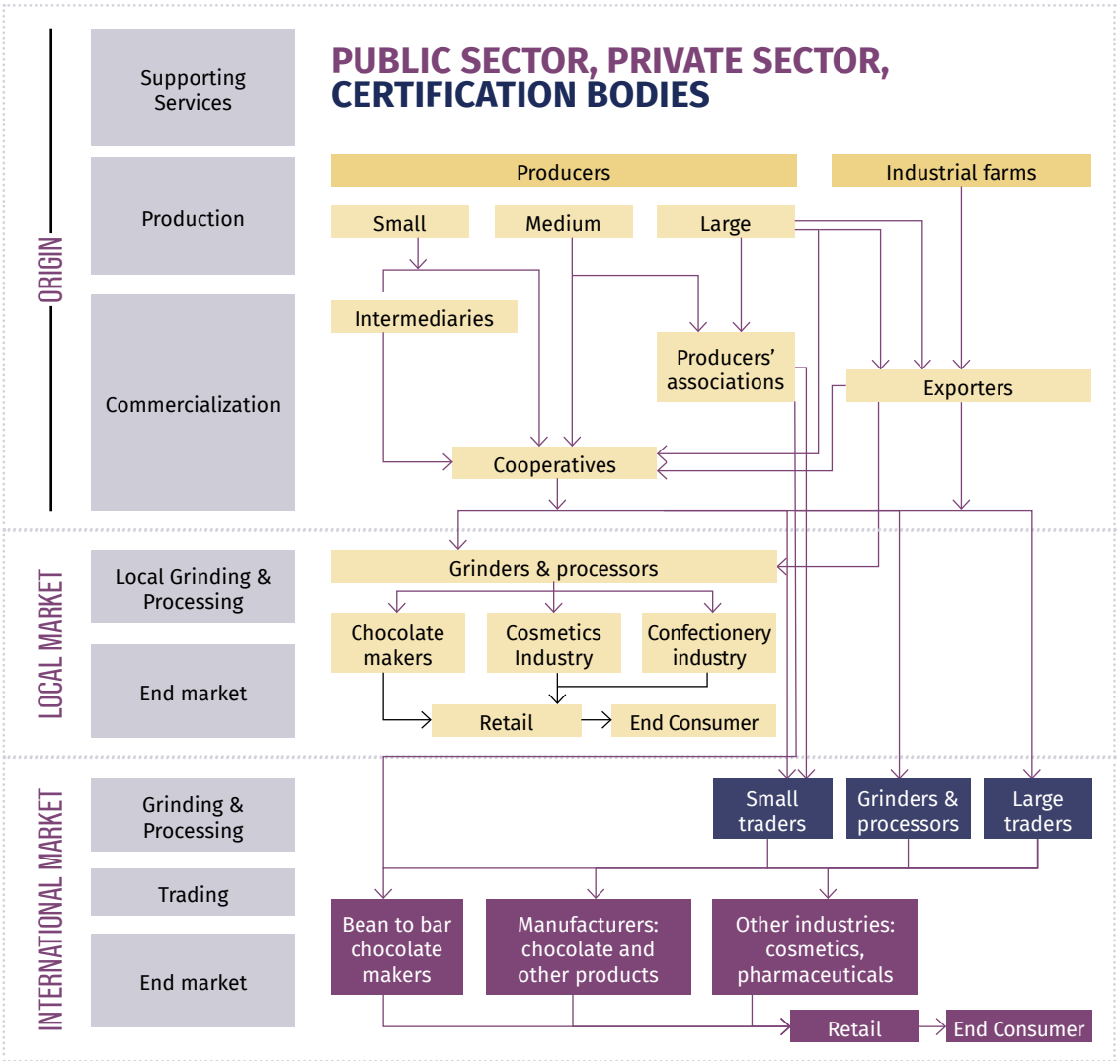


Figure 23. Cocoa value chain in DR. Source: own elaboration, 2021

Cocoa producers in the Dominican Republic

The last official census conducted by the Ministry of Agriculture in the Dominican Republic occurred in 1981. However, recent estimates suggest that there are around 42,751 cocoa producers in the country (Ferreiras, 2020). Most producers involved in cocoa production in the Dominican Republic are smallholders; of these producers, 64.4% cultivate cocoa in areas of five hectares (80 *tareas*) or less (Batista, 2009).

Most cocoa producers worldwide produce other crops in their farms for their own consumption or commercialization, and this is also the case in the Dominican Republic. This is 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).

Although cocoa producers may produce other crops on their farms, a producer is usually considered to be a cocoa producer if a large share of their income (>30-40%) comes from cocoa production. In traditional cocoa-producing zones in the Dominican Republic, they dedicate most of their land to cocoa production. In some regions and countries, cocoa can represent as much as 70% to 100% of the income of a household (Oduro-gyimah, 2012).

According to Ferreiras (2020), more than 25% of cocoa producers in the Dominican Republic belong to a Farmer-based organization. This figure differs significantly from the producers' survey conducted in this study, in which a total of 67% respondents said they belonged to an FBO.

Estimated number of actors
Recent estimates suggest a total of approximately 42,751 cocoa producers in the country (Ferreiras, 2020).
Main role and activities in the cocoa value chain
Main activities performed by cocoa producers are: cocoa growing, harvesting and, in some cases, fermentation and drying. Producers in the Dominican Republic sell wet cocoa beans, unfermented but dried cocoa beans and, more rarely, fermented and dried cocoa beans, to intermediaries/agents, FBOs or directly to exporters. Producers can be independent or organized into Farmer-Based Organizations (FBOs) like cooperatives and associations, which give them the capacity to aggregate larger volumes and carry out post-harvest processes such as fermentation and drying in higher volumes and more consistently (CBI, 2020).

Typology of cocoa producers

During the research, several categories have been identified among the surveyed individuals. The typology included heterogeneous groups defined by agroforestry and intercropping production systems, age, access to credit, connectivity, association membership, electricity, water access, attended market and related investments, among other parameters.

The survey conducted during this study provides trends and data sets that offer solid descriptors of cocoa producers in the Dominican Republic. These data were used for the characterization of producers, which were further validated through other (qualitative) data collection methods (i.e., interviews and focus groups).

Size and concentration

The size of the farms (small, medium and large) defined in the survey was based on the study conducted by Berlan & Berges (2013) on the cocoa value chain in the Dominican Republic; findings of this study considered a share of 80% small farmers, 12% medium and 8% large-scale producers in the total producer population surveyed. Smallholder farmers were those who had fewer than 65 *tareas* of production area (<4 ha); medium farmers had between 66 and101 *tareas* (4.1-6.3 ha) and large ones had more than 102 *tareas* (>6.35 ha) of production area.

A total of 59% of the producers who took part in the survey conducted in the framework of the current study were smallholders (Table 31) across all cocoa-producing regions of the Dominican Republic. The mean size of cultivated land for all surveyed producers was

6.15 hectares (33 *tareas*) (Table 32.), thus few changes have been observed since the findings obtained by Berlan & Berges (2013).

Table 31. Size of landholding of respondents per region

	Size of landholding			
Region	**Small**	**Medium**	**Large**	**Total**
North-East	51	15	19	85
East	15	3	4	22
Central	11	3	2	16
North	11	6	7	24
North Central	9	4	6	19
South	4	0	2	6
Total producers per size	101	31	40	172
%	59%	18%	23%	

Table 32. Size of landholder - 172 respondents

	Size in Hectares		
Size landholder	**Min**	**Average**	**Max**
Small	0.3	2.1	3.9
Medium	4.1	5	6.3
Large	6.6	17.3	62.5
Total sample	0.3	6.2	62.5

Gender

Although women represent a crucial resource in the agricultural sector (FAO, 2011), the survey indicated that only 15% of cocoa producers are women. While the study showed a low share of women involved in cocoa production, they are believed to conduct crucial activities in the supply chain. In this respect, the research showed that women have a participation in the entrepreneurial scene through the transformation of cocoa into derivatives and finished products. Value-adding activities conducted by associations such as Chojoba, Chocolala are clear examples of this.

Table 33. Gender representation of respondents

	Respondents	
Women	26	15%
Men	144	85%

Level of Education

Producers surveyed during this study registered low literacy levels. A total of 64.7% of

producers had only completed primary education (40.6% had incomplete primary education, while 24.1% had completed their primary education). Figure 24 below represents the total educational level of the respondents:

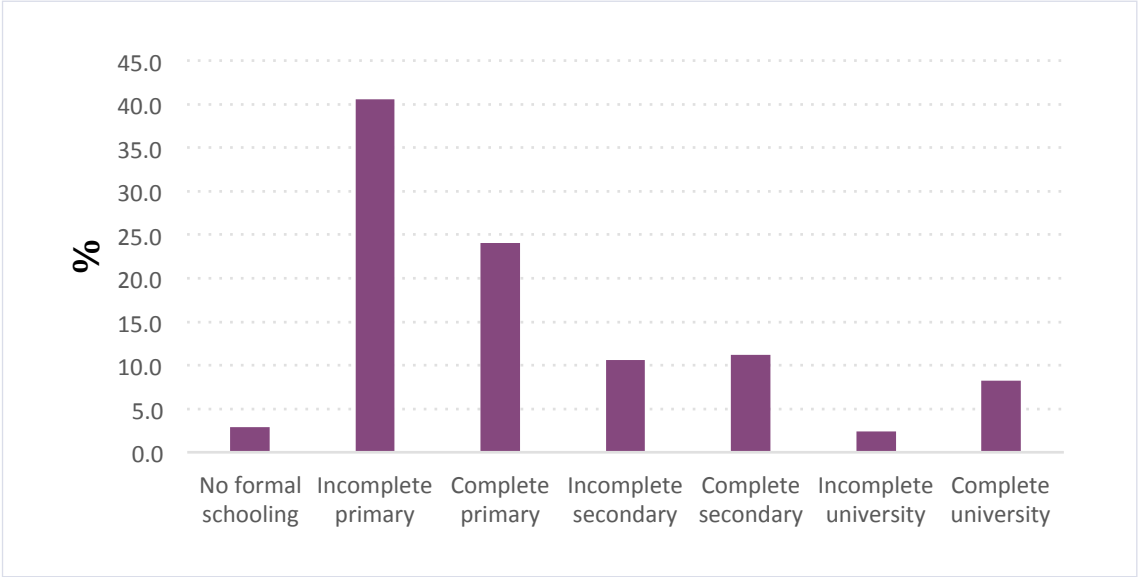


Figure 24. Educational level of respondents - Source: own elaboration

Regarding the correlation between the levels of education and gender, as shown in Figure 25, the survey indicated that only male producers had partly completed or completed university studies. A total of 46% of female producers have incomplete primary school, while this was observed among 40% of male producers. The men surveyed tended to have a higher level of education than women.

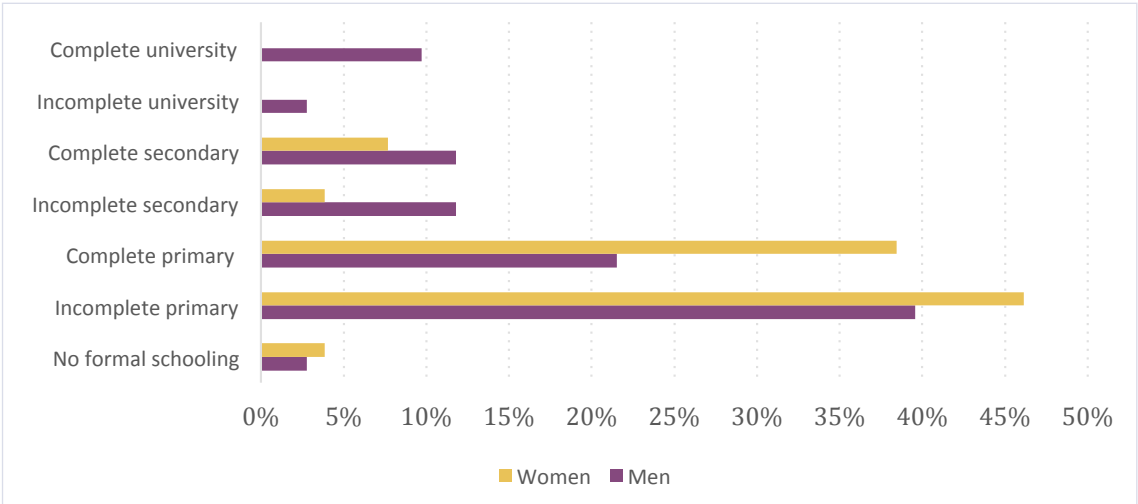


Figure 25. Educational level and gender of the respondent - Source: own elaboration

Connectivity

The poor infrastructure and access to services is a point of vulnerability faced by Dominican cocoa producers (Berlan & Bergés, 2013). The survey conducted in this study shows a mixed

picture according to the different types of services producers have access to. For instance, a total of 98.8% of the producers surveyed reported to have access to electricity, while 88.9 % of the respondents reported to have access to potable water at home; 65.5% reported to have access to internet connection, as shown in Table 34 below:

Table 34. Access to services (electricity, water, connectivity)

	Access	
Service	Yes	No
Electricity	98.8%	1.2%
Potable water	88.9%	11.1%
Connectivity (internet)	65.5%	34.5%

Although these data show a different picture than the one presented by Berlan & Bergés, 2013, it could be an indication that, over the last decade, accessibility to basic services of producers has increased.

Age

The average cocoa producer age is relatively high, estimated at over 50 year old (*About Cocoa - Fairtrade Foundation*, n.d.), younger generations are not involved in cocoa production because of its low profitability and their interest in other economic activities.

The mean age of producers who took part in the survey was 58.7 years old (Table 35, Figure 26), with a level of confidence of 95% that the true mean is between 33 and 84 years old. This value was similar to the one obtained by the study conducted by Berlan & Berges in 2013 (58.4 years old). Therefore, the concern over the lack of future generation within the sector remains. According to the survey, 34% of respondents said they did not have descendants to take over their business.

Table 35. Average age of respondents per region and farm size in years

Region	Small farm	Medium farms	Large farms
North East	55	61	59
East	61	74	70
Central	53	56	50
North	55	59	61
North Central	58	69	44
South	64	-	63

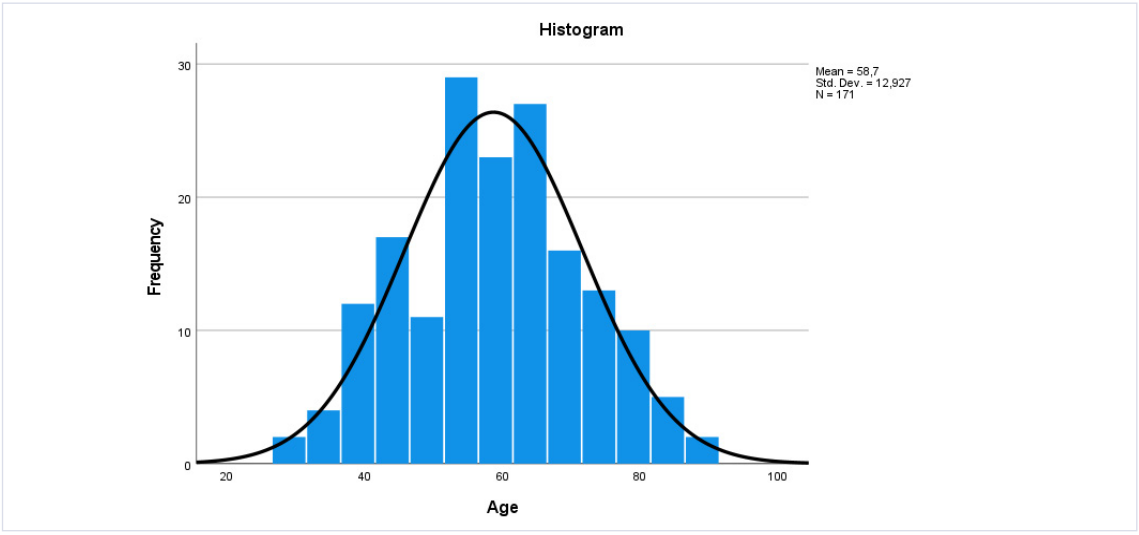


Figure 26. Distribution of respondent's age – Source: own elaboration

The study and the feedback obtained from the focus groups and the interviews clearly indicated a concern over the ageing of farmers and the potential gap in the work force within cocoa production. Due to the economic struggles of being a cocoa producer, the younger generation has shown a lack of interest in farming. During one of the focus groups, a field technician mentioned that "if the young producers do not stay, there will be no one to harvest - It is a risk for the cocoa sector, and we need to find ways to motivate the future generations" (Focus group in San Francisco de Macoris, July 2021).

Succession of cocoa production across generations safeguards continuity of the sector. Therefore, within the study, a question related to the replacement generation was additionally posed to the surveyed producers. Further analysis on this specific topic is discussed and quantified further in the chapter.

> *"I feel very proud to be a cocoa producer. I'm also involving my children so that they can continue this important activity"*
>
> The voice of the producer

Access to credit

Another challenge commonly faced by cocoa producers, especially small-holder farmers, is access to finance (Siegel & Alwang, 2004). The urge to increase agricultural yield requires investment capital. Therefore, understanding producers' access to credit has been included in the study.

According to the survey, 68% of the respondents did not request a credit line in the last three years to invest on their farm.

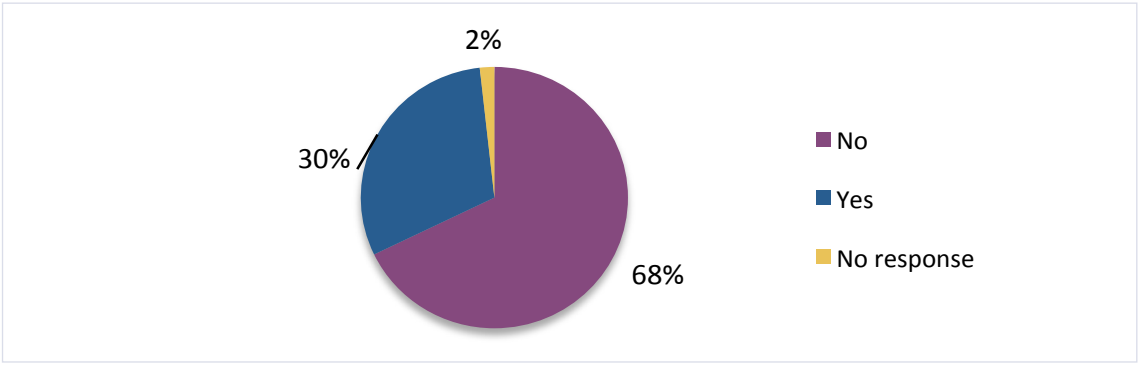


Figure 27. % of respondents who requested a credit line in the past three years to invest on their farm - Source: own elaboration

The general purpose of agricultural finance is to empower the farmer; for instance, in enabling the farmer to increase productivity by leveraging their capabilities, the result will likely be an increase in their incomes and an improvement in their livelihoods. Therefore, understanding the main reasons why producers did not attain a credit line in the past three years was investigated. Figure 28 below, shows that 79% of the producers indicated that they have never tried to gain access to credit, while 9% said that they are not interested in doing so.

> *Cocoa production gives you enough to eat for the whole month if it is managed well"*
>
> The voice of the producer

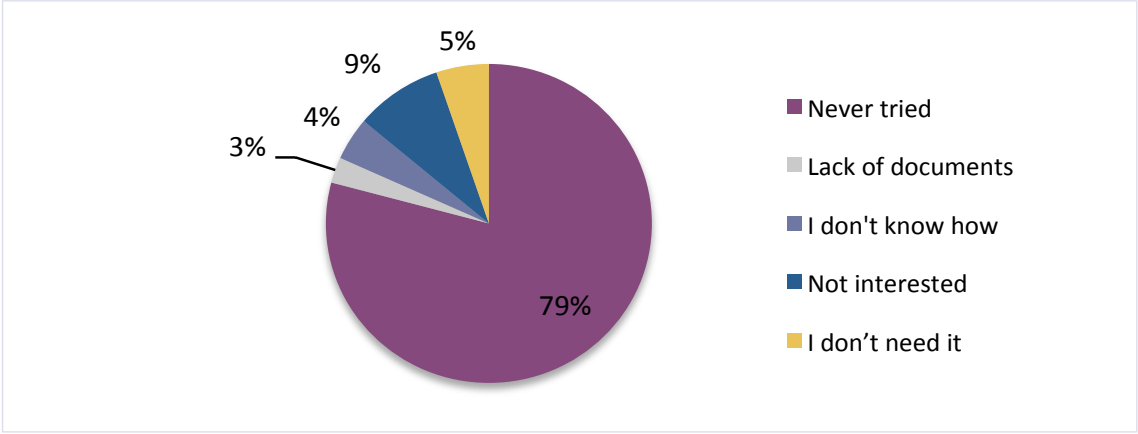


Figure 28. Reasons why producers did not have a credit in the past three years - Source: own elaboration

A further link between variables such as productivity and credit access will be made in the following chapters to understand whether credit schemes are associated with agricultural output. Although additional investigation on the effect of credit access is required with a study design and not a cross-sectional survey, this correlation can provide a light indication and spark further research in this specific area.

Those who did receive credit to finance their production were further asked from which entity they obtained capital. A total of 55% of the respondents indicated that their source of credit was a cooperative, while 21% mentioned the government. Figure 29 below shows the different entities from which credit was received.

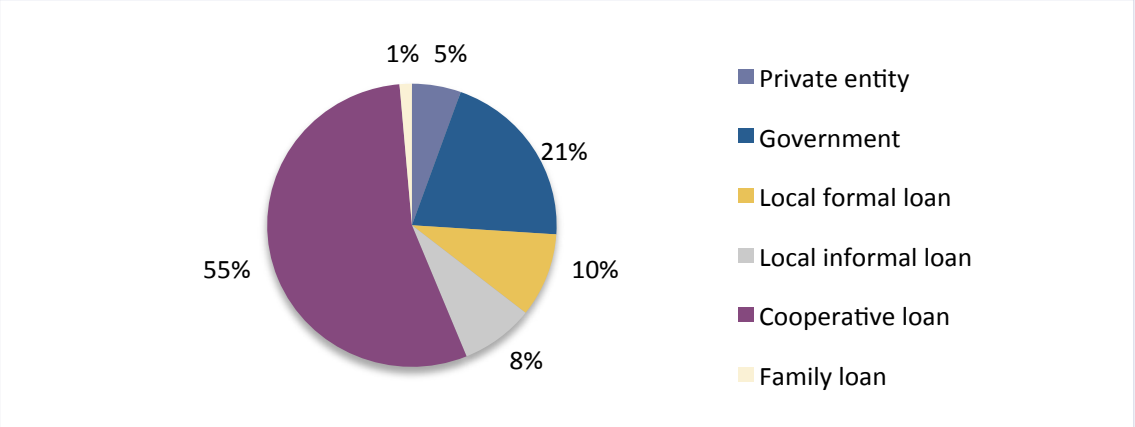


Figure 29. % of entities from which the producers requested a credit line - Source: own elaboration

As part of the face-to-face interviews, intermediaries were mentioned often as an informal channel for producers to gain access to credit, in contrast to the formal and more bureaucratic system of Farmer-Based Organizations. The share of producers which reported using this channel is surprisingly low (8%: local informal loan) in relation to the frequency it was mentioned in personal communication with stakeholders (July 2021).

Land tenure

Access to agricultural credit for the producer to invest in their plot can lead to a boost in their yield and productivity (Nusrat, Malek, Nikolov, Kumbhakar, 2014). During the interviews conducted in this study, participants mentioned that "Many producers don't have access to credits presumably linked to the lack of land titles"; without land titles producers cannot obtain credit as it will be difficult to reduce their risk profile by using land as collateral. According to Siegle & Alwang (2004), the overall land distribution is highly skewed, and less than 50% of the rural population has access to formal land titles in the Dominican Republic. The results of the survey indicated that 32% of the participants who claimed to be landowners did not have land titles.

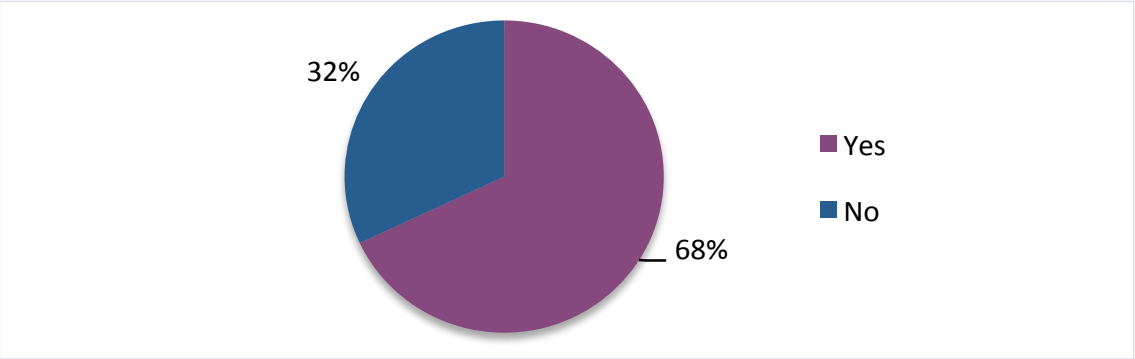


Figure 30. Owners of land that said to have titles - Source: Own elaboration

Nationality of hired labor

Farmers were also asked to comment on the nationality of their hired labor, specifically focusing on Dominican and Haitian nationalities. A total of 74% of respondents reported they employ workers of Dominican nationality, while 21% of respondents reported to hire both Haitian and Dominican workers; only 5% employ only Haitians. These findings are consistent with those of Berlan & Bergés (2013); the study states that Dominicans are the main nationality among the hired workforce, while Haitians are a minority.

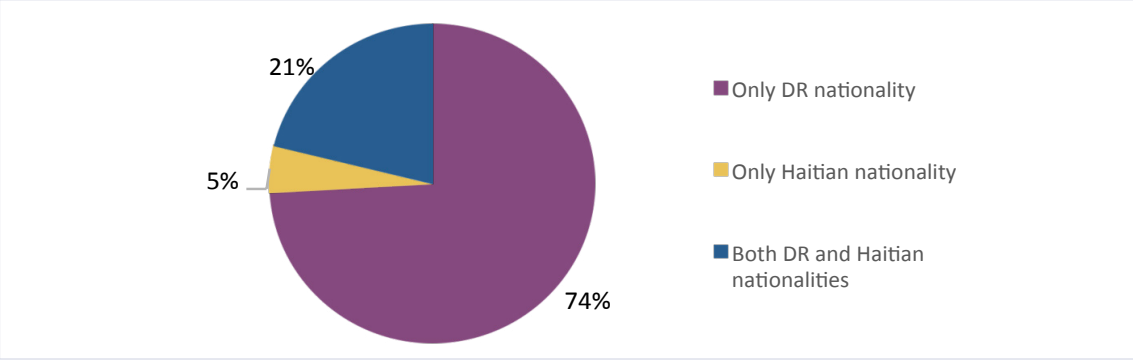


Figure 31. Farms hiring labor from DR/Haitian nationality - Source: own elaboration

Certifications

Certification is a mechanism that safeguards compliance with several pre-established standards addressing social, economic and environmental sustainability. Issues related to climate change, environmental protection and human rights are increasingly important to the industry. For this reason, certification has become a crucial instrument on the cocoa market. Certification is achieved through independent (third-party) audits that confirm whether producers, FBOs, traders and other market actors comply with the standards. Compliance usually generates a price premium paid by the market (Ferro et al, 2020), although this is not the case for all certifications or all certified cocoa. The Dominican Republic has a high percentage of multiple certifications compared to their share of the total certified number of certificates (Standards Impacts, 2018), as indicated in previous chapters.

Of the farmers who participated in the survey, 62% reported to have at least one certification, while 36% reported to be non-certified. The remaining 2% are in transition (see Figure 32).

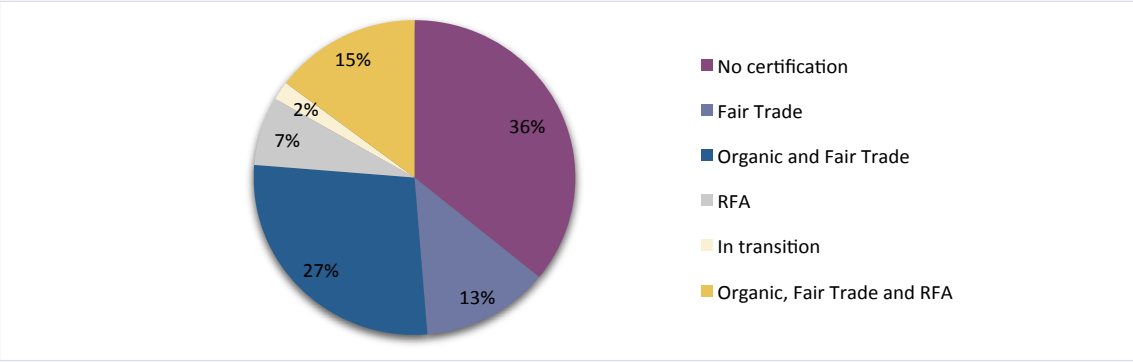


Figure 32. Certifications among producers surveyed – Source: Own elaboration

The following sections derive directly from the semi structured interviews and data collected during the focus groups and sector roundtable in the Dominican Republic.

> *If the world requires organic production, there should be a significant difference in the benefits provided to the organic-certified producer"*
>
> The voice of the producer

Intermediaries

Also known as collectors or aggregators, intermediaries are actors in the 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 conduct 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. 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 Farmer-Based Organizations.

In most cocoa-producing countries, intermediaries have a present role since the formal structure of the market fails to meet every producer in a country. However, in their effort to secure the supply of cocoa beans, local collectors may bring down farmgate prices (Abdulsamad et al., 2015).

In the Dominican Republic, intermediaries are also common, even though the cocoa value chain in the country is well-organized from a global perspective. According to personal communication with sector stakeholders (July 2021), the Dominican Republic has around 1000 intermediaries, but only around 10 have installed capacity to implement post-harvest processes such as fermentation and drying.

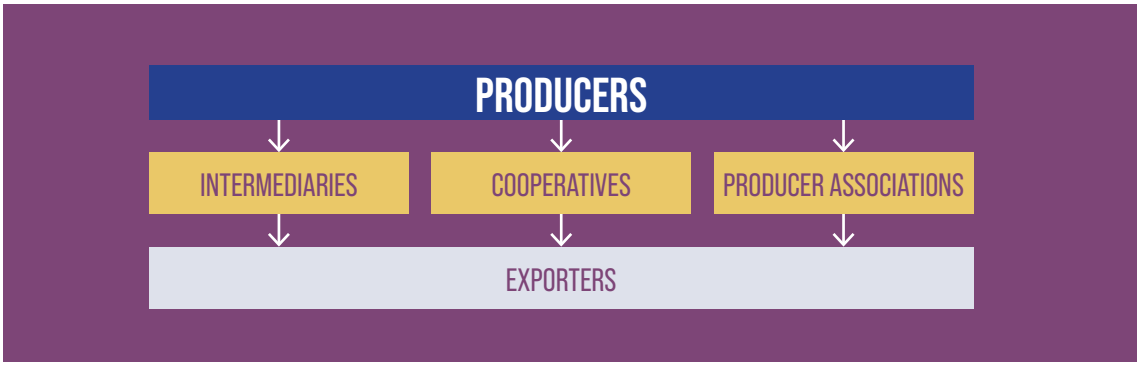


Figure 33. Producers selling channels

Estimated number of actors
Local cocoa trade involves a large number of intermediaries that act on behalf of large traders or subsidiaries of multinationals, or work independently. It is not possible to determine a range or an exact number of actors acting as intermediaries in the Dominican cocoa value chain. However, actors interviewed said that over 1000 intermediaries, both formal and informal, can be accounted for in the Dominican Republic.
Main role and activities in the cocoa value chain
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 (FBOs)

Farmer-based organizations are formal or informal (registered or unregistered) membership-based collective action groups serving its 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 provides leverage for bargaining.

According to Ferreiras (2020) more than 25% of cocoa producers in the Dominican Republic belong to a Farmer-based organization. This figure differs significantly from the producers' survey conducted in this study, in which a total of 67% respondents said they belonged to an FBO.

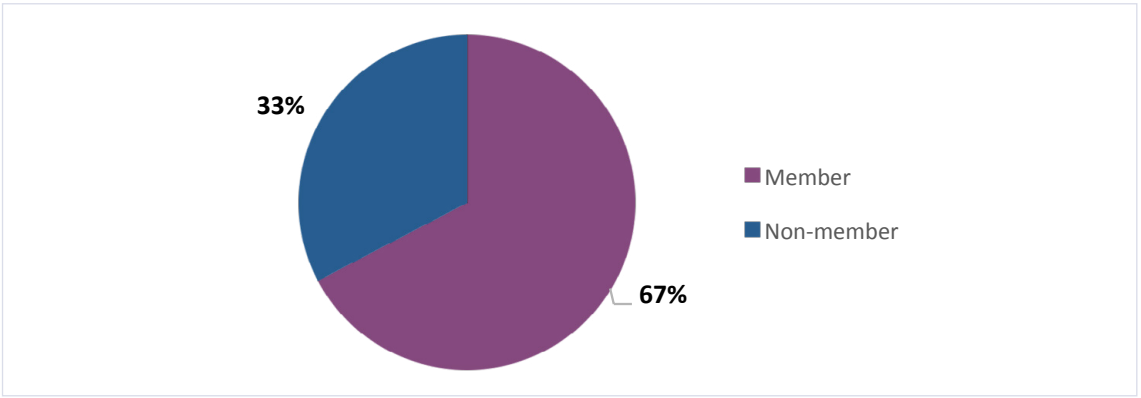


Figure 34. Respondents' associativity to a Farmer-based organization

Within the category of FBO in the Dominican Republic, three types were identified:

1. Cooperatives

Regulated by specific law within the Dominican Republic (Ley 127 del 27 de Enero de 1964 y el Decreto 623-86). Cooperatives are private entities composed of individuals or legal persons. These entities are non-profit economic and social enterprises that aim at meeting individual and collective producer needs. For cocoa producers to become members of a cooperative,

they must be admitted and comply with its laws and statutes.

Cooperatives can buy cocoa directly from their members, from producer associations and intermediaries.

Estimated number of cooperatives
Four, combining all cocoa-producing regions in the Dominican Republic: • CONACADO • COPROAGRO • COOPCANOR • Cooperativa de Servicios Múltiples Luz y Esperanza (Cooperative that currently belongs to CONACADO)
Main role and activities in the cocoa value chain
Foundations in the Dominican Republic also act in areas such as facilitating access to information, training and technical assistance (Foundation Rural and Agricultural Finance Learning Lab, n.d), as well as implementing projects, including those using the Fairtrade premium fund (Interview with sector experts).

A good example of a complex cooperative structure in the Dominican Republic is the *Confederación Nacional de Cacaocultores Dominicanos* (CONACADO), 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* website, n.d.).

2. Producer Associations

Associations consist of groups of producers that can be registered, but which cannot access formal credits. Associations can become cooperatives if they go through the legal procedures according to local regulation.

Estimated number of associations
Between 15-20, combining all cocoa-producing regions in DR *Examples:* • Asociación de Cacao Orgánico de Castillo (APCOC) • Asociación de Productores Agrícolas de Villa Altagracia (APAVA) • Asociación de Cacaocultores La Milagrosa • Productores Las Taranas, San Francisco de Macorís • Asociación de Cacaotaleros Acción y Progreso del Valle en Hator Mayor del Rey • Asociación de Cacaocultores Buena Esperanza, Vicentillo, El Seibo • Asociación de mujeres Cacaoteras de El Naranjo • Asociación de Productores de Cacao del Cibao (APROCACI) • Asociación de Productores de Cacao de La Curtiembre, Higuey • Asociación de Productores de Cacao de La Esperanza, El Bonao, Higuey • Asociación de Productores de Cacao San José • Asociación de Productores de Cacao Los Conservadores, Paraíso, Barahona • Asociación Nueva Vida • Mujeres Emprendedoras de Maimón • Productores El Valle, Samaná
Main role and activities in the cocoa value chain
Basic activities such as purchasing, aggregating and re-selling cocoa beans to exporters and other actors in the value chain, or can have more complex structures, thus performing a wider number of activities such as purchasing, post-harvest processing, and in occasions, exporting. Associations can also act in areas such as facilitating access to information, training and technical assistance and advocacy. (Foundation Rural and Agricultural Finance Learning Lab, n.d) (Personal communication with sector experts)

3. Foundations

Another category of FBO within the core of the value chain consists of foundations. Opposite to the common definition for foundations which are wealthy philanthropic organizations, they are defined in the Dominican Republic as social structures created by the main exporters, operating as separate entities from their commercial units.

Foundations are composed of producers that are associated with the exporting company.

Their role is to manage the premium received from the certification schemes with the purpose of re-investing resources with a view on social impact and to provide technical assistance and support to their members.

The foundation does not buy or sell cocoa; this commercial activity is linked to the exporter directly.

Estimated number of actors and concentration level
In the cocoa sector, only two foundations were found: Fundación Dominicana de Productores Orgánicos (FUNDOPO) – Part of Yacao Fundación Para La Asistencia Social, Recuperación Y Manejo Orgánico De Plantaciones Cacaoteras, Inc. (FUPAROCA) – Part of Rizek group
Main role and activities in the cocoa value chain
Foundations in the Dominican Republic also act in areas such as facilitating access to information, training and technical assistance (Foundation Rural and Agricultural Finance Learning Lab, n.d), as well as implementing projects, including those using the Fairtrade premium fund (Interview with sector experts).

Out of the 67% of respondents to the survey that reported belonging to a FBO, 39% are members of a cooperative, 15% of an association and 13% of a foundation.

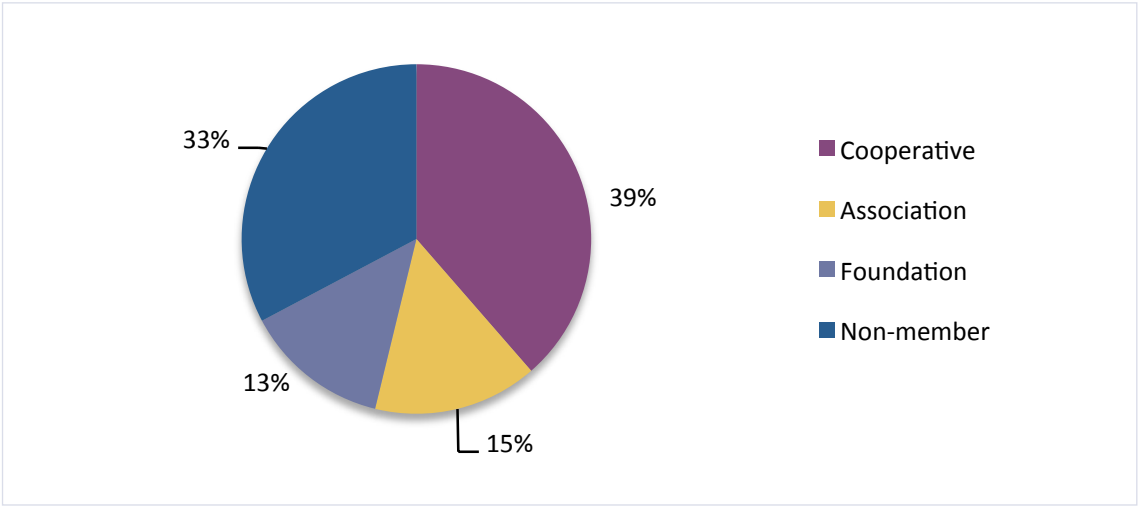


Figure 35. % FBO associativity breakdown of the surveyed sample

The lack of associativity is believed to give producers a low bargaining power in the value chain (Beg et al., 2017). However, other studies and the interviews conducted during this study show that producers in some countries can have significant bargaining power when they have multiple options to sell cocoa beans forward. Producers select the marketing channel depending on their specific needs and organization within the country sector. Table 36 gathers the main reason producers decide not to join an FBO:

Table 36. Breakdown of main reasons reported for not joining a producer organization

Related to the organization	#	Sub-total	%
I was associated before, but I decided to quit	3	7	14%
I was associated before, but I did not receive benefits	1		
Negative view of organizations	1		
I do not trust the directors	1		
I am not interested in the credit system they have	1		
Personal reasons			
I am an independent producer	1	37	74%
I am not interested in producer organizations	21		
I like to sell my cocoa without commitment	1		
I don't have time for that	2		
I have not tried	1		
I have not been motivated	5		
I don't like groups	1		
I am a new producer	5		
Convenience			
I prefer to sell my cocoa to closer traders	3	3	6%
Lack of knowledge			
I do not know any organization	2	2	4%
Other reasons			
I had a debt with an intermediary	1	1	2%
	50		100%

> *The organizations must strengthen their linkages to the producer"*
>
> The voice of the producer

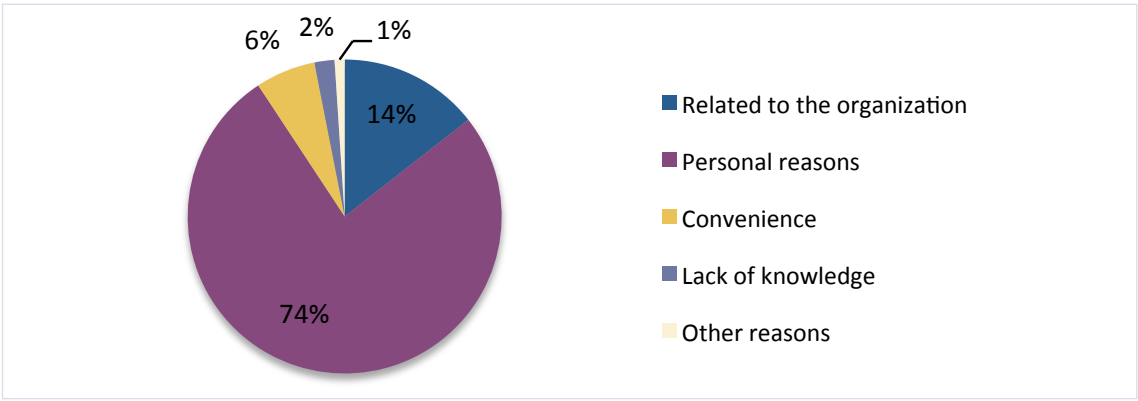


Figure 36. Main reasons reported for not joining an FBO

Exporters

Exporters are companies with the infrastructure, license and capital to purchase and arrange exports of cocoa beans and derivatives. Exporters can source cocoa directly from FBOs or via intermediaries; some exporters also use their own agents to purchase cocoa beans from farmers.

Exporters sell to foreign importers or directly to manufacturers.

Between 90% and 95% of cocoa production in the Dominican Republic is destined for exports, where only four companies control around 60% of the total market.

Estimated number of actors

There are around 30 to 32 exporters handling cocoa beans and derivatives. Note, however, that this number includes the cooperatives and associations that also export.

In 2016, the total number of exporters reported by the CNC (2017) equaled 24 companies. The cocoa year 2019/ 2020 saw an increase in the number of exporter companies by 33%, to 32 exporters.

Accurate annual data on the specific exporters and their respective volumes are available through the statistics provided by the *Comisión Nacional de Cacao*. The main Dominican exporters in 2019/2020 are:

Examples:

- CONACADO Agroindustrial SA
- Roig Agrocacao,SA
- Rizek Cacao, SA
- Biocafcao S.A
- Hacienda Doña Maria Mercado, Eirl
- Yacao, SRL
- Fernandez Badia Agrocacao SRL
- Dominicao, SRL
- COPROAGRO, Inc.
- Jose Paiewonsky E Hijos, Srl
- COOPCANOR, Inc
- Gth Cacao Mport Group
- Cortes Hnos & Co., Cxa
- Munne, Srl
- Cagemi, Srl
- Corpacan, Srl
- APROCACI, Inc
- Cfsp Solcorpcao Srl
- Humarias, Srl
- Oko Caribe, Srl
- Bloque Agrocacao Srl
- Asbp Agroindustrial, Srl
- Lomaver
- Agroindustrial Enmanuel
- Cavadi, Srl
- Cacao Del Bosque, Srl
- Plantaciones De Cacao El Eden, SRL
- CH Alimentos Internacionales
- Reserva Privada El Zorzal, SA
- Agroganadera Ramon Y Edita G. S, SRL

Main role and activities in the cocoa value chain

Exporters in the Dominican Republic purchase cocoa beans directly from producers, FBOs or via intermediaries. As many as 5 exporters have processing facilities to transform cocoa beans into derivatives, which are also exported to international markets.

Domestic Processors and Manufacturers

Processors and manufacturers are actors in the chain that process cocoa beans into derivatives and finished products. They can be grouped by size (large, medium, small) and into those that export or not.

Among the large processors that export, the main actors in the Dominican Republic are: CONACADO Agroindustrial, Rizek Cacao, Munné SRL and Cortés Hermanos and Co. Despite the clear export orientation of the Dominican Republic, in recent years there has been an increase in domestic demand for cocoa products, with a year-on-year growth of approximately 2% in the last five years, and a year-on-year growth projected of 3% by 2024 (Euromonitor, 2021).

Multinationals: Exporters / Importers / Grinders

Multinational processors/grinders and chocolate companies source their cocoa beans directly from producing countries. They process the raw material 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 (processing into paste, butter and powder), they sell the cocoa derivatives to companies in consuming markets that use this for final products. Second processing (processing into chocolate couverture) is also done, and the products are sold to (inter)national brands and artisans (FAO & BASIC, 2020).

Five vertically integrated multinational companies control 56% of trade and processing: Cargill, ECOM, Olam, Barry Callebaut, and Touton. None of these multinationals have production facilities in the Dominican Republic, however their sourcing strategy is in place via their exporters' network.

Importers, Independent traders, non-multinationals (International market)

Due to its quality and certified status, Dominican cocoa has an important position in the international market. Many intermediate and finished product-processing companies use Dominican cocoa in their recipes. In this context, independent traders and importers are defined in this study as those that do not belong to multinational groups. They are characterized by having a wide range of cocoa origins and diverse client base. Sometimes they participate in further cocoa processing and in sales of cocoa derivatives. (Ferro et al, 2020)

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. Importers either sell the cocoa beans to domestic companies or re-export them to other countries or regions.

Independent traders can focus on:

- Cocoa beans
- Cocoa beans and/or cocoa derivatives
- Cocoa derivatives / ingredients

Estimated number of actors and concentration level

Cocoa trade involves a large number of companies.
Examples of buyers sourcing from DR:

Bulk and bulk certified	Premium	Other industries: cocoa derivatives / ingredients
Albrecht & Dill	Cacao Latitudes	Rapunzel
Walter Matter	Silva Cacao	
Theobroma	Daarnhouwer	
Huyser Moeller	Uncommon Cacao	
Kemofina	Twenty Degrees	
Facta International	Bohnkaf Kolonial	
Dietz Cacao Trading		
Cocoanect		

Main role and activities in the cocoa value chain

Importers purchase cocoa beans to either process the beans into cocoa liquor in origin or ship the cocoa beans to grinders in other regions. Importers carry out services that include logistics, customs clearance and documentation, risk management (sourcing from origin, price, exchange rate), quality control, etc.

Importers of cocoa beans and/or derivatives can be specialized in one specific market segment such as organic, organic + fair trade, specialty cocoa, or in cocoa from specific origins.

Sometimes importers own cocoa farms or subsidiaries in selected origins.

The minimum volume requirement of importers is normally one container or more. The volume sourced from a specific supplier can be incremental along the years. Specialized importers focusing on specialty cocoa beans may source LCL (Less than Container Load).

End-buyers:

- Chocolate manufacturers
- Bean-to-bar chocolate makers
- Some food industries with grinding and processing

Manufacturers (International market)

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 and other confectionery products. 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., 2021).

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).

Estimated number of actors and concentration level
Manufacturing of chocolate and other cocoa preparations involves a large number of companies in several target markets.
Main role and activities in the cocoa value chain
Manufacturers can source cocoa directly from large producers, FBO or intermediaries, and supply ingredients for various industrial end-users: 1. Food industry 2. Chefs and other HORECA 3. Cosmetic companies (butter) 4. Health products (nibs and paste) *Examples of buyers sourcing from DR:* 1. Icam (Italy) 2. Valrhona (France) 3. Felchlin (Switzerland) 4. Weinrich (Germany) Smaller manufacturers will have an annual volume requirement starting at > 200 metric tonnes per year depending on the origin and the market demand, but large manufacturers can reach up to 100,000 metric tonnes.

Chocolate makers (Domestic and International market)

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).

Bean to bar and craft chocolate makers

Bean to bar maker is a term that usually refers to those companies that produce chocolate in small batches from fermented and dried specialty cocoa. [Note: the term craft is often used along with the term chocolate maker] (Martin, 2017). According to the Fine Chocolate Industry Association (2010), craft chocolate makers are artisans who understand their craft intimately and when they tolerate and embrace inconsistency (Gordon, 2019).

Main role and activities in the cocoa value chain
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. Excellent quality and differentiated prices are paid for the cocoa beans. Small chocolate markets offer finished products at the retail level with differentiated prices, usually distributed via specialized (chocolate) stores, delicatessens 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., 2021) (CBI, 2020).
Estimated number of actors and concentration level
According to the statistics of the Dominican Republic's Ministry of Industry, Trade and MSMEs, the country has 38 companies active in the processing of cocoa, chocolate and confectionery. Around 15 are chocolate makers. *Examples:*

Milz Chocolate	Bolitos & Candin
Definite Chocolate, SRL	Cacaoteca
Chocolate Chin Chin	Choco Punto
SPAGnVOLA	Chocolate Experience
Chocal	Xocolat
Chocolala	Saari Chocolate
Choco sol	Chokamil

Other end-user industries

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 (European Commission, 2020). 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-sized and large companies; 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, including from the Dominican Republic, which can produce deodorized cocoa butter, an important requirement in this industry. The interviews conducted during this study confirmed that 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 relatively 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).

Retailers

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

Retailers' dynamic

- 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 (Anonymous, personal communication with sector expert, July 2021)
- More and more cocoa is sold as private label in the big retailers. As such, they have become chocolate companies themselves (Anonymous, personal communication with sector expert, July 2021)
- In Germany, the biggest market in Europe, nearly a third of the chocolate sales comes from retailers' own brands. Thirdly, retailers —together with the chocolate producers— get the highest part of the turnover of the whole supply chain (Feige-Muller 2020).
- European retailers with a specific focus on combating deforestation, is an example of a broader collaboration, although more transparency and ambition are necessary around their aims and activities.
- It is important to stress that the responsibility of retailers goes beyond their private label products, and should include their role as key outlets for - and profit-makers of - all the major chocolate brands.
- Supermarkets have the power to enforce sustainability for all the brands that are on their shelves.
- It is encouraging that in some countries retailers are increasingly becoming part of the discussion and live up to their responsibility.

Enabling environment and Supporting services

During the focus groups it was noticed that the cocoa sector in the Dominican Republic is fairly unified and non-predatory amongst its stakeholders. They act in common interest and can create a harmonious functioning environment. Examples of institutional, policy, legal and business environment institutions that play a role in the VC are:

Macro institutions

- Ministry of Agriculture (MA): entity that regulates/makes policies for cocoa production
- National Cocoa Commission - Comisión Nacional del Cacao (CNC): Formulates cocoa policies and supports the Cocoa Director at the Ministry of Agriculture
- Instituto Dominicano de Investigaciones Agropecuarias y Forestales (IDIAF): Responsible for execution of policies for agricultural and forestry research and validation
- The Dirección General de Normas y Sistemas de Calidad (DIGENOR) is the official Institution for standardization, measurement, certification and training on complying with international best practices
- Free Zone National Council (CNZFE): Outlines policies to guarantee the development of

free trade zones
- Foreign Trade Commission (Comisión de Comercio Exterior): formulation and implementation of trade policies
- National Program for Organic Agriculture (PRONAO-M. A.)
- Dominican Association of Exporters (ADOEXPO): promotes services and management support for export business
- Ministry of Industry, Commerce and MSMEs (MICM): responsible for the formulation, adoption, monitoring, evaluation and control of policies, strategies, programs, projects and services in the industrial sector, exports, internal and foreign trade, free trade zones, special regimes and MSMEs
- National Committee for the Application of Sanitary and Phytosanitary Measures (CNMSF): Ensure the general compliance of the legislation and policies of the Dominican State in sanitary and phytosanitary matters
- National Council for Agricultural and Forestry Research (CONIAF): support the agricultural sector with emphasis on quality improvement and protection of natural resources and the environment.
- ProDominicana - Export and Investment Center of the Dominican Republic

Intermediate Services:

- Junta Agroempresarial Dominicana (JAD): supports, promotes agricultural production.
- Centro Especializado de Desarrollo Agropecuario y Forestal (CEDAF): Promotes the sustainable development of the agricultural and forestry sectors
- Organismo Dominicano de Acreditación (ODAC)
- Consejo Nacional de Agricultura Orgánica (CONAO)
- Latin American and Caribbean Coordinator of Small Producers and Fair Trade Workers (CLAC) represents the organizations of small producers and workers' associations of the Fairtrade International system, as well as other organizations of small fair trade producers of the continent.
- Asociación Dominicana de Agricultura Orgánica (ADAO)
- Special Fund for Agricultural Development (FEDA): provides resources with or without financing to associations, cooperatives and organized groups that are part of the national agricultural sector.
- Cooperative Credit and Development Institute (IDECOOP): Coordination of cooperatives, federations and confederations to achieve the most efficient use of economic and human resources for the benefit of the cooperative movement.
- Dominican Institute of Agricultural and Forestry Research (IDIAF): focused on scientific research of agricultural and forestry systems.
- Agricultural Bank of the Dominican Republic (BAGRICOLA): Encourage agricultural and livestock production, through the channeling of financial resources.
- DR Cocoa foundation - is a non-profit entity with a mission is to catalyze public-private action in pursuit of cocoa sustainability.

International cooperation

The cocoa sector in Dominican Republic has been supported intensively by private initiatives and cooperation programs that have made a substantial impact such as:

- **GTZ program -** Certification and quality program propelled by the German cooperation (through GTZ, currently GIZ).
- **Cocoa Life –** A program launched in 2012 by Mondelez international as part of their commitment to ensure a sustainable future for chocolate.
- **Cacao Forest** - A program based on agroforestry aiming to create innovative agricultural models to boost yield and crop diversification.
- **USAID and IESC** executed the Program 'Exporta Calidad' working within the full supply and distribution system to deliver technical training to producer groups, cooperatives, and their members to boost quality standards in cocoa production.
- **Equal Exchange and TCHO** in 2010 initiated the Cooperative Development Program with the goal to strengthen and engage their partners in the supply chain. The outcome: a systematic approach to demonstrative plots.
- **Private sector development program:** (February 2021) coordinated by the Vice Ministry of International Cooperation of the Ministry of Economy, Planning and Development, in coordination with the International Trade Center (ITC), and the Caribbean Export Development Agency (Caribbean Export) to support companies and policies in strengthening productive capacities and value chains in cocoa sector.

Productivity

Productivity in cocoa farms is a key indicator of profitability of the production area. Personal communication with sector stakeholders and experts (July 2021) during this study highlighted that productivity is also a key aspect to consider when stratifying producers into different categories, as this factor will have an impact on possible interventions, such as the technical assistance required by individual producers or producers' groups.

In this study, productivity was calculated by averaging the production level over the past three years reported by surveyed cocoa producers, divided by their production area.

The average productivity (expressed as yield in kg/ha) is indicated in the figure below. A mean of 565.64 kg/ha was obtained for the producers who took part in the survey, with a level of 95% that the true mean is between 345 kg/ha and 786 kg/ha.

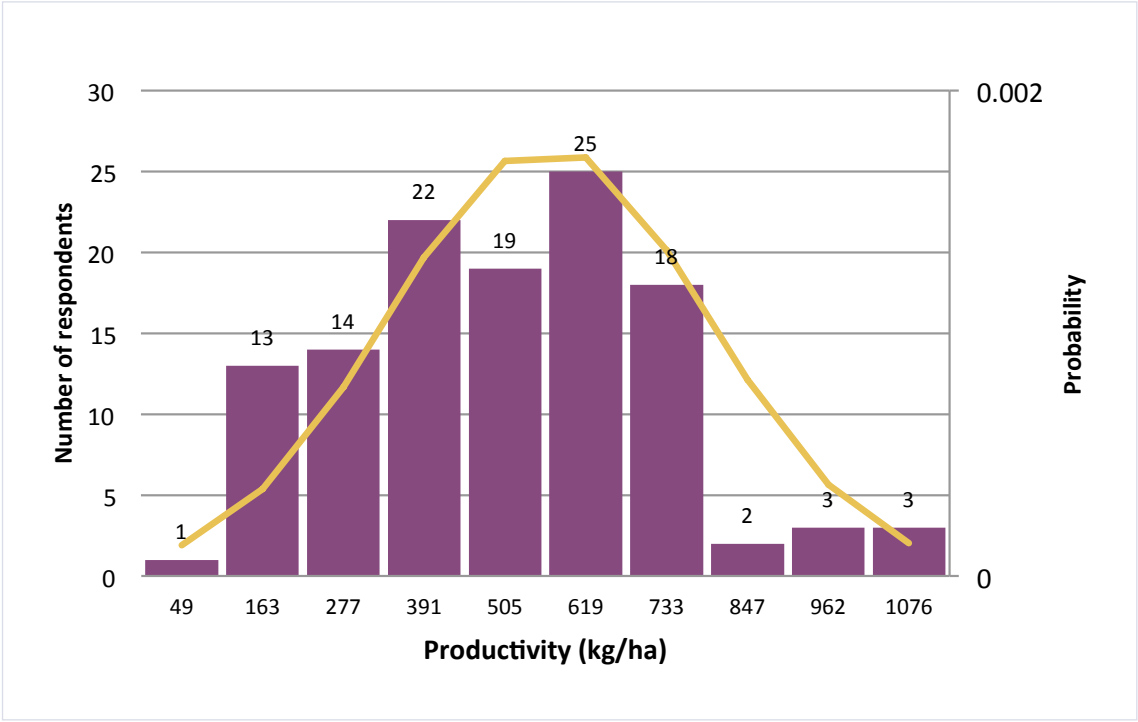
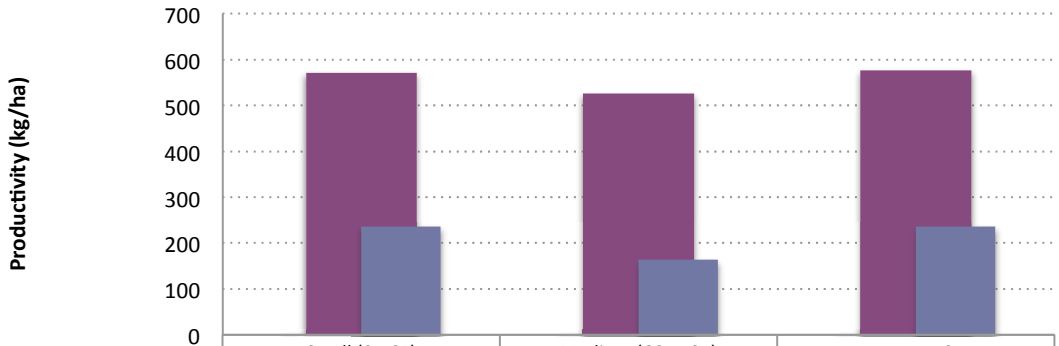


Figure 37. Productivity distribution reported by respondents of the survey

Yield is the most important measure in a producer's performance. The survey conducted in the Dominican Republic served as an opportunity to understand the main variables impacting this indicator. In addition, many factors play a role in its potential improvement, thereby offering promising intervention areas that could integrate future projects in the Dominican cocoa sector.

Within each correlation made, the Standard Deviation (STD) was considered to understand the spread of the data values around the mean. Low standard deviation means data are clustered around the mean, and high standard deviation indicates data are more spread out.

Productivity by farm size

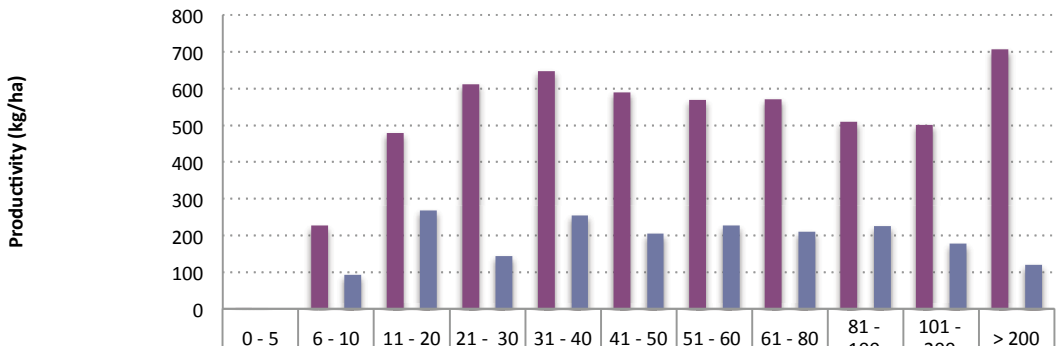


	Small (0 - 65)	Medium (66 - 101)	Large > 101
Productivity (Kg/Ha)	571	526	577
% of Total Sample	40%	11%	19%
STD (Kg/Ha)	236	163	236

Figure 38. Productivity grouped by farmer size area in tareas

Figure 38 shows the mean and standard deviation (STD) of productivity by producer's land size. Overall, the highest yield is obtained by large farmers in terms of land size, at more than 101 *tareas* (6.30 ha). These producers reached an average yield of 577 kg/Ha, slightly higher than the productivity achieved by small (571kg/Ha) and medium-sized farmers (526 kg/Ha). The relationship between productivity and farmer size area was statistically not significant (p=0.348). This result reveals that there are not remarkable differences among small, medium and large land size among producers.

Productivity by the age of the farm



	0 - 5	6 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60	61 - 80	81 - 100	101 - 200	> 200
Productivity (Kg/Ha)	1	227	479	612	647	590	569	571	509	501	706
% of Total Sample	1%	2%	9%	7%	11%	15%	11%	6%	3%	5%	2%
STD (Kg/Ha)	0	93	269	144	255	204	226	210	226	177	120

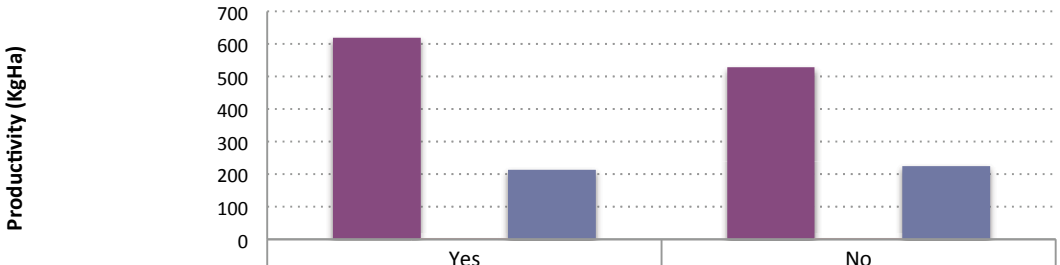
Figure 39. Productivity by age of the farm, in years

Figure 39 shows productivity by different farm's age. The highest productivity is achieved by farms ranging between 20 and 50 years old, with the peak value of 647 kg/ha centered at

31 to 40-year-old farms. Regardless of the productivity peak of 706 kg/ha shown by a farm older than 200 years, there are very few farmers that fit in this group (about 2% of total population sampled), which makes it challenging to compare with other respondents, as they are probably outliers. The relationship between productivity and age of the farm was statistically not significant (p=.683).

> *Producers have little resources to maintain their farm in good conditions and renovate it."*
>
> The voice of the producer

Productivity by credit access

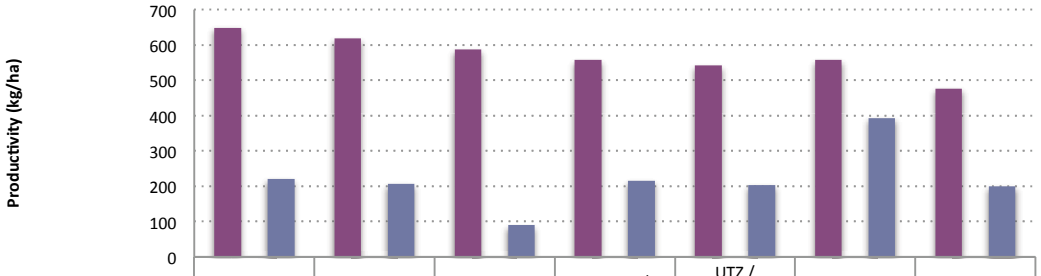


	Yes	No
Productivity (Kg/Ha)	620	529
% of Total Sample	28%	42%
STD (Kg/Ha)	214	226

Figure 40. Productivity grouped by credit access

Figure 40 shows farm productivity among producers that received credit for leveraging farming activities and those who did not receive any financial aid aimed at supporting their cocoa production. Farmers, who used these financial instruments, had, overall, 17% more productivity (620 kg/ha) than farmers who did not use credit (529 kg/ha). The relationship between productivity and credit access was not statistically significant (p=0.803) however a trend was noticed during the fieldwork. Many producers are not familiar with financial instruments available for agricultural activities, and hence they are not aware of their potential benefits in overcoming cash flow issues typical for cocoa and many other cash-crop producers. With limited cash flow, producers find it difficult to invest in seeds, land leasing or land purchasing, irrigation systems, among other crucial aspects to increase their production in the mid- to long-term. It is worth noting, however, that formal credit provision systems (through the cooperative or agricultural banks, for example) are marked by high interest rates (Anonymous, Interview with sector expert, July 2021).

Productivity by certifications

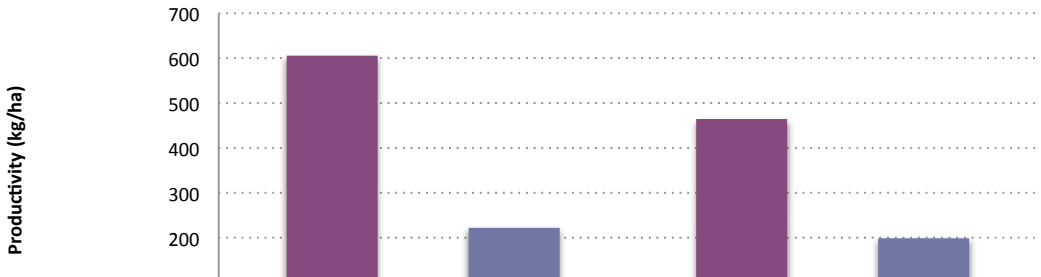


	Organic	Fairtrade	In Conversion to organic	Organic / Fairtrade	UTZ / Rainforest Alliance	Other	None
Productivity (Kg/Ha)	649	618	587	557	542	557	477
% of Total Sample	30%	10%	2%	17%	5%	2%	24%
STD (Kg/Ha)	221	206	90	216	204	393	200

Figure 41. Productivity observed by producers using certification schemes

Figure 41 shows productivity performance for the different certification schemes adopted by producers. Respondents who reported having Organic and Fairtrade certifications tend to have higher yields of all groups surveyed, at respective 649 kg/ha and 618 kg/ha, than those reporting a combined Organic and Fairtrade 557 kg/ha. It is important to note that farmers without any certifications reported the lowest productivity among all groups (477 kg/ha), which is on average 27% less than organic certified farmers and 23% less than Fairtrade certified farmers. This finding was unexpected given the controversies around productivity and organic production. Further research is required to understand actual yields in organic certified farms (Personal communication with sector expert, July 2021) and find possible correlations between each certified production and productivity.

Productivity by associativity



	Yes	No
Productivity (Kg/Ha)	605	464
% of Total Samples	51%	20%
STD (Kg/Ha)	222	199

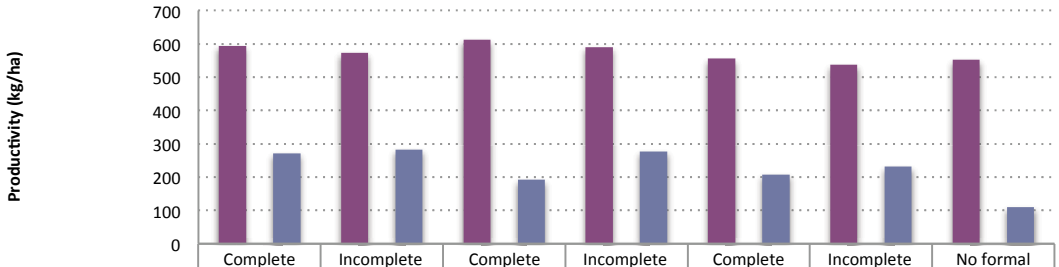
Figure 42. Producers grouped by associativity to an FBO

The survey also revealed that producers who are associated with a farmer-based organization are on average 30% more productive than independent producers (Figure 42). Members of a

Farmer Based Organization (FBO) reported an average yield of 605 kg/ha compared to an average yield of 464 kg/ha reported by independent producers. The relationship between associativity and productivity was statistically significant (p=0.001). It is hypothesized herewith that this has to do with the fact that FBOs offer technical assistance to their members (personal communication with sector experts, July 2021), which would substantiate the relevance of these interventions in terms of increased productivity.

> *I would like to get more technical assistance to have better knowledge about cocoa cultivation."*
>
> The voice of the producer

Productivity by educational levels

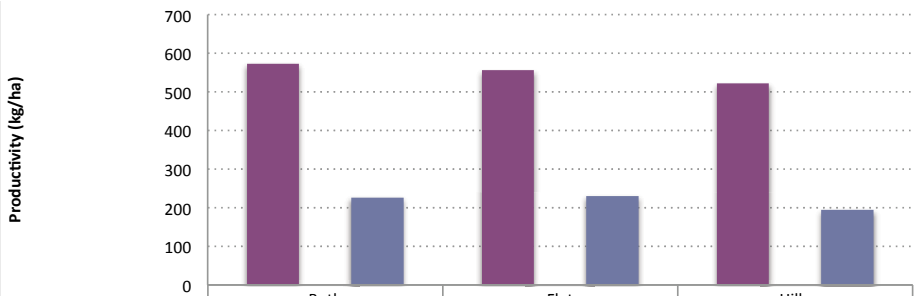


	Complete University	Incomplete University	Complete secundary	Incomplete secundary	Complete primary	Incomplete Primary	No formal schooling
Productivity (Kg/Ha)	594	573	612	590	555	537	552
% of Total Sample	6%	2%	10%	8%	16%	26%	2%
STD (Kg/Ha)	271	282	192	277	208	231	111

Figure 43. Productivity grouped by producers' educational level

Figure 43 shows productivity by farmer's attained education level. Results show no statistically significant differences in terms of productivity among education level groups (p=0.927).

Productivity by terrain conditions

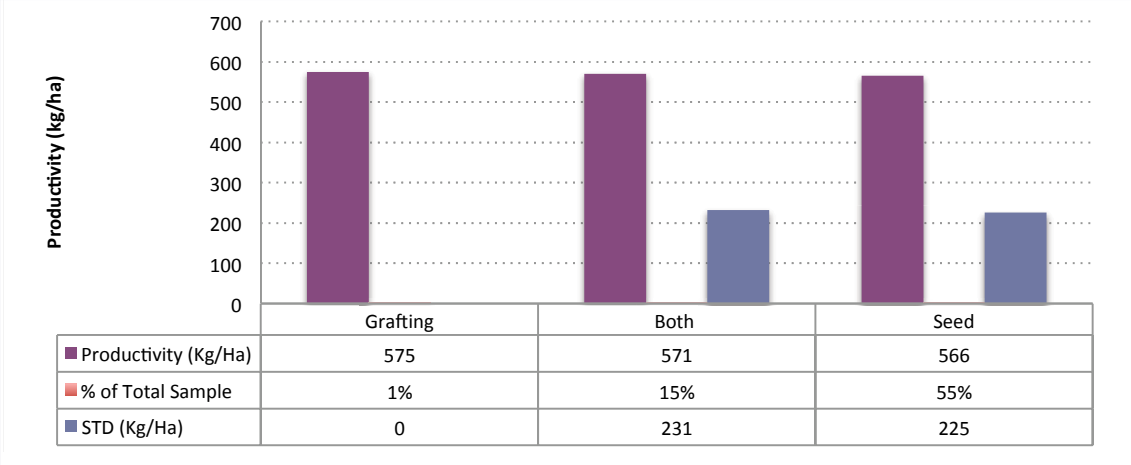


	Both	Flat	Hilly
Productivity (Kg/Ha)	573	555	522
% of Total Sample	51%	15%	5%
STD (Kg/Ha)	227	230	194

Figure 44. Productivity grouped by terrain conditions

Figure 44 shows productivity per terrain condition. There are no significant differences across topographic settings in terms of productivity. It is generally believed that farms with flat topography are more suitable for higher yields compared to hilly production areas, but the results showed no statistically significant differences within the sample surveyed (p=0.506).

Productivity by planting material



	Grafting	Both	Seed
Productivity (Kg/Ha)	575	571	566
% of Total Sample	1%	15%	55%
STD (Kg/Ha)	0	231	225

Figure 45. Productivity linked to planting material used in the farm

Figure 45 shows productivity per planting method used by farmers in the production area, i.e., seeds, grafting or both. There are no statistically significant differences in productivity amongst different planting methods used by farmers (p=0.637).

> *There is little access to highly productive clones to improve the farm's yield."*
>
> The voice of the producer

Analysis of value provided by each marketing channel

Product segments in the cocoa industry related to Dominican Republic

In this study, the following product segments have been considered:

a. **Commodity, bulk, or mainstream segment:** This market segment refers to products of high volumes and of standard quality. Bulk cocoa is highly price-driven and follows international market prices. Bulk cocoa is usually used for manufacturing cocoa butter and high-volume mainstream or bulk chocolate products (CBI, 2020).

   Due to the inadequate fermentation processes, Sanchez cacao 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 commercial-quality chocolate.

b. **Bulk certified segment**: Refers to cocoa or derivatives of a bulk quality 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, 2020).

   Certifications are trends gaining importance in the global cocoa industry. In the context of the Dominican Republic, Sanchez organic cocoa can be included in this product segment. The main actor active in the production and exports of organic and fair trade cocoa in the country is CONACADO.

c. **Premium segment:** This market segment is used to denote a superior quality and 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).

   The premium segment can be further sub-categorized into:

   - **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) (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. Less container load (LCL) shipments of this quality are common.

- **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. 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, color and chemical characteristics of the cocoa beans and nibs produced, 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.

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

As seen in the previous chapter, the share of fermented cocoa beans in total exports from the Dominican Republic has been increasing over time.

Price setting

Although Dominican producers have high bargaining power when it comes to selecting sales channels, this bargaining power reduces when setting prices for their produce.

In the decade 2000-2010, Dominican producers sold their cocoa at an average 57% of the price in international markets (Batista, 2009) (Bymolt, et al., 2018). Historically, the Dominican cocoa producer has not had incentives to improve the quality of their product and thus access the benefits of selling with a price premium, since the main export market for Dominican cocoa was the United States. Primarily focusing on the trade of Sanchez cacao, 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 the quality improvements (Batista, 2009) propelled by the German cooperation (through GTZ, currently GIZ) in the 1985s, 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 (Personal communication with sector expert, July 2021).

Nowadays, the producer receives between 80-85% of the value of the international market for

his cocoa. Looking at export prices, in just 10 years, 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 (Personal communication with companies and sector experts, July 2021).

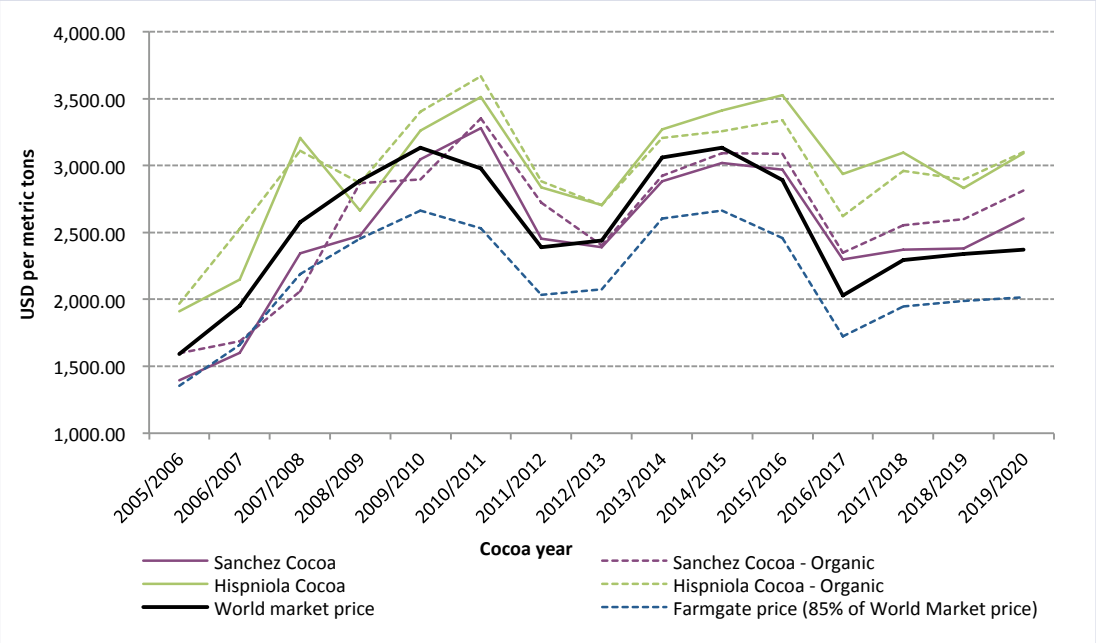


Figure 46. Value of cocoa beans in USD per metric tons for each product segment in relation to World Market prices and estimated farmgate price

Source: (CNC, 2020)

As seen in Figure 46, from 2015 onwards, all cocoa beans in the DR have been sold with a premium on top of the average world market prices for cocoa beans.

Price per cocoa product of Dominican origin

Cocoa beans

Table 37 shows the increase in cocoa prices, at export level (FOB), driven by the implementation of quality standards. Sanchez cacao 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)

Table 37. Value in USD per metric ton - Average harvest 2019/2020 and % price increase vs. Sanchez Cacao

Product	USD per metric tons	% Compared to the total volume exported (70,095 tonnes)	% price increase compared to Cacao Sanchez
Reference ICE NY stock average market price 2019/2020	2370.00		

Cacao Sanchez	2,605.16	44.9%	-
Cacao Sanchez Organic	2,814.27	16.4%	8.03%
Cacao Hispaniola	3,094.73	7.3%	18.79%
Cacao Hispaniola Organic	3,104.01	28.7%	19.15%

Source: CNC, 2020

With regards to organic certification, the premiums paid for Sanchez and Sanchez organic are evident (8%) (Table 38). However, the average export price difference between Hispaniola and Hispaniola organic (premium versus Premium certified segment) is not as large. In the last decade, Sanchez organic was sold at an average premium of 5% over conventional Sanchez while Hispaniola organic was sold at an average discount of 1.8% over Hispaniola. The organic certification is a promising alternative to increase the value in the Sanchez bulk[6] market.

Table 38. Comparison of premium price in USD per ton paid for organic certification between Sanchez and Hispaniola

	SANCHEZ CACAO			HISPANIOLA CACAO		
Cocoa year	Convention-al (USD)	Organic (USD)	Organic premium paid compared to conventional cocoa	Conventional Hispaniola (USD)	Organic (USD)	Organic premium paid compared to conventional cocoa
2010/2011	3,280	3,355	2.3%	3,512	3,666	4.4%
2011/2012	2,453	2,722	10.9%	2,838	2,881	1.5%
2012/2013	2,389	2,404	0.6%	2,703	2,705	0.1%
2013/2014	2,881	2,923	1.5%	3,269	3,208	-1.9%
2014/2015	3,021	3,091	2.3%	3,412	3,257	-4.5%
2015/2016	2,969	3,086	3.9%	3,524	3,339	-5.3%
2016/2017	2,298	2,348	2.2%	2,939	2,621	-10.8%
2017/2018	2,371	2,556	7.8%	3,097	2,959	-4.5%
2018/2019	2,380	2,598	9.2%	2,832	2,896	2.3%
2019/2020	2,605	2,814	8.0%	3,094	3,104	0.3%

These findings for Hispaniola and Organic Hispaniola were counterintuitive based on the paradigm that organic-certified products are more valued, or are paid higher market prices, than non-organic-certified products. This can be explained by analyzing in detail the exporters for Hispaniola, where it was noticed that a fraction of the volume was marketed in the specialty and ultra-premium segments, showing some promising opportunities for differentiation based on extra quality and storytelling attributes. As mentioned previously, specialty cocoa is determined through a combination of attributes such a genetics, flavor, quality, and traceability, but also aspects of social, environmental and gender responsibility that are associated with it.

Having said this, the volumes exported for Hispaniola organic are higher than Hispaniola.

[6] Conventional/Bulk implies "without certification".

Hence, while the latter segment offers higher prices and higher margins, the volume is notably lower and targets a relatively saturated market.

Cocoa derivatives

Cocoa butter prices averaged USD 4,155 per ton for a ratio of 1.67 for the cocoa year 2019/2020 (CNC, 2020) as shown in table 39 below:

Table 39. Value in USD per ton per cocoa derivative, average value for cocoa year 2019/ 2020 (Reference ICE NY stock average market price 2019/2020 USD 2,370.00)

Product	% Compared to the total volume exported (70,095 tonnes)	USD per tonnes
Cocoa butter	2.1%	4,155
Cocoa powder	0.4%	4,644
Cocoa cake	0.1%	9,224
Cocoa paste	0.15%	3,830
Chocolate products	0.001%	28,365

Source: CNC, 2020

Cocoa derivatives ratio is used as a guide to assess the cost-benefit of processed beans versus raw cocoa beans. It is an indicator of the value of the derivative in the international stock market regardless of the price fluctuations of the cocoa beans. Due to the small volume of the cocoa derivatives exported by DR, the data presented by CNC does not differentiate between organic and conventional products.

The derivative market is intrinsically linked, but with cocoa butter being the largest cocoa derivative exported from the Dominican Republic, for the purpose of this analysis, its price and profit margin will be further explored.

Table 40. FOB prices in USD per ton for cocoa butter, volume and estimated ratio per month for the 2019/2020 cocoa year in DR

Month 2019/2020 cocoa year	NY Stock market Average price (in USD per ton)	Butter FOB prices (in USD per ton)	Volume (in metric tons)	Estimated Ratio
Oct	2,473	4,096	242.06	1.66
Nov	2,535	4,224	106.40	1.67
Dec	2,541	3,981	53.20	1.57
Jan	2,672	4,193	109.71	1.57
Feb	2,756	4,192	101.08	1.52
Mar	2,458	4,472	77.14	1.82
Apr	2,325	4,221	77.14	1.82
May	2,399	2,768	52.60	1.15
Jun	2,308	4,684	110.42	2.03
Jul	2,272	4,465	104.53	1.97

Aug	2,520	4,106	286.44	1.63
Sep	2,602	3,965	132.00	1.52

Source: CNC, 2020

The Figure 47 shows the prices fluctuations between the NY Stock Market prices for cocoa, Dominican Republic's FOB cocoa butter prices reported by CNC, 2020 and the ratio[7] over the past five cocoa harvests. Dominican cocoa butter increased its value during 2018/2019 and 2019/2020 with regards to cocoa market prices, when compared with ratios of previous cocoa years.

The latest cocoa years (2018/2019 and 2019/2020) registered an average ratio of 1.75, compared to a ratio of 1.54 for the cocoa years 2015/2016 and 2016/2017. This represents a 21% increase in value for cocoa butter despite the market volatilities.

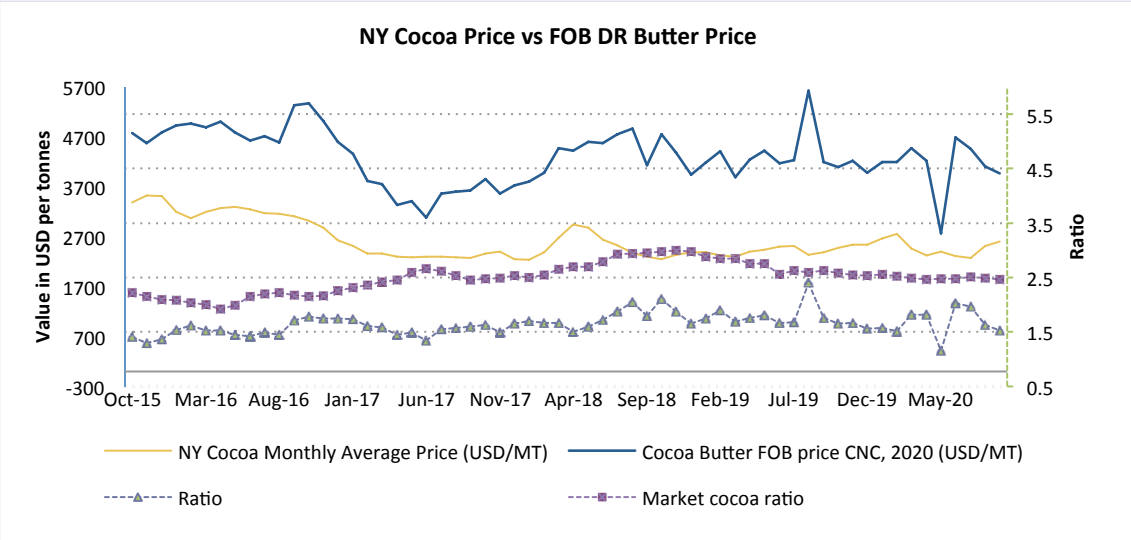


Figure 47. NY Cocoa Stock market prices, FOB prices for cocoa butter exports from the Dominican Republic, in USD and Cocoa butter ratio. Source: CNC, 2020 & Foresight, 2021

[7] Ratio calculated between the FOB cocoa butter prices reported by CNC, 2020 and the monthly average cocoa stock market prices

A report issued by Foresight (2021) indicates that cocoa butter prices for 2020 were approximately at a ratio of 2.30 and an average ratio of 2.15 is observed for the current cocoa year (2020/2021). Meaning DR cocoa butter has been sold below the world average price.

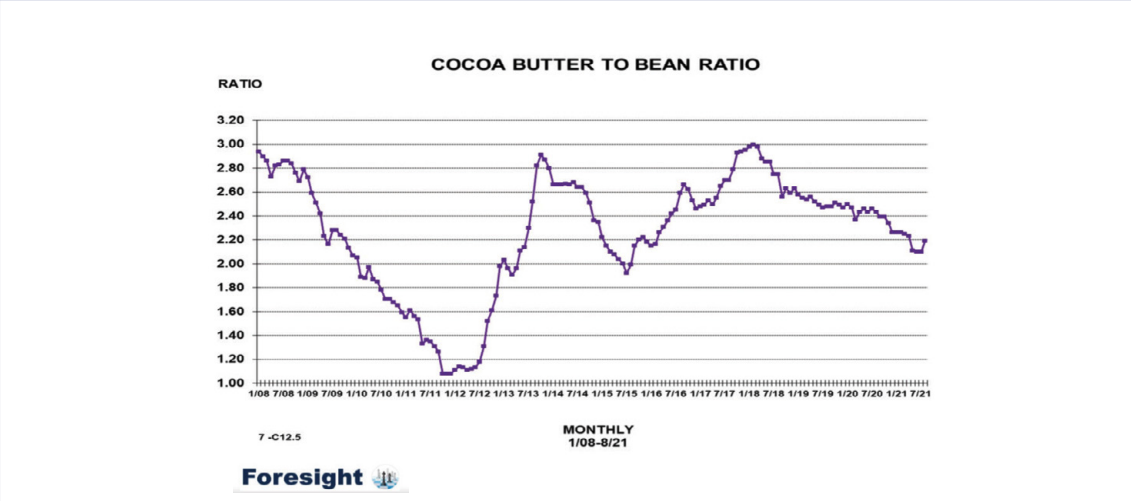


Figure 48. Cocoa butter to bean ratio variation for 2008 – 2021. Source: Foresight, 2021

Price breakdown per cocoa product of Dominican origin

For producers, the products identified for sale are: wet cocoa beans (*cacao en baba*), non-fermented but dried cocoa beans, or fermented and dried cocoa beans.

Most of the producers in the Dominican Republic sell their cocoa as wet cocoa beans. The survey indicated that 91% of the respondents sell in this manner.

With the cocoa being bought as wet cocoa beans, a conversion system is in place; so, depending on the season of the year the conversion could vary from 125 to 135 kg of wet beans, which equals 50 kg in dry weight. This measurement unit used in this calculation is unique to the Dominican Republic and is called *quintal* (plural: *quintales*).

Producer sales price

The price offered to producers for cocoa beans at farmgate corresponds to 80-85% of the world market price (Personal communication with producers, companies and sector experts, July 2021). Premiums are added on top of this price depending on the certification and the FBO they sell their produce to. The fair trade 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 DOP 200 - 300 per quintal (USD 70 - 105 per ton).

A small share of producers belongs to the Premium segment (Specialty and Ultra-premium), receiving higher prices per kg for their produce. This is possible because in this segment

prices are not directly connected to the world market prices. Details on the profit margin for actors commercializing in this chain are detailed in the chapter related to 'Price breakdown per cocoa product of Dominican origin'.

Personal communication with sector experts (July 2021) indicated that, on occasions, if producers choose a longer chain involving an intermediary, the price received could be even lower ranging between 75-80% of the world market price.

Producer costs

Different cost estimations for a Dominican cocoa producer were gathered from the literature review as well as from the survey data collected:

- The project conducted by Tcho and Equal Exchange supported by USAID indicated that a plot would require an average DOP 2,569.42/*tarea* per year (USD 830.50/ha) (Gomez & Almonte, 2018).

- The data collected from the focus group showed that, on average, a cocoa producer has a total annual cost of DOP 3,200.00/*tarea* (USD 898.25/ha).

Important to note that the costs presented by Gomez & Almonte (2018), and findings of this project are marked by the exchange and inflation rates of the respective year it was reported. In addition, personal communication with sector experts in the Dominican Republic (July 2021) revealed that actual costs are higher than indicated by literature. For this reason, a non-conservative average cost estimation of USD 1,000 / ha was applied to the calculation of the price structure and profit margins for each product segment and marketing channel.

Price structure and profit margin analysis throughout the value chain

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

Based on these possible marketing channels, an estimated price structure and profit margin analysis throughout the value chain for stakeholders in the Dominican Republic has been calculated following two different scenarios: one involving two actors and the other one, a longer channel, with four. An estimated visual representation of the selected channels in Figure 49.

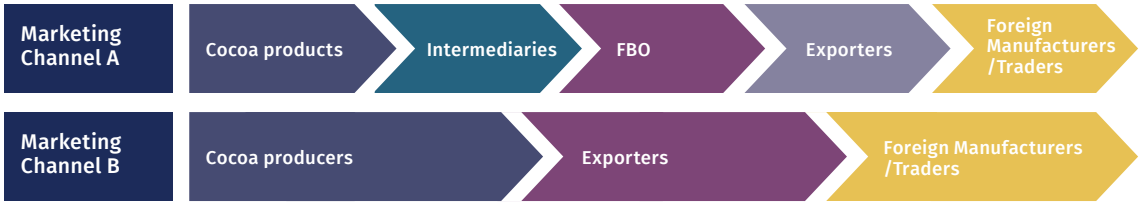


Figure 49. Marketing channels A and B

Several considerations and assumptions were made to assess the value in each proposed channel, cooperative and non-cooperative selling costs, transportation costs, cost of inputs,

and export cost. For a detailed explanation on each of them, refer to calculation notes at the bottom of each table.

The margin per value chain actor has been calculated as the difference between the price paid for the cocoa and the costs involved in their specific level of the chain.

Table 41. Value chain in the bulk segment: Sanchez Cocoa beans sold to large foreign traders or manufacturers

No	Actor	Marketing Channel A		Marketing Channel B	
		Value (USD)	%	Value (USD)	%
	ICE NY price REF 2019/2020	USD 2,370.00			
1	Producer				
	Base price	USD 2,014.50		USD 2,014.50	
	Premiums	-		-	
	Selling price	USD 2,014.50		USD 2,014.50	
	Production costs	USD 1,768.00		USD 1,768.00	
	Margin	USD 246.50	13.9%	USD 246.50	13.9%
2	Intermediary	-	-		
	Purchase Price	-	-	USD 2,014.50	
	Costs	-	-	USD 70.00	3.5%
	Selling Price	-	-	USD 2,147.04	
	Margin	-	-	USD 62.54	3.0%
3	FBO	-	-		
	Purchase Price	-	-	USD 2,147.04	
	Costs	-	-	USD 100.00	4.7%
	Selling Price	-	-	USD 2,359.39	
	Margin	-	-	USD 112.35	5.0%
4	Exporter				
	Purchase Price	USD 2,014.50		USD 2,359.39	
	Costs	USD 230.00	11.4%	USD 100.00	4.2%
	Selling Price	USD 2,605.00		USD 2,605.00	
	Margin	USD 360.50	16.1%	USD 145.61	5.9%
5	Foreign Manufacturers / Traders				
	Purchase Price	USD 2,605.00		USD 2,605.00	
	CIF Costs	USD 300.00		USD 300.00	
	Total value	USD 2,905.00		USD 2,905.00	
Total Costs		USD 2,298.00		USD 2,338.00	
Total Margin		USD 607.00		USD 567.00	

Note 1. Calculation notes for marketing channel A and B

Producer:

1. The wet cocoa sales price for producers is based on 80 - 85% of the stock market price (average world market price for 2019-2020 is USD 2,370 per tonne).
2. The costs for farmers, including land cost, inputs, hired labor and were reported during the fieldwork as USD 898.25/ha. A roundup of USD 1000/ha was considered.
3. The productivity is based on the mean value obtained from the producer survey = 565,64 kg/ha
4. Total producer cost is then the relation between the production costs per hectare and the productivity = USD 1,768.00
5. Inputs include seeds, fertilizers, pesticides, tools and equipment.

Intermediaries:

1. Estimated margin for intermediaries based on export price reported by CNC, 2020, and producers sales price based on interview with sector experts

Exporters:

1. Estimated margin for FBOs based on export price reported by CNC, 2020, and producers sales price based on interview with sector experts
2. Export price is taken from the average reported by CNC statistics (cocoa year 2019 - 2020). For Sanchez cacao the export price is around USD 300 per tonne above the average stock market price.
3. USD 230/tonne estimated production costs of robust and large FBO/exporters
4. USD 100/tonne estimated production costs for FBOs based on sector interviews.
5. CIF costs are estimated at USD 300,00 based on interviews with sector experts.

The more actors involved in the chain, the more fragmented the profit margins are distributed among them as shown in the marketing channel B in Table 41.

Intermediaries are necessary for the commercialization of cocoa beans, as they aggregate small volumes into export-viable amounts by collecting the cocoa beans from individual producers or FBOs, thus facilitating handling and transportation to downstream actors in the chain. Intermediaries do not export directly but sell to FBOs or exporters.

Based on these calculations, it can be estimated that the margins for intermediaries within the chain have a ceiling of about 5% while maintaining a purchasing price for the producers of 85% of the NY stock market price.

The calculations also reveal possible profit margins of exporters; by working on shorter chains (A), exporters can reach an approximate margin of 16% compared to 6% as seen in channel B. An interesting opportunity for large (exporting) FBOs and exporters is that profit margins can be even higher by reducing expenses and making this product segment more cost-efficient.

Table 42. Value chain in the bulk certified segment: Organic Sanchez Cocoa sold to large foreign traders or manufacturers

No	Actor	Marketing Channel C Value (USD) %		Marketing Channel D Value (USD) %	
	ICE NY price REF 2019/2020	**USD 2,370.00**			
1	**Producer**				
	Base price	USD 2,014.50		USD 2,014.50	
	Premiums	USD 100.00		USD 100.00	
	Selling price	USD 2,214.50		USD 2,214.50	
	Production costs	USD 1,768.00		USD 1,768.00	
	Margin	USD 346.50	19.6%	USD 346.50	19.6%
2	**Intermediary**	-	-		
	Purchase Price	-	-	USD 2,214.50	
	Costs	-	-	USD 70.00	3.3%
	Selling Price	-	-	USD 2,250.04	
	Margin	-	-	USD 65.54	3.0%
3	**FBO**	-	-		
	Purchase Price	-	-	USD 2,250.04	
	Costs	-	-	USD 100.00	4.4%
	Selling Price	-	-	USD 2,467.54	
	Margin	-	-	USD 122.65	5.0%
4	**Exporter**				
	Purchase Price	USD 2,214.50		USD 2,467.54	
	Costs	USD 230.00	10.9%	USD 100.00	4.1%
	Selling Price	USD 2,814.00		USD 2,814.00	
	Margin	USD 469.50	20.0%	USD 138.31	9.6%
5	**Foreign Manufacturers / Traders**				
	Purchase Price	USD 2,814.00		USD 2,814.00	
	CIF Costs	USD 300.00		USD 300.00	
	Total value	USD 3,114.00		USD 3,114.00	
Total Costs		USD 2,298.00		USD 2,338.00	
Total Margin		USD 816.00		USD 776.00	

Note 2. Calculation notes for marketing channel C and D - (same assumptions as Note 1 unless indicated otherwise)

Producer:

- Estimated organic premium paid to the producers is USD 100 per ton rounded from DOP 70 - 100 per quintal, based on personal communication with sector expert (July 2021).

Exporter:

- For Hispaniola cocoa the average export price reported by CNC (2020) is around USD 500 per ton above the average world stock market price.

Similarly, to marketing channel B, it can be estimated that, within marketing channel D, the

margins for intermediaries within the chain have a ceiling of about 5% while maintaining a price for the producers of 85% of the NY stock market price plus the USD 200 related to the organic premium.

By working on shorter chains (C) exporters can reach an approximate margin of 20% compared to 9.6% as seen in channel D.

At the producers' level, certifications can be beneficial, as it provides farmers with access to different sales channels and premiums (Anonymous, personal communication, July 2021).

At the exporters' level, certification also brings benefits related to the market value of the product in relation to conventional cocoa, despite having a slightly smaller profit margin.

Same as in the previous channel, profit margins can be even higher for exporters in marketing channel C by reducing costs and making this product segment more cost-efficient.

Table 43. Value chain in the Premium segment: Hispaniola Cocoa sold to large foreign traders or manufacturers

No	Actor	Marketing Channel E Value (USD)	%	Marketing Channel F Value (USD)	%
	ICE NY price REF 2019/2020	**USD 2,370.00**			
1	**Producer**				
	Base price	USD 2,014.50		USD 2,014.50	
	Premiums	USD 0.00		USD 0.00	
	Production costs	USD 1,768.00		USD 1,768.00	
	Selling Price	USD 2,014.50		USD 2,014.50	
	Margin	USD 246.50	13.9%	USD 246.50	13.9%
2	**Intermediary**	-	-		
	Purchase Price	-	-	USD 2,014.50	
	Costs	-	-	USD 70.00	3.5%
	Selling Price	-	-	USD 2,147.04	
	Margin	-	-	USD 62.54	3.0%
3	**FBO**	-	-		
	Purchase Price	-	-	USD 2,147.04	
	Costs	-	-	USD 150.00	7.0%
	Selling Price	-	-	USD 2,411.89	
	Margin	-	-	USD 114.85	5.0%
4	**Exporter**				
	Purchase Price	USD 2,014.50		USD 2,411.89	
	Costs	USD 230.00	11.4%	USD 150.00	6.2%
	Export Price	USD 3,094.00		USD 3,094.00	
	Margin	USD 849.50	37.8%	USD 532.11	20.8%

5	**Foreign Manufacturers / Traders**				
	Purchase Price	USD 3,094.00		USD 3,094.00	
	CIF Costs	USD 300.00		USD 300.00	
	Total value	USD 3,394.00		USD 3,394.00	
Total costs		USD 2,298.00		USD 2,438.00	
Total Margin		USD 1,096.00		USD 956.00	

Note 3. Calculation notes for marketing channel E and F - (same assumptions as Note 1 unless indicated otherwise)

USD 150/ton estimated production costs for FBOs based on sector interviews due to the additional post harvesting practices required.

An interesting opportunity for intermediaries is identified in terms of value-adding activities (fermentation and drying) within marketing channel F as to attain larger profit margins, as chances are higher for an even profit margin distribution given the large share seen on the exporter's calculation.

Table 44. Value chain in the Premium certified segment: Organic Hispaniola Cocoa sold to large foreign traders or manufacturers

No	Actor	Marketing Channel E		Marketing Channel F	
		Value (USD)	%	Value (USD)	%
	ICE NYW price REF 2019/2020	**USD 2,370.00**			
1	**Producer**				
	Base price	USD 2,014.50		USD 2,014.50	
	Premiums	USD 100.00		USD 100.00	
	Selling price	USD 2,214.50		USD 2,214.50	
	Production costs	USD 1,768.00		USD 1,768.00	
	Margin	USD 346.50	19.6%	USD 346.50	19.6%
2	**Intermediary**	-	-		
	Purchase Price	-	-	USD 2,214.50	
	Costs	-	-	USD 70.00	3.3%
	Selling Price	-	-	USD 2,293.73	
	Margin	-	-	USD 109.23	5.0%
3	**FBO**	-	-		
	Purchase Price	-	-	USD 2,293.73	
	Costs	-	-	USD 150.00	6.5%
	Selling Price	-	-	USD 2,565.91	
	Margin	-	-	USD 122.19	5.0%

4	**Exporter**				
	Purchase Price	USD 2,214.50		USD 2,565.91	
	Costs	USD 230.00	10.4%	USD 150.00	5.8%
	Selling Price	USD 3,104.00		USD 3,104.00	
	Margin	USD 759.50	32.4%	USD 388.09	14.3%
5	**Foreign Manufacturers / Traders**				
	Purchase Price	USD 3,104.00		USD 3,104.00	
	CIF Costs	USD 300.00		USD 300.00	
	Total value	USD 3,404.00		USD 3,404.00	
Total Costs		USD 2,298.00		USD 2,438.00	
Total Margin		USD 1,106.00		USD 966.00	

Note 4. Calculation notes for marketing channel G and H - (same assumptions as Note 1 unless indicated otherwise)

USD 150 / ton estimated production costs for FBOs based on sector interviews due to the additional post harvesting processes required.

There is an opportunity for producers to attain higher margins within the premium market segments related to value-adding activities such as fermentation and drying as shown in Table 44 for the Organic Hispaniola. Actors in DR indicated that fermented and dried cocoa could be sold for 10% more of its value compared to an approximate cost of USD 150/ton (personal communication with sector experts, July 2021). This will depend on the continued growth in demand for premium cacao, in a sector that remains very small.

Same as seen in channels C and D, at the producers' level, certifications can be beneficial, as it provides farmers with access to different sales channels and premiums (Interview with sector expert). Around 5% additional profit is attained related to the organic certification. As a conclusion, it can be assumed that there is potential value in fermenting and drying at producers' level, but the reality is that if quality standards cannot be met, reaching premiums for quality will be challenging. Exporters and FBOs, when purchasing larger volumes, can homogenize and provide consistent quality to aim for higher market prices within the segment. Rarely do they buy fermented and dried cocoa beans directly from producers due to these risks related to quality.

The investment required for a centralized fermentation facility is significant, plus, producers fear facing the potential issues related to the inconsistency of their product and the higher risks due to possible robbery of fermented or dried cacao (this issue creates a big disincentive for farmers) (A. Rodriguez, personal communication, July 2021).

> *"The production of organic cocoa is profitable, but requires many expenses due to the non-use of chemicals to maintain the farm's cleanliness; the workforce is also getting more expensive day-by-day"*
>
> The voice of the producer

Value chain in the Premium certified segment

Compared to the international market for mainstream cocoa, the market for specialty cocoa is a relatively small, highly specialized and separate market, with its own supply and high demands for the beans. The beans reach the market through specialty trading companies, who sell the beans to these chocolate makers (CBI, 2018). Figure 50 below shows the typical distribution channel for these product type.

Figure 50. Marketing channel I for the Premium segment

Table 45. Value chain in the Premium certified segment: Organic Hispaniola Cocoa sold to large foreign traders or manufacturers

No	Actor	Marketing Channel I Value (USD)	%
	ICE NY price REF 2019/2020	USD 2,370.00	
1	**Producer**		
	Base price	USD 2,370.50	
	Premiums	USD 100	
	Selling price	USD 2,900.00	
	Production costs	USD 2,000.00	
	Margin	USD 900.00	45%
2	Exporter		
	Purchase Price	USD 2,900.00	
	Costs	USD 230.00	7.9%
	Selling Price	USD 4,200.00	
	Margin	USD 1,070.00	34.2%
3	Specialty importers		
	Purchase Price	USD 4,200.00	
	CIF Costs	USD 330.00	8%
	Selling price	USD 4,530.00	
	Margin	USD 330.00	7.9%
4	Specialty chocolate makers		
	Purchase Price	USD 6,900.00	
	Transport costs	USD 200.00	3%
	Total value	USD 7,100.00	
Total Costs		USD 2,760.00	
Total Margin		USD 1,970.00	

Note 5. Calculation notes for marketing channel I

Producer:

1. The sales price of wet cocoa at the producers' level is based on the transparency report of a North American trader specialized in the specialty and ultra-premium segments. – Farmgate price USD 2,900,00
2. The costs for farmers, including land cost, inputs, hired labor were estimated at USD 2,000/ha higher than obtained during the fieldwork.
3. Inputs include seeds, fertilizers, pesticides, tools and equipment.

Exporters:

1. Estimated margin for FBOs based on export price reported on the transparency report of a North American trader specialized in the specialty and ultra-premium segments and validated with the export values as reported by CNC, 2020.
2. USD 230/ton estimated production costs of robust and large FBO/exporters.

Specialty cocoa importers:

1. USD 330/ton import costs based on the transparency report of a North American trader specialized in the specialty and ultra-premium segments.
2. Transport costs are estimated at USD 300 per ton based on personal communication with a sector expert (July 2021).

Traders and chocolate makers mostly do not look at the world market price when sourcing exotic types of cocoa, such as prized Venezuelan, Colombian or Panamanian varieties (G. Toro, personal communication, July 2021).

By working on the specialty or ultra-premium segment (I) exporters can reach an approximate margin of 34%.

The profit margin within the specialty segment depends, as seen previously, on many factors (cocoa quality, post-harvest processing, genetic variety, storytelling aspect, among others).

In this marketing channel, the margin for the producer is significantly higher compared to the other marketing channels and products. Although prices are attractive, volumes remain quite low and it is not scalable to the reality of the country or to the reality of the market. Price paid to producers is levelled with world stock markets and on occasions premiums can be added or paid at the end of the cocoa year to the farmers (Personal communication with specialty cocoa exporters in DR, July 2021).

During the research, a few exporters belonging to a niche market that focuses on bean to bar makers and craft chocolate makers with unique needs and preferences were identified. Reserva Zorzal and Okö-Caribe were clear examples of this. These specialty beans are mainly used to produce premium chocolate bars.

Important to note that not all of the cacao sold via Reserva Zorzal and Okö-Caribe goes to the specialty market. In fact, it is just a part of their businesses. Selected producers are linked to their specialty chain and work under strict quality control processes.

Currently, the specialty and ultra-premium cocoa segment in the Dominican Republic accounts for less than 1% of the total cocoa exports (data from CNC, 2020).

Value chain profit margin for cocoa butter

Processing beans into derivatives is an interesting channel to consider. The processing will depend on the market demand, which in turn dictates prices. Figure 51 shows an example of the flow of the product as it reaches international market:

Figure 51. Marketing channel J for cocoa butter

The cocoa butter prices considered in Table 46 for the cost estimation were those reported in the CNC,2020.

Table 46. Value chain for cocoa butter: Sanchez Cocoa pressed to cocoa butter and sold to a large chocolate manufacturer

No	Actor	Marketing Channel J	
		Value (USD)	%
	ICE NY price REF 2019/2020	USD 2,370.00	
1	Producer		
	Base price	USD 2,014.50	
	Premiums	USD 0.00	
	Selling price	USD 2,014.50	
	Production costs	USD 1,768.00	
	Margin	USD 246.50	13.9%
2	Intermediary	-	-
	Purchase Price	-	-
	Costs	-	-
	Selling Price	-	-
	Margin	-	-
3	FBO	-	-
	Purchase Price	USD 2,014.50	-
	Costs	USD 100.00	5.0%
	Selling Price	USD 2,220.23	
	Margin	USD 105.73	5.0%
4	Processor / Exporter		
	Purchase Price	USD 2,220.23	
	Processing Losses (20%)	USD 444.05	
	Production Costs (30%)	USD 799.28	56.0%
	Cocoa Powder Selling Price	USD 4,621.50	
	Cocoa Butter Selling Price	USD 3,934.20	
	Total Equivalent Selling Price	USD 4,291.60	
	Margin	USD 828.05	23.9%

5	Derivatives importers		
	Purchase Price	USD 4,291.60	
	CIF Costs	USD 330.00	8%
	Selling price	USD 4,852.68	
	Margin	USD 231.08	5.4%
5	Chocolate Manufacturers		
	Purchase Price	USD 4,852.68	
	Transport costs	USD 200.00	4%
	Total value	USD 5,052.68	
Total Costs		USD 2,742.05	
Total Margin		USD 1,074.55	

By transforming cocoa beans into powder and butter, processors can reach an approximate margin of 23%.

Note 6. Calculation notes for marketing channel J - (same assumptions as Note 1 unless indicated otherwise)

Processor:

1. Processing losses estimated at 20%
2. Operational costs estimated at 30% based on interview with sector expert for large processors
3. Ratios based on CNC (2020) statistics (cocoa year 2019 - 2020)

Derivative exporter:

1. CIF costs based on interview with sector expert
2. Estimated margin 5%

Regardless of the processing, end-use and value addition given in further steps of the value chain, the profit margin of the producer does not change unless it is directed to the ultra-premium market. It is estimated that this Premium segment accounts for less than 200 specialty cocoa producers worldwide (C. Martin, personal communication, July, 2021).

During the cost exercise for both Organic product types (Sanchez Organic and Hispaniola Organic) it was noticed that certified producers receive slightly higher margins due to the organic premium paid when compared to non-certified cocoa (19.6% margin for organic certified producers versus 13.9% for non-certified). Further understanding of the actual costs incurred by these certified groups is required, as due to the lack of time for this research, it was not investigated in depth.

Cocoa production in agroforestry systems

Agroforestry benefits

Agroforestry is a form of biodiversity-based farming (Therond et al., 2017), which relies on a system that contains a diversity of different species and soil cover for planting of the crops.

The farming style and the ecosystems can provide different services and benefits to the producers. These benefits can be environmental, economic, and social benefits. For instance, planting can provide crops with shadow and shelter and regulate rainwater, prevent erosion and enrich the soil. The trees capture carbon and attract insects and other biodiversity, which can help control pests and further improve the nutrients in the soil (Earthworm, 2017).

Aspects brought by agroforestry systems according to Cuijpers, Koopmans & Erisman (2013), Vilanova & Ameyaw (n.d.) and Wiebke Niether et al 2020, have been compared and combined as follows:

Soil nutrition

Cocoa plantations are required to have access to soil nutrients and water to stimulate the growth of the trees and increase the productivity of the plot. A study conducted by Muchane et al (2020) indicates that the usage of agroforestry boosts infiltration rates and reduces runoff and the macroaggregates, which is an indicator of good soil health. Isaac, M.E., Timmer, V.R., (2007) found that nutrient uptake by cocoa increased under shade conditions. Availability of Nitrogen for instance, stored in the macroaggregates, can be 22-43% higher in agroforestry systems (Muchane et al., 2020).

Soils that have been used for cropping can become infertile (Dogbatse et al, 2021). Among the factors that can affect soil fertility of the cocoa plantations are: the age, the density of the plants, the application of agrochemicals, the density of soil macro-organisms and diversity of tree species planted (Tsufac et al., 2020). When the soil fertility decreases, farmers may be tempted to move their farms, and start new forest grounds, where the soil fertility is high. However, this stimulates deforestation (Fountain & Huetz-Adams, 2020). The farming style can affect the soil quality of the plot and through this, trees are able to improve the soil quality and reduce soil erosion (Muchane et al., 2020).

The evaluation of soil health can be appraised through erosion control, carbon and nitrogen storage, nutrient availability and soil acidity alleviation (Muchane et al., 2020). Muchane et al. (2020) indicated in their study that 50% of soil erosion can be reduced through agroforestry due to the infiltration rate improvement.

Pest and diseases

Pests and diseases are a major threat to the cocoa production and can have devastating

effects in the economy of a country. Estimates put losses as high as 30-40% of global production (ICCO, 2020). A good example of the devastating impact of an invasive fungal disease is witches' broom, which reduced production in Brazil by 75%, (from 400,000 to 100,000 tons) in only 10 years (Hebbar, P. K. 2007).

A way to control pests and diseases is with chemicals and pesticides. The downside is the negative effect these products have, not only on the flora and fauna and on the pollinators of the trees (Ndakidemi et al., 2016), but also on the health of the farmers and consumers due to long-term exposure (Afrane & Ntiamoah, 2011).

An Integrated pest management system (IPM) that incorporates practices for economic control of pest populations below the economic injury level is required. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems 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, planting pest-resistant crops, and, only when absolutely necessary, careful use of pesticides.

A study conducted by Muchane et al. (2020) mentions that cocoa agroforestry systems compared with cocoa monocultures are not prone to pests and diseases, contrary to widespread perceptions. According to several panelists of the Sweet Sustainability online Conference (Conversation Commons, 2021), many of the diseases and pests that plague cocoa production which respond to temperature and humidity can be managed with good agroforestry practices.

It is important to note that stand-alone agroforestry is not the control measure for pests and diseases as the potential regulating effect of such a system depends highly on the set up, design, distribution and placement of the crops and shade trees and finally the management, maintenance and the implementation of the IPM.

With regards to pests and diseases that typically affect cocoa production, the Dominican Republic has proven to be resilient to them (Interview with sector experts and focus group outcome). The survey revealed that 23.5 % of the respondents have been affected by pests and diseases. Of this percentage, more than 50% of producers surveyed reported rats as a pest in their cocoa plantation, 19% woodpeckers and 19% other diseases such as buba and rosellinia as a major problem (Table 47).

Table 47. Pest and diseases reported in the producer survey

Pest/disease	%
Rats	52
Woodpeckers	19
Diseases (buba, rosellinia)	19
Black pod disease (Phytophthora)	6
Insects	3

Source: Own elaboration based on survey results

Climate change resilience and carbon sequestration

Climate change leads to unavoidable events, which can have a serious impact on producers and other stakeholders in the cocoa supply chain. It is a growing concern and during several interviews conducted along the course of this study many participants mentioned that climate change should be the priority of the cocoa sector. “Evidence of observed changes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened” (IPCC, 2021).

“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 (CO2) 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” (IPCC, 2021).

Peréz Neira et al. (2020) conducted a study comparing conventional monoculture farming with organic agroforestry system in Ecuador; findings indicated that that agroforestry system has a lower carbon footprint than conventional monoculture. As such, cocoa agroforestry can contribute to climate change mitigation by storing 2.5 times more carbon. This means cocoa agroforestry systems have greater potential for climate change mitigation than cocoa monocultures due to this carbon sequestration potential. (Niether et al 2020).

Expert Altair Rodriguez explaining agroforestry systems in DR to Research team (Mariana De La Rosa and Omar Caraballo). Photo taken by: Gustavo Ferro

Biodiversity

The interaction between different kinds of species makes several ecosystems possible. The areas of interest brought by biodiversity systems in cocoa plantations are: pollination, pest control, nutrient cycling and disease control (Greenberg, R, nd). In a study conducted by Niether et al (2020) agroforestry systems have been reported to provide habitat for functionally more diverse species communities due to their more complex structure when compared to monoculture systems.

Agroforestry systems and productivity

One concern that naturally occurs to producers' worldwide concerning production under agroforestry systems is for the reduced space for cocoa trees in the plot, which would result in a lower yield. At first, this might seem negative to producers; however, in agroforestry, other crops are grown together with cocoa, which also contribute to the overall yield/productivity of the plot. A study conducted by Niether et al (2020) found that cocoa on agroforestry systems on average yields 75% of monoculture cocoa production but argue that this loss in productivity is compensated by a longer productive lifespan of the trees.

The main concern related to yield in such systems, is that given that there are many species and crops per area there is less management focused exclusively on cacao resulting in less external inputs such as fertilizers (A. Rodriguez, Personal communication, Oct 2021).

Cocoa agroforestry systems in DR

Most of the cocoa production in the Dominican Republic is conducted in agroforestry systems (personal communication with industry experts, July 2021). This was reflected in the survey conducted where 96% of the respondents said to have associated crops in their plantations. According to a sector expert, "the ones that do not have associated crops likely still have shade trees which don't provide income like Gliricidieas or Erythrinas which would still put them in the category of agroforestry "(A. Rodriguez, Personal communication, October 2021).

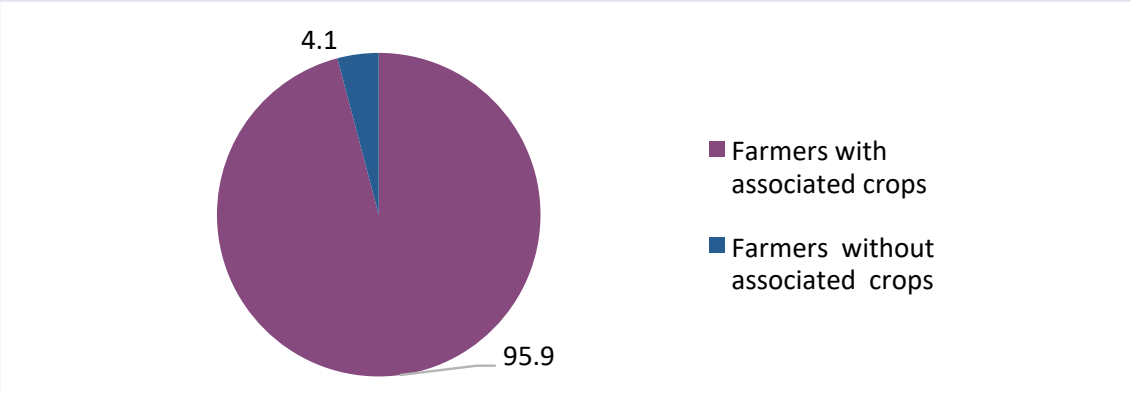


Figure 52. % of farmers with associated crops in Dominican Republic according to the survey

Among the benefits from working in an agroforestry system, the producers in the survey indicated that shade, soil nutrition and biodiversity are the ones that impact them the most:

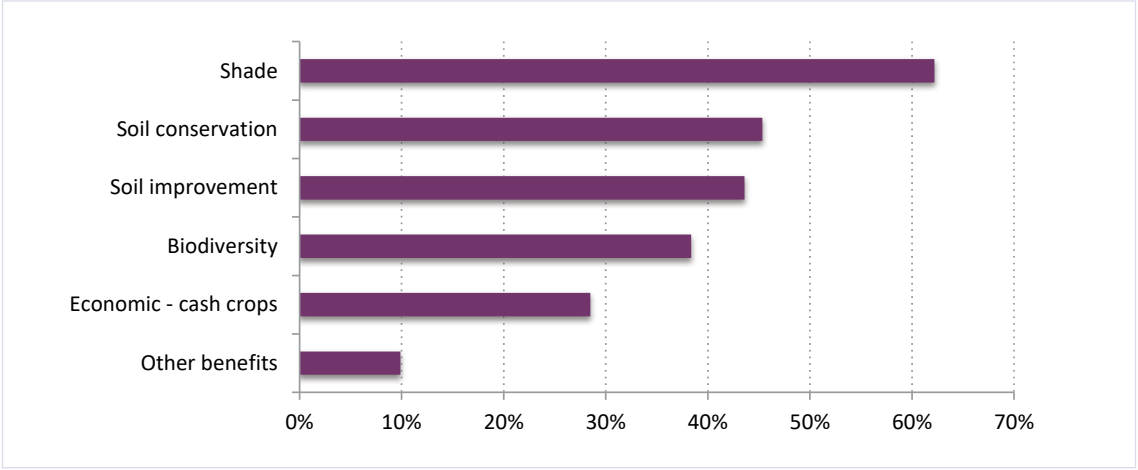


Figure 53. Benefits received from working in agroforestry systems according to the sample surveyed

Agroforestry systems: Alternative crops and farmer's income

Income-diversification activities are key to provide additional benefits to farmers. Among the benefits mentioned in the previous chapter, agroforestry is also considered a significant contributor in alleviating poverty (Garrity 2004) as the alternative crops can contribute either to the producers' income (cash crops) or for their own consumption (food crops).

With regards to the main alternative crops mentioned during the survey: avocado, banana, oranges, sapote fruit, tannia, mangoes, yam, and cassava among others are within the majority planted by Dominican producers.

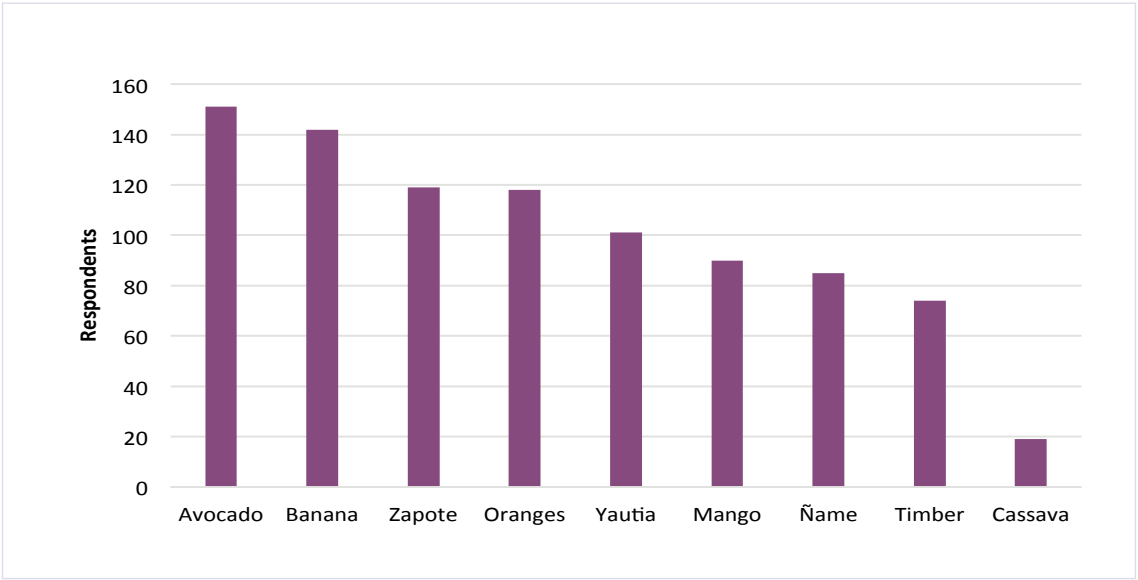


Figure 54. Main alternative crops mentioned during the survey

According to the survey, 60% of the producers who used agroforestry systems had an additional income from associated crops. On average DOP 1,210 / *tarea* (USD 340/ha) can be generated annually. With a level of confidence of 95% the true mean is between DOP 0/tarea (USD 0/ha) and DOP 2,999/tarea (USD 842/ha).

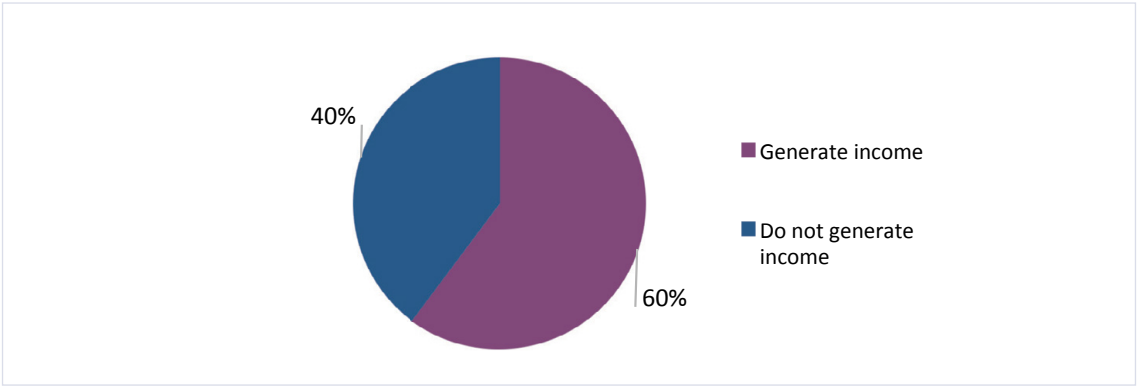


Figure 55. percentage of producers generating income from associated crops according to the survey

Farmer awareness on the need for income diversification is crucial to manage risks, create an extra source of income and thereby improve their living standards. To enable this in a sustainable way, producers should be given the tools and resources to associate themselves with other producers selling crops other than cocoa, and jointly create additional income opportunities.

During an interview with a sector expert in the Dominican Republic, it was mentioned that: "Most producers have not done an income analysis, you know how cocoa is handled in a traditional way: first banana, temporary shade, you plant the cocoa and produce and that's your source of income. What people do is incorporate fruit trees, but they do not work from a system design point of view, it's not part of their accounting and admin system."

An interesting increase of volume in non-traditional agricultural crops has been mentioned during the interviews related to health-conscious consumers. Within this trend, consumers are increasingly concerned over health benefits associated with the products they purchase and consume. An example brought up was ginger. Despite the negative effect that the COVID-19 pandemic has created, it appears that ginger has experienced some level of growth in the agricultural sector (S. Cardenas, Cacao Forest project, personal communication, July 2021).

The alternative crops will require strengthening supply chain partnerships and marketing of products across value chains to take sufficient advantage of the income from the agrobiodiversity of the plots (Anonymous, interview with sector expert, July 2021).

The establishment of these organizational schemes could take full advantage of the emergence of new markets.

Demonstrative plots

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, 2018b).

Strategic partnerships with private sector, state and civil society organizations play a key role in changing the position and activities of actors (Helmsing & Vellema 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).

To enable this, demonstration plots have been set up in cooperation with partner institutions working in the field of agroforestry (IDIAF, National Cocoa Commission, Cocoa Department of the Ministry of Agriculture, Ministry of the Environment), two cocoa cooperatives (FUNDOPO & CONACADO), international organizations (Earthworm), research and development institutes (CIRAD) and education (ISARA Lyon) (Cacao Forest, 2020).

Experts interviewed in the Dominican Republic highlighted that the choice of crop species and density will depend on the geographic location, as species tend to adapt to the ecosystem of the region. Although the Dominican Republic is a small country, marked climatic zones are found throughout its territory (personal communication with experts, July 2021). Taking this into account, these partners, together with a group of pioneering producers and the agricultural technicians of the cooperatives, have designed four innovative and participatory models of agroforestry systems based on cocoa cultivation in association with diversified crops in real conditions, spread over three regions (Duarte, San Cristobal and Espaillat). These three regions offer different climatic and ecological conditions and bring together producers from the two cooperatives to introduce the human aspect to the development of the project (Cacao Forest, 2020).

Given that the project started in 2018, results on productivity and a complete cost-benefit analysis are not yet conclusive. However, educated projections on output from the third to the tenth year were made, leading to yields between 740 kg and 1,000 kg per year (World Cocoa Foundation, 2019).

As the project evolves, the productivity and development of these plots is being documented to understand the impact and possibilities of agroforestry systems for the cultivation of cocoa in the Dominican Republic. (Cacao Forest, 2020) (Cardenas S., Segura J., personal communication, July 2021).

These demonstration plots are key for the establishment of the value of traditional cocoa as a conservation tool.

Access to the results of the demonstration plots developed by the Cacao Forest project, the CEDAF, FUNDOPO and CONACADO will support the knowledge development in this area, and it should be institutionally linked to regional programs of forest protection in the future.

Sustainability

This chapter focuses on some of the most relevant topics related to sustainability in the Dominican Republic. The elements that will be covered are: Climate change resilience, gender, and living income. Other sustainable related issues, such as diversification, certification, youth, and deforestation are crosscutting subjects which have been analyzed throughout the report.

Climate resilience

The impacts of climate change can have a serious effect on producers and other stakeholders in the cocoa supply chain: rising sea levels increase the risk of flooding, droughts, cyclones, increased average temperatures threatening food production, are among the catastrophes that Dominicans could face in the future if no actions are implemented to increase resilience (United Nations, 2021).

In 2015, the Dominican government submitted its Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), identifying climate change as a constitutional priority. Within the WHO (World Health Organization, 2021), the Dominican Republic is categorized as a Small Island in Developing States (SIDS) since the island is in the front line of climate change and the immediate impact of environmental disasters will be devastating for its population.

In addition, the Dominican Republic started its "Journey to Sustainable Growth" in 2016 as part of its Climate Change Development Strategic Plan. This plan commits the country to reducing its total greenhouse gases by at least 25 percent by 2030.

Definitive results on the actions taken by the climate resilience-oriented programs are not yet conclusive. Nonetheless, the attention given to the subject will provide more focus and awareness within all sectors to address challenges in production, deforestation concerns, pesticide/chemical use, the availability of trained workers, local climate and soil conditions, access to modern and appropriate agronomy techniques, production costs, processing, transportation and export costs and several other areas (Nature Bank, 2016).

Similarly, a report led by the World Cocoa Foundation (2018) shows that some of the current areas where cacao is grown in the Dominican Republic will have to transition and adopt practices to cope with the impact of climate variability. The recommended practices include activities such as irrigation systems, selection of clones and resilient varieties, composting, soil improvement practices, among other practices (Personal communication with sector experts, July 2021).

Figure 56 below shows the identified areas in the Dominican Republic based on Agroclimatic Zones (ZAC), impact gradient and the type of adaptation required. (Latin-America-Agroforestry.pdf)

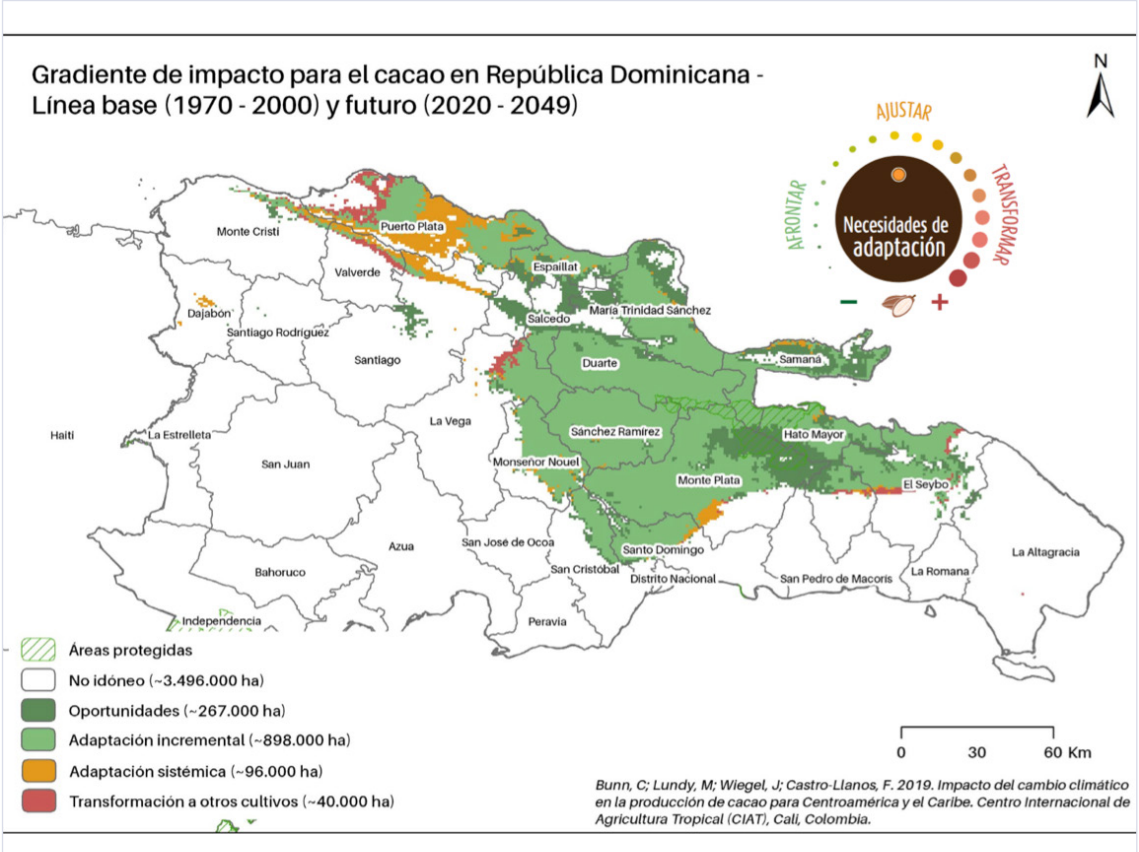


Figure 56. Impact of the Agroclimatic cocoa regions identified in DR. Source (https://cgspace.cgiar.org/handle/10568/101293).

- **Incremental adaptation:** where the climate is most likely to remain suitable and adaptable. The main actions to be taken under this categorization can be achieved through a change in practices and strategies in the area. Expected climate conditions in this segment are: altered pest and disease patterns, uncertain rainfall, drought and heat that can affect the crop, but overall, the cocoa production will remain feasible.

- **Uncertain suitability:** These zones are suitable for cultivation, but the climatic information did not enable a clear classification into one of the specific agroclimatic zones. They are areas between two agroclimatic zones and share characteristics of them both.

- **Systemic adaptation:** substantial stress on normal production systems and adaptation will require comprehensive change and system redesign. Without implementing the advised changes, the production runs the risk of being unsustainable. Better adapted varieties, diversification and financial mechanisms will be necessary to reduce risks under this category.

Each adaptation system has specific characteristics and proposed actions to be considered when implementing them in the cocoa plot. Considering these actions is crucial and will lead to a climate-smart cocoa production system, increasing productivity, improving resistance to climate risk, and reducing or eliminating greenhouse gases (GHG) ((Bunn, C; Lundy, M; Wiegel, J; Castro-Llanos, F., 2019).

Proposed actions per adaptation system are focused on: Clone/variety selection, planting design, soil management, shade management, Integrated pest and disease management system, good harvesting practices, cocoa architecture (relating to pruning), and fertility management.

Regarding the climate resilient clones/varieties, according to the agroclimatic zone and impact, a list of clones has been identified and can be found in the CONACADO clone catalog in the following link:

(https://equalexchange.coop/sites/default/files/CATALOGO_CLONES_FINAL_Enero25018.pdf)

CATIE also offers a set of six productive clones, disease tolerant and of overall good quality. The following link offers more details on the available clones:

http://www.aprocacaho.com/wp- content/uploads/2013/07/Poster-clones-CATIE-VF.pdf.

Gender

In the context of the cocoa sector in the Dominican Republic, gender inequality persists. This is based on the data obtained from the survey revealing that only 15 percent of the respondents were women. The engagement of women in the first steps of the value chain is relatively low. More participation, however, has been observed in the production of artisanal chocolate.

“In Latin America, the cooperatives are much more powerful, much better organized. They are often run by educated women, and you immediately see the difference when compared to Africa, where men are taking the lead” (Henk Veldman, Tony’s Chocolonely, 2020).

Research team (Gustavo Ferro and Mariana De La Rosa) visiting women-led Association Chojoba in Gaspar Hernandez. Photo taken by: Omar Caraballo

The study conducted by Périlleux & Szafarz (2015) further reinforces the good performance of women in charge of financial cooperatives and their inclination towards social communal benefits. From the traders' perspective, the encouragement of women in dealing with financial and administrative aspects in cooperatives and at the farm level can work as a two-way road of benefits. The presence of women in managing boards would give traders more sense of security in the long-term, as community resilience will have a positive impact on the supply of cocoa, compliance with standards, and long-term agreements. The employment of women in these activities would ensure their independence, empowerment, and that the next generations have better access to education, health, and nutrition, this has the potential to impact upon other major issues such as deforestation and youth (Henk Veldman, Tony's Chocolonely – June 2020).

During the fieldwork, willingness to bring more women into the sector was observed; but for now, greater male participation remains. Efforts to bridge this gap in the sector are required; a first step would be to provide the tools needed to enter the workforce, training and education about empowerment and leadership, and ensure sustainable development.

Women are change agents and projects like poverty alleviation, infant nutrition, forest preservation and child labor awareness will become much more effective when women in the communities are involved. (Fountain & Huetz-Adams, 2020b).

Child labor

According to the International Labor Organization (ILO), child labor is still as much a global problem today as it was in 2000. ILO reports that the number of children in ch ild labor has decreased from 245.5 to 160 million, however, this number is still enormous (See Figure 57). 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).

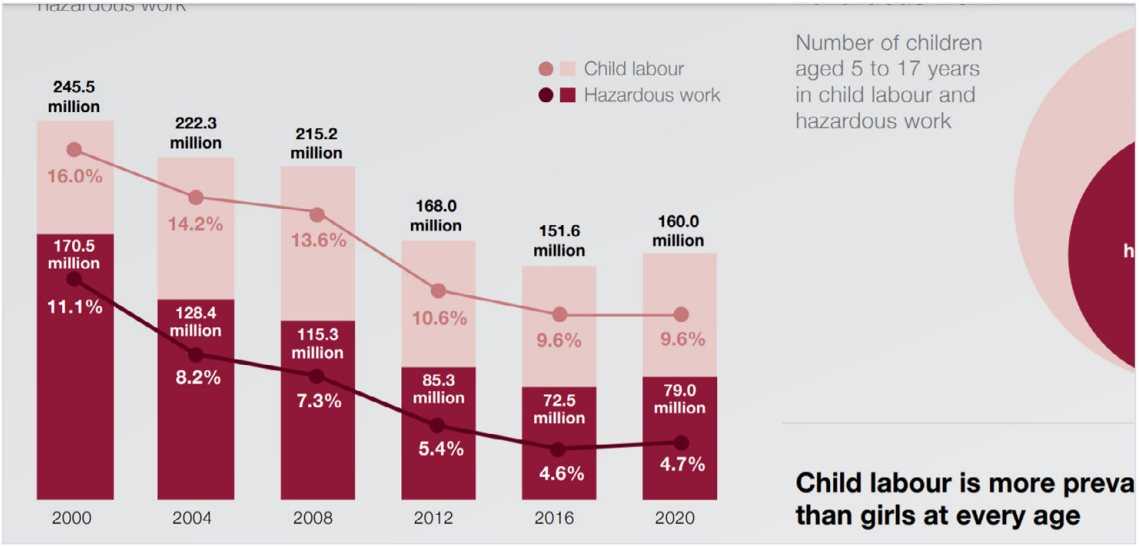


Figure 57. Percentage and number of children aged 5-17 in child labor and hazardous work, from 2000 to 2020

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 58). 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).

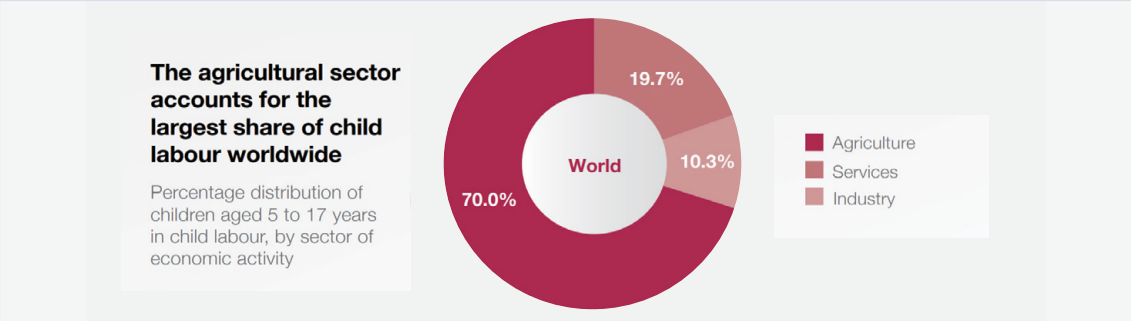


Figure 58. Percentage distribution of children in child labor, by sector of economic activity

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. Child labor levels in the Asia-Pacific region are thought to have decreased 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 by 1.4 percent from 25.3 percent (2008) to 23.9 (See Figure 59).

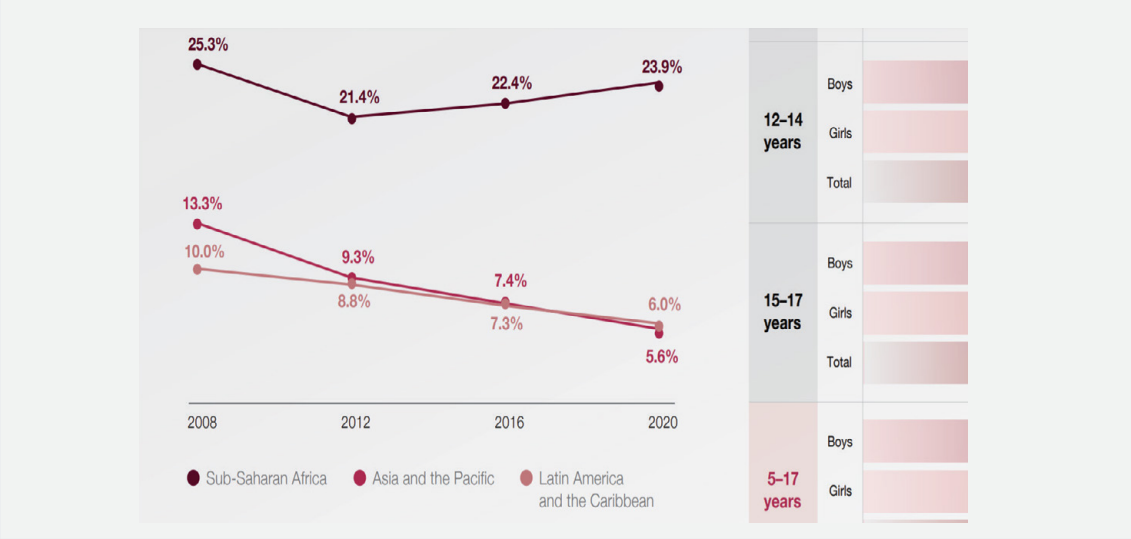


Figure 59. Percentage of children in child labor by region from 2008–2020

In this context, the Dominican Republic is a more progressive country when compared to the issues observed in West Africa. In contrast to Ghana for instance, no child exploitation per se has been known in the Dominican cocoa industry. Nevertheless, children and young people are not entirely absent from the industry as it is common for children to informally participate in tasks on the farm. This sort of participation is often described as a "form of 'helping out'

the family ('una ayudita') and is an integral and important component of rural life".[8]

A report issued by the U.S. Department of Labor in 2020 stated that children in the Dominican Republic are subjected to "the worst forms of child labor, including in commercial sexual exploitation, sometimes as a result of human trafficking". An overview of the activities in which the children are involved indicated in this research are shown in Figure 60.

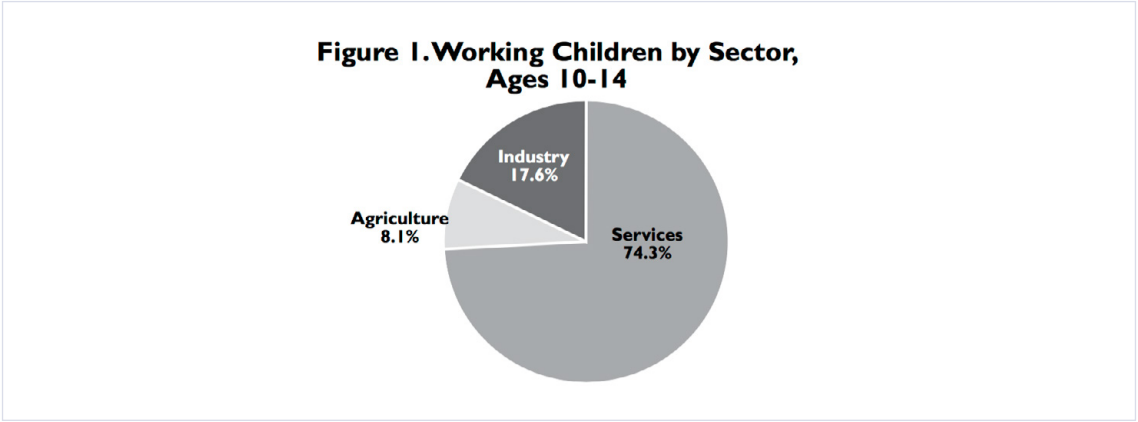


Figure 60: Working children by sector ages 10 to 14 according to the study conducted by DOL in 2020 in DR. Source; U.S. Department of Labor, 2020

The specific activities conducted by children in the agricultural sector, according to the U.S. Department of Labor report, are particular to the sugar plantations, and not cocoa. These are for instance: clearing land for production, planting and harvesting. Therefore, from the report, it is not clear what specific activities are conducted in cocoa farms.

Despite no clear signs of child labor in the cocoa industry present in the Dominican Republic (Personal Communication with expert, Oct 2021) attention to this topic remains on the agenda and the Dominican Republic government has plans in place to eradicate all forms of child labor.

The National law in the Dominican Republic indicates the legal working age is 14 years old, and that free public education should be guaranteed, demanding all children attend school until that age (Article 245 of the Labor Code; Article 40 of the Code for the Protection System and Fundamental Rights of Boys, Girls, and Adolescents; Article 56.1 of the Constitution).

To eradicate all forms of child labor, in 2020, the Dominican Republic government established the 'Oportunidad 14–24 program', aiming at "reintegrating high-risk and socially vulnerable adolescents and young people into technical or vocational education and training programs".

Details of the full outcome of the research conducted by the U.S. Department of Labor can be found in the following link. The study was conducted from a need to re-examine and reanalyze available data to provide new insights for effective policymaking to cover all industries and not only the cocoa sector:

https://www.dol.gov/sites/dolgov/files/ILAB/child_labor_reports/tda2020/Dominican-Republic.pdf

[8] https://www.li verpool.ac.uk/politics/research/research-projects/ccc/cocoa/DR/

Living Income

Several researchers have highlighted the difficulties that producers go through regarding daily income, placing most of them in poverty lines according to international standards (Hütz-Adams and Schneeweiß, 2018).

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 economic benefits generated by the cocoa industry are not sufficiently reaching the cocoa producers, who are typically poor, middle aged, and hold only a small plot of old cocoa trees. Thus, the farmers cannot secure his/her subsistence solely on cocoa production and often have different primary or secondary sources of income (Hütz-Adams et al., 2016; Kozicka, 2018a).

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, 2020a) from commodity trade to the consumers who are not willing to pay a little more for a chocolate bar.

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

In 2018, Fairtrade 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 Cote d'Ivoire and Ghana. In 2019, an adjustment of the model incorporated potential diversified (in-kind) farm income (Anker & Anker, 2018; Veldhuyzen, 2019).

To understand the LIRP in the Dominican Republic, and calculate an estimated LIRP for the country, data about families active in cocoa cultivation are needed. The following key parameters should be considered: (Veldhuyze, 2019):

- **Cost of a decent standard of living:** it includes a nutritious diet, water, decent housing, education, healthcare, transport, clothing and other essential needs, including a provision for unexpected events. A recent study published by Anker & Anker, 2021 indicates that the living wage and living expenses for the rural part of the Dominican Republic up to June 2021 (taking into account the inflation rate) is DOP 29,115 per month (USD 6,129.47 per year) (Anker & Anker, 2021).
- **Sustainable yields:** personal communication with sector experts (July 2021) revealed that between 700 - 800 kg/ha was considered a realistic benchmark under current circumstances in the Dominican Republic. The producer survey indicated that the current yield is on average 565,64 kg/ha. The sustainable yield used for the LIRP calculation is 800 kg/ha. This seemed a reasonable estimation based on the projections of the country, the programs and attention in place, and on feedback from sector experts.

Yluminada Ortega from Cacao Florencio Ortega, Omar Caraballo and Mariana De La Rosa. Photo taken by: Gustavo Ferro

- **Viable farm size (to fully employ the available household labor):** a farm that is large enough to fully absorb the available household labor should generate a living income. This would be considered a viable farm size or a 'full-employment farm size' (Veldhuyzen, 2019). As seen in previous chapters, most producers involved in cocoa production in the Dominican Republic are smallholders; and 64.4 percent cultivate cocoa in areas of five hectares (80 *tareas*) or less (Batista, 2009). Both viable farm sizes were considered for the calculation: 2.2 ha, which is the average of the small-holder producers who took part in the survey (Chapter 2.2.1.1) and 5 ha reported by Batista (2009).

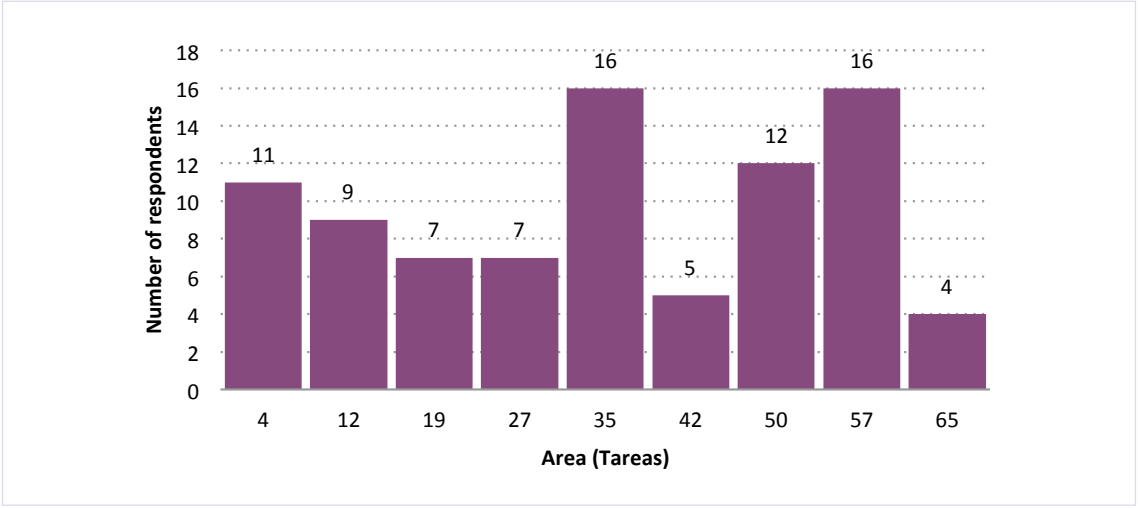


Figure 61. Size in tareas reported by smallholder producers in the survey

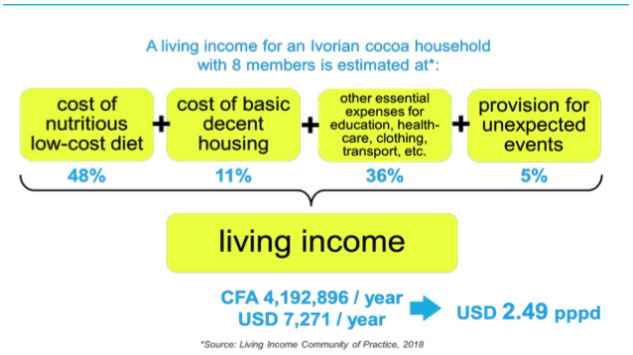
- **Cost of Production:** The data collected from the producer survey revealed that, on average, a cocoa producer has a total annual cost of DOP 3,200.00 / *tarea* (USD 898.25/ha). The costs for farmers included hired labor and inputs such as seeds, fertilizers, pesticides, tools, and equipment.

Calculating the Living Income Reference for Dominican Republic (Veldhuyzen, 2019)

The formula to calculate the LIRP is:

$$\text{Living Income Reference Price} = \frac{\text{cost of decent living} + \text{cost of sustainable production}}{\text{viable land area} \times \text{sustainable yields}}$$

Where the cost of living, following the Cote d'Ivoire Living Income Community of practice (2019) equates to:



Research findings, including the extensive "Demystifying Cocoa" household study by the Royal Institute of the Tropics (KIT), as well as the farmer survey data conducted for this study, indicate that a large share of household food needs is -or could be- produced on the farm. These food crops are generally grown alongside cocoa and compensate for unproductive years in areas where cocoa trees have been newly replanted as part of rehabilitation efforts. The report of the KIT reveals that, for Ivorian farmers, it is realistic to aim for 50% of a nutritious diet, being produced on the farm.

Following the same approach taken for Cote d'Ivoire, the financial cost of decent living in the Dominican Republic is estimated as:

Cost of decent living in DR	
Monthly Living Income (Anker & Anker, 2012)	DOP 29,115.00
Total per year	DOP 349,380.00
Total per year in USD	USD 6,129.47
Cost of nutritious diet (48% of total Living Income)	USD 2,942.15
Nutritious diet produced on the farm (50%)	USD 1,471.07

Variables for the equation	
Yearly Living income	USD 6,129.47
Nutritious diet produced at the farm (50%)	USD 1,471.07
Sustainable yields (productivity benchmark)	800 kg / ha
Viable farm size (ha)	2.2 ha
Cost of sustainable production per ha	USD 898.25

Allowing for continuous crop renovation needed to maintain the cocoa trees optimally productive implies that part of the land is always unproductive. Considering a 28-year life cycle of cocoa trees with zero production during the first three years, 15% productivity in the next two years and full production for the following 23 years, **the productive cocoa area represents 83% of the total cocoa area**. The non-productive cocoa area is assumed to be used for food production as in-kind income.

Subsequently, this leads to a Fairtrade Living Income Reference Price at farm gate for the Dominican Republic of USD 4.54/kg and USD 2.75/kg for a viable farm size of 2.2 and 5 ha respectively, as follows:

$$\text{Living income Reference price in DR (Viable farm size 2.2 ha)} = \frac{(6{,}129.47 - 1{,}471.07) + (2.2 \times 898.25)}{(2.2 \times 83\% \times 800)} = \text{USD } 4.54$$

$$\text{Living income Reference price in DR (Viable farm size 5 ha)} = \frac{(6{,}129.47 - 1{,}471.07) + (5 \times 898.25)}{(5 \times 83\% \times 800)} = \text{USD } 2.75$$

Living Income Reference Prices for cocoa under the assumptions made for this study should be USD 4.54 per kilo for a viable farm size of 2.2 ha and USD 2.75 for a viable farm of 5 ha at farm gate. The price increase seen in the Dominican cocoa sector due to quality standards plus the potential implications brought by the increased Fairtrade Minimum Price for cocoa per October 1, 2019, could constitute a first step in a gradual approach to bridge the price gap (Veldhuyzen, 2019).

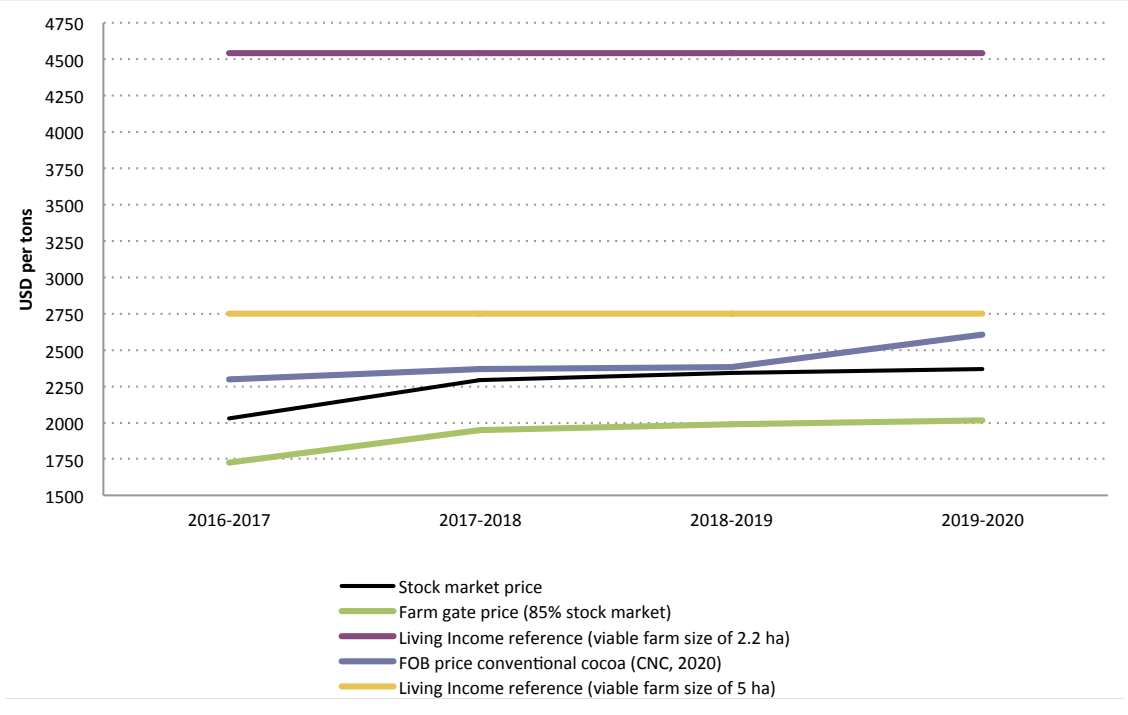


Figure 59. Fairtrade living income reference price for Dominican Republic in relation to farmgate price and world market prices

Source: Own elaboration

To further reduce this gap and ensure better incomes for producers, more efforts are required to increase social, economic, and environmental benefits in a sustainable manner.

Other sustainability issues within the sector

Significant economic disparities have fueled the migration of the Haitian population to the Dominican Republic. Since both countries share the island of Hispaniola, tensions between these two neighbors have risen over the years.

Politics and migration, especially the relationship with Haiti and migrant workers were topics not explored in depth in this research due to the lack of time. However, should remain on the agenda for future projects.

Market opportunities for the Dominican Republic

Current market opportunities for the Dominican Republic

The Dominican Republic has shown over the years the potential to position the production of certified and quality cocoa at the top level worldwide. Among the current market opportunities spotted for this cocoa producing country are:

- **Recognition in the Specialty segment:**

One of the main aspects that makes Dominican Republic cocoa unique is the flavor. This is due to the unique genetic varieties introduced in the country (primarily criollo and trinitario, with strong fine flavor imports from Trinidad and Venezuela), as well as the post-harvest processes that optimize their organoleptic characteristics: "Fruity flavors in our cocoa may have hues of ripe bananas, citrus and prunes", are among the descriptors mentioned by an assessment conducted by the FCIA under a project titled 'Make mine Fine' (Fine Chocolate Industry Association, 2021).

- **Leader in organic and Fair-trade certifications:**

The Dominican Republic has a high share of organic and fair trade-certified cocoa and is considered to be a pioneer in this segment. Considering the European market, the largest organic cocoa market worldwide, the Dominican Republic accounts for nearly 40% of total imports by the region. The Dominican Republic is the third largest producing country worldwide, just behind Cote d'Ivoire and Peru. The availability of certified cocoa from the Dominican Republic follows a growing market trend, driven largely by retailers, for third-party-certified chocolate confectionery (CBI, 2020). In Europe, particularly, the trend has also followed a growth in private-label chocolate offered by the main retailers (CBI, 2019).

- **Low cadmium incidence:**

Cadmium is a contaminant predominantly found in cocoa coming from Latin America. Since the introduction of new limits of cadmium by the EU, buyers are searching for alternative origins with low cadmium incidence. Here the Dominican Republic cocoa is clearly in the lead compared to other cocoa producing countries such as Ecuador, Colombia, Peru, and Venezuela. It is definitely a differentiating point, particularly regarding certified cocoa beans. During an interview with a chocolate company, it was revealed that they have increased their Dominican cocoa purchases to blend it with Peruvian beans to decrease total cadmium content in the final recipe

A study conducted by Peralta et al. revealed that the average cadmium content in cocoa in the Dominican Republic was 0.29 mg/kg, demonstrating that cadmium levels are below the average when compared to other countries in the region.

Table 48. Results from cadmium analysis in different regions in DR

Regions	Results in mg/kg													
North East	0.69	0.18	0.30	0.19	0.28	0.32	0.30	0.36	0.49	0.28	0.30	0.22	0.26	0.33
	0.23	0.27	0.38	0.37	0.12	0.25	0.53	0.32	0.31	0.22	0.30	0.15	0.18	0.73
	0.35	0.31	0.21	0.26										
East	0.32	0.34	0.22	0.18	0.20	0.23	0.20	0.22						
Central	0.36	0.57	0.22	0.19	0.14	0.17	0.19	0.36	0.31	0.51				
North	0.30	0.24	0.19	0.26										

Source: Peralta et al, 2018

- **Free from pests and diseases:**

The Dominican Republic has proven to be relatively resilient to pests and diseases that typically affect cocoa production. Nonetheless, these are pests and diseases that affect Haiti, and have been present in other countries in the Latin American continent. As such, preventive action (e.g., maintenance of the cocoa trees) and the appropriate technical assistance in this regard are necessary.

- **Linkage to market–end user industries:**

Engaging in shorter chains has demonstrated to enhance the country brand and position in the higher levels of the value chain, i.e., directly to chocolate manufacturers, generating higher margins at the export level.

Untapped market opportunities for the Dominican Republic

- **Expansion into high value markets**

Cocoa bean production in the Dominican Republic has risen sharply in recent years. Over the last decade, an increase of roughly 10,000 metric tons has been observed for both cacao Hispaniola and cacao Sanchez. Fermented cocoa beans receive higher prices and this quality boost is well received among the buyers. Exporters which have traditionally not provided price incentives for higher-quality fermented cocoa are now including this into the farm gate price paid and, as a result, more value is captured locally.

In 2020, the United States, Belgium and the Netherlands were the largest markets for cocoa beans exported from the Dominican Republic worldwide, together accounting for 65% of total exports. Besides the United States, which purchases the Dominican Republic's highest share of cacao Sánchez, all main export destinations purchase Dominican cocoa beans at prices above world market prices, thus indicating potential for market expansion at a high value (Figure 60).

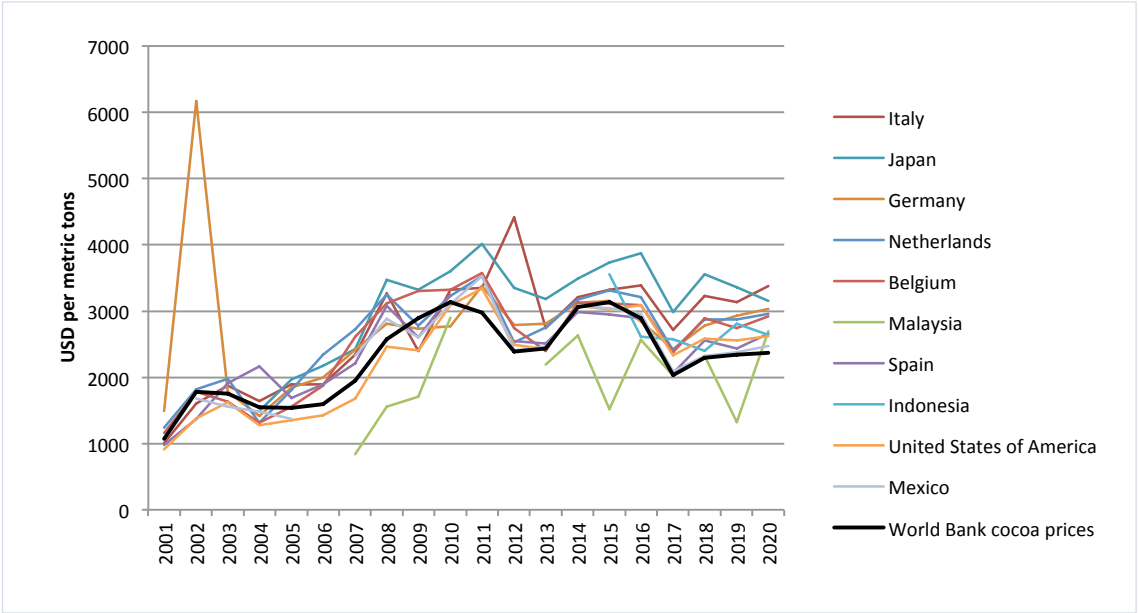


Figure 60. Export value for the Dominican Republic's main export destinations for cocoa beans, relative to world market prices, in USD per ton (Source: ITC Trademap)

The ITC Export Potential Tool is a statistical instrument from the International Trade Center which analyzes the export potential from a specific country, for a given product, in various export destinations. This tool is used in this section as an indication for the untapped potential of the Dominican Republic's cocoa products. Regarding cocoa beans, the tool reveals that, even though the United States, the Netherlands and Germany are already among the main export destinations for the country, they still present a potential for further growth. Belgium,

on the other hand, is presented as an export destination whose potential has been fully met by existing exports.

Important to note that, the tool must be used with caution, and considering some qualitative elements. For instance, France is shown as a country offering low export potential, but recent cadmium contamination occurrences in the industry reveal an interesting opportunity for the Dominican Republic, since this cocoa-producing country can satisfy the French market's demand for low-cadmium certified cocoa beans.

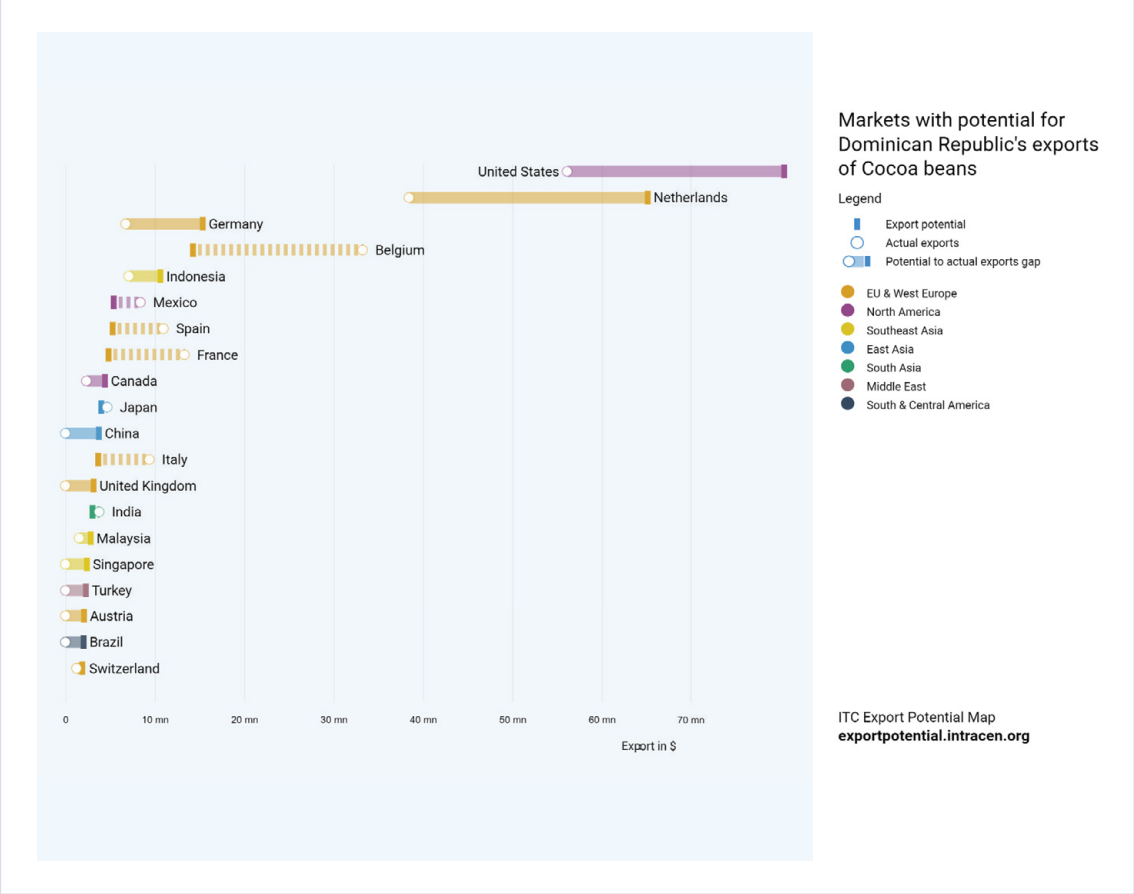


Figure 61. ITC Export Potential Tool for cocoa beans exported from the Dominican Republic

- **Potential growth of the cocoa derivative product segment**

Regarding derivatives, and using cocoa butter as an example, the ITC Export Potential Tool shows a clear potential towards increasing Dominican market presence in North America (US and Canada), while it indicates very low demand in the largest markets in Europe, with particular emphasis on the Netherlands, large producer and exporter of cocoa butter. In a qualitative analysis, not only is the Netherlands a strong competitor in the cocoa butter market, but specifically in the organic segment. Interestingly, the ITC Export Potential Tool shows a market potential for smaller-scale markets in Europe such as Russia, Estonia and Poland, as well as in Asia (Japan, China) and other global markets as indicated below. When analyzing potential markets for the Dominican Republic, it is also crucial to observe growth in organic markets, since the country is competitive in this segment. In general,

investing in marketing cocoa derivatives, expanding international markets for derivatives as a value-added strategy for the Dominican cocoa sector should be considered (Figure 62).

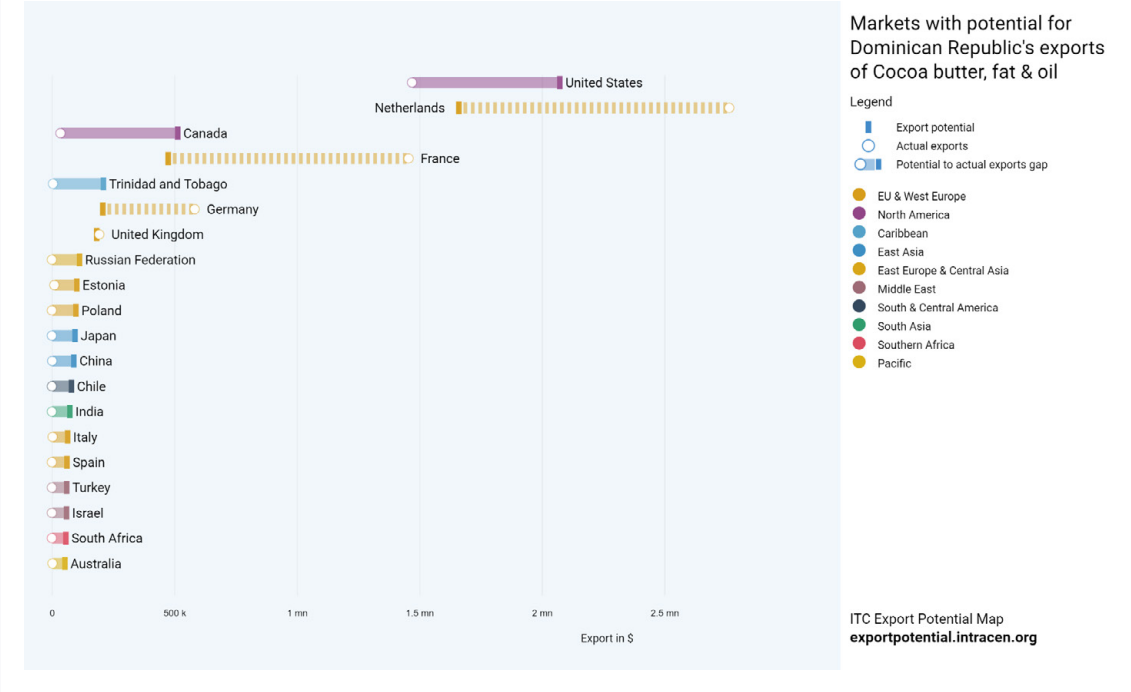


Figure 62: ITC Export Potential Tool for cocoa butter exported from the Dominican Republic

The export data of the Dominican Republic, in relation to its Latin American and Caribbean (LATAC) counterparts, reveal that the country's share in total exports of couverture (industrial chocolate) from the region is fairly low, at 0.1%. Mexico and Colombia are the main exporters in LATAC. This is an untapped opportunity for the Dominican Republic, particularly in the growing organic and premium segments worldwide, given the wide availability of organic-certified raw material, low cadmium incidence and high-quality reputation. In addition, the Dominican Republic has an existing cocoa-processing and confectionery industry with high potential to tap into this opportunity, and to develop quintessentially Dominican products. Product development should be done in synchronization with market demand and buyer requirements, to match end-market sensory profiles, product presentation and format and other characteristics.

Note that the challenges in developing wider markets for Dominican couvertures and finished products, particularly in the organic segment, are more complex, since these are products require other raw materials such as sugar and milk. These raw materials are not commonly produced in the Dominican Republic under organic certification, and requires that cocoa processors, manufacturers and chocolate makers search for alternative suppliers outside of the country adding significant sourcing and logistical risks and production costs to the final product (J. Kemin, personal communication, Jul 2021) (S. Duarte, personal communication, Oct 2021).

- **Integration of new cocoa-producing regions**

There is also an untapped potential in the newly-recognized cocoa-producing regions in

the Dominican Republic by Resolution No. 2019-63 (Ministerio de Agricultura, 2019). On the one hand, regions like Barahona, Pedernales, Jimaní and La Descubierta, as well the North-West region, including Dajabón, Santiago Rodríguez and Valverde, offer potential for market linkages and sector organization within the Dominican Republic, through the articulation of producers' organizations and value chain integration into existing processors and exporters. On the other hand, there's potential to develop the cocoa sector in regions such as Barahona in parallel to the ecotourism industry.

- **Eco-tourism and Agro-tourism experience**

In general, the Dominican Republic's flourishing tourism sector has been largely disconnected from the potential and strength offered by its cocoa sector. Global tourism statistics published by the World Bank revealed that the country is the eight largest in terms of expenditure by inbound international visitors. There are different ways in which the cocoa sector could be integrated into the tourism sector:

- ***Agro-tourism:*** creation of Dominican cocoa routes and their integration into tourist itineraries.
- ***Eco-tourism:*** expansion of successful models that integrate biodiversity, agroforestry and cocoa production; example: Reserva Zorzal.
- ***Marketing of bean-to-bar:*** expansion of the bean-to-bar and tree-to-bar offers, made in the Dominican Republic, in specialized shops targeting international tourists.
- ***Factory and museum visits:*** promotion of existing opportunities for factory and museum visits in the Dominican Republic through tourist packages.

A webpage listing all touristic activities related to cocoa has been compiled by the Dominican industry. However, it is recommended that sector stakeholders together with tour operators engage in further promotion of these activities to ensure that visitors are able to navigate and include this offer during their trip to the Dominican Republic: https://www.chocolate.do/oferta-turistica.

Recommendations and potential investments in the Dominican Republic

During the research, several improvement opportunities and recommendations were grouped. As the quantity of cocoa for export from the Dominican Republic gradually increases some investments can be focused on:

Increase productivity

The main issue affecting cocoa producers is the low productivity of their farms, leading to low and insecure 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). Yield is, therefore, the most important measure in a producer's performance and many factors play a determining role in its improvement.

The role of government takes different shapes and can span across different parts of the cocoa supply chain. While governmental support is urgently needed in terms of productivity / increase in cocoa production in the DR, as well as in issues such as safety in rural areas, the government cannot / should not be highly paternalistic.

It is important to be cautious about the promises of higher prices promoted by NGOs and governments. Such promises lead to considerable extra planting of cocoa trees, resulting in deforestation and potential price drop due to surplus.

Improve cultivation systems and crop diversification

At the micro level, high yield and diversification of income (but not necessarily in agriculture) seem to be drivers of higher income for cocoa farmers (Oomes et al., 2016). Among the income increase strategies, crop diversification plays a significant role. Many participants of the focus groups and interviewees agreed that "cocoa plots should be seen as a productive system and not just a cocoa plantation". Farmer awareness, training and knowledge on how to strategically combine crops in the need for income diversification is crucial to manage risks, create an extra source of income and thereby improve their living standards. Therefore, income increase is related to the productivity of the complete agricultural system.

- Diversifying / expanding the use of other crops in the cocoa production system will require connecting them to markets to satisfy their demand. The type of support could range from financial support to capacity building support to farmers, SMEs, financial institutions, or national governments (Oomes et al, 2016).
- Establishing distribution and marketing channels for these associated crops. An idea is to

aggregate larger volumes of different agricultural products via the existing FBO. Associating members can take advantage of economies of size and bargaining power in the agricultural sector.

- Diversify in a 'dual transition' whereby the farmers that remain in cocoa would become (much) more productive, while many other cocoa farmers will diversify away from cocoa into other crops and/or other economic activities. Such a transition would require significant improvements in farmers' access to information, training, infrastructure, and finance (Oomes et al., 2016). This is especially relevant in areas where climate variability will have a greater impact as highlighted in Guharay F. report (2018) (Anonymous, personal communication, July 2021)
- It is recommended that stakeholders in chocolate-consuming countries (governments, companies, NGOs) should review the programs they support that are cocoa specific, because these increase the dependence of farmers on cocoa (Hütz-Adams & Hegger, 2018; Oomes et al., 2016). This also applies to the Dominican Republic.

Local value addition and marketing

Although the Dominican Republic is an important cocoa producing country, the local consumption market is still undeveloped. Per capita, the consumption is lower (0.30-0.36 kg per capita) than the global average consumption (0.6 kg per capita) (Euromonitor, 2020). Local production and local consumption are an easy market linkage especially with the large crowds of tourists the Dominican Republic attracts. Therefore, emphasis can be placed on promoting the cocoa country brand. (Anonymous, personal communication, July 2021)

> *The potential increase of chocolate consumption in the local market will also have an impact on the cocoa derivative consumption." – "Government support is needed to increase the country brand"*
>
> The voice of the producer

To create more value and jobs in producing countries, there is a need to move from primary processing of cocoa beans to producing chocolate or other products made from cocoa. In Latin America, Brazil has managed to create and engage a market for chocolate. (Hütz-Adams et al., 2016) – This model can be used as an inspiration for the Dominican Republic to strengthen the sector and increase local consumption.

- 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. Emphasis can be placed on promoting the cocoa country brand and advantages can be taken in the high inflow of tourists.
- Start a campaign to instill pride in purchasing nationally produced food items. The campaign Peru launched around 2010 was very successful in stimulating the consumption of national products. Instillment of national pride could therefore be used as well, countering the status of consuming imported products.

- Include cocoa 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 farmer's benefits.
- Conduct R&D to develop products suitable for different regional tastes and the hot climate (Grumiller et al., 2018).

Initiatives such as the First chocolate Festival and Awards organized by the Exporting Quality Program in December 2020 have increased consumer awareness regarding locally made chocolate and should remain in the agenda to boost local value addition.

During the fieldwork, a newly opened visitor center by Cortes Hermanos showing the historical and cultural legacy of cocoa in the Dominican Republic will serve as an incentive to engage the Dominican population and promote consumption of chocolate and cocoa preparations locally.

Market expansion and diversification

The Dominican Republic has high potential to grow in various international markets and market segments, especially in different application areas for cocoa derivatives. As pointed out previously, the country has an attractive offer in its wide availability of organic-certified raw material, low cadmium incidence and high-quality reputation. It is also a country that has a track record and existing cocoa-prodcessing industry with tradition and know-how.

In order for the Dominican Republic and its cocoa industry to optimize its access to market segments such as food and beverages, health foods and even cosmetics – segments representing prospects for cocoa derivatives – these markets must be understood in terms of their structure, requirements and market access points. This will require the implementation of tailored market intelligence targeting several promising export markets, resulting in actionable recommendations that the industry can roll out with the support from governmental agencies, donors and (impact) investors. Activities in product development and adaptation, as well as in food safety and sustainability, should be considered in terms of complying with these wider market segments and end-user industries.

Exposure to different market segments and international buyers will also require an effort in terms of export-promotion services. In this respect, the market diversification strategy of Dominican cocoa processors and exporter should be aligned with the country's export -promotion agencies in terms of:

- Participation in international trade fairs in sectors such as food and beverages, health foods, cosmetics, etc.
- Support in market orientation and B2B matchmaking
- Promotional campaigns at specific target markets
- And general trade facilitation.

Climate change resilience

Climate change leads to unavoidable events, which can have a serious impact on producers and other stakeholders in the cocoa supply chain especially in a country like DR where frequent

incidence of droughts and hurricanes occur. Measures to improve farmers' livelihoods' resilience to climate change must be integrated in all aspects:

- Innovative technical assistance tools and the inclusion of resilient crops into the productive system can help farmers mitigate the impact of climate change. 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.
- Study the feasibility to introduce a post-disaster fund or insurance scheme at the national level that will help farmers recover their cocoa trees (and other crops) in case of natural disasters such as hurricanes and other tropical cyclones as well as droughts. The Dominican Republic is a hurricane-prone country, and some of them have been responsible for the destruction of large production areas in the past, resulting in declining production outputs / yields. Experts warn that, as the planet gets warmer, tropical cyclones are likely to increase in intensity (IPCC, 2021).
- Intensify collaboration amongst actors of the cocoa sector and elaborate projects to stop deforestation and to promote reforestation.
- The promotion of agroforestry could be a good way to combine both, adaptation of the cocoa sector to climate change and greenhouse gas mitigation. These options should be explored further, as international funding is available for projects of this nature.
- Due to its crucial importance for the future of the cocoa sector, research on climate resilient cocoa varieties needs to be coordinated on a regional and global level to combine forces and accelerate progress. This also applies to complementary crops (which on occasions are overlooked); incorporating climate resilient shade and fruit trees into the systems is of utmost importance (A. Rodriguez, personal communication, July 2021).

Human resources

Sector strategies are required to develop human resources. As technification in the sector increases the country requires that their workers also have specialized skills. Therefore, it is important to build the country's human resource base to support public service, academia and the private sector.

- Invest in education programs to be able to supply a skilled labor force necessary for chocolate manufacturing.
- As the Dominican cocoa industry diversifies into new markets, particularly for cocoa derivatives and finished products, the role of regulatory and compliance professionals will be key in terms of aligning the Dominican offer to the legislative framework of these potential destination countries.
- Some of the technical skills recommended to enhance the competitiveness of the sector:
    - **Food technologists:** Expanding to new markets will require technical sales support for recipe development and product adaptation.
    - **Regulatory and compliance officers:** As the Dominican cocoa industry diversifies into new markets, particularly for cocoa derivatives and finished products, the role of regulatory and compliance professionals will be key in terms of aligning the Dominican offer to the legislative framework of these potential destination countries.
    - Market and marketing specialist to boost international exposure

Associativity to strengthen the sector

In the 'Productivity' chapter, a positive correlation was observed between productivity and associativity. Those farmers linked to a FBO can be related to the technical assistance and support received which enables the producers to make interventions to their plot in a sustainable way (Personal communication with sector experts, July 2021):

- Farmer-based organizations can strengthen the sector rather than having independent individuals. Understanding how each of the different available systems work is necessary to ensure farmers make informed decisions.
- Focus point to consider for technical training: According to the participants of the focus groups, there has been a "lack of follow-up when technical assistance programs are implemented; the producer is trained, and then they face challenges during the implementation". Training should include follow-up, so concepts and skills can be reinforced over time. It was also mentioned that, on occasions, "the individuals who receive the training are not the ones who implement it at the farm level".
- Related to the crop diversification activities, producers should be given the tools and resources to associate themselves with other producers selling crops other than cocoa, and together create other income opportunities in a sustainable way.

Youth Participation in Agricultural (Cocoa) Programs

The survey conducted during this study showed that the mean age of surveyed producers was 58.7 years old. A concern over the lack of a future generation within the sector remains and has been mentioned during personal communication with sector stakeholders (July 2021). Many producers also mentioned not having descendants to take over their business.

To secure succession of cocoa production across generations safeguards continuity of the sector, it is recommended to:

- Design programs for categories of youth concerning their aspirations. This will ensure that the youth are engaged in activities in line with their preferences, ensuring full utilization of their potential. Formal skill training on cocoa value chain activities is recommended. In line with a recommendation by Haggblade et al. (2015), these programs should be illustrated by role models in the agricultural value chain as they can show them a wide range of professional opportunities in modern agribusiness (Mabe et al., 2020).
- Motivate youth in rural areas by engaging them in innovative activities at the production level such as those related to technology and IT.
- 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).

Specialty segment caution

Approach the specialty segment with caution. The segment is fairly small, consisting of around 1.000 bean to bar makers, most of them buying less than 200 metric tons a year in total

(Personal communication with Carla Martin, July 2021). There are several sources of good-quality cocoa on the market, so competition is fierce. The relationship between buyers and suppliers is based on trust, personal connections and development around sustainability principles, and developing such channels requires dedication and time.

Accurate and up-to-date agricultural census

Quantification of developments, opportunities and challenges through data-driven decision making. This can be made possible with further investments in data collection in the agricultural sector particularly in cocoa via an up-to-date census.

During the study, sector stakeholders called for an update from the latest census conducted in 1981.

Appendix

1. Factsheet Dominican Republic

Fact sheet Dominican Republic		Source
Number of producers	42,751	(Ferreiras, 2020)
Total number of Farmer-Based Organizations	20 approximately	
Number of Associations	15 approximately	
Number of Cooperatives	4	
Number of Foundations	2	
% Associativity to a FBO	> 50%	
Number of exporters	32	CNC, 2021
Number of processors	5	CNC, 2021
Number of Chocolate Makers	15	IESC, 2021
Total exports (in tonnes) - 2019 - 2020	70095.25	
Market share Top 5 exporters		
CONACADO	21.1%	
Roig Agrocacao,SA	15.1%	
Rizek Cacao, SA	14.9%	
Biocafcao S.A	10.6%	
Hacienda Doña Maria Mercado, Eirl	6.4%	
Products exported in tonees 2019 - 2020		CNC, 2020
Cacao Sanchez	31449.18	
Cacao Sanchez Organic	11466.07	
Cacao Hispaniola	5114.81	
Cacao Hispaniola Organic	20148.99	
Cocoa butter	1452.72	
Cocoa powder	296.78	
Cocoa mass	105.96	
Chocolate products	60.38	
Cocoa cake	0.36	
Top 5 Export destinations volume in MT - Product: 18010000		Faostat,2020
United States of America	19788	
Netherlands	15392	
Belgium	7459	
Indonesia	6552	
Spain	4769	
FOB price per product in USD per tonnes		CNC, 2020
Cacao Sanchez	**2605**	
min FOB price	2208	
max FOB price	2789	
Cacao Sanchez Organic	**2814**	
min FOB price	2634	
max FOB price	3249	
Cacao Hispaniola	**3095**	
min FOB price	2933	
max FOB price	3221	
Cacao Hispaniola Organic	**3106**	
min FOB price	2941	
max FOB price	3297	
Cocoa butter	**4156**	
min FOB price	2768	
max FOB price	4684	
Stock market price 2019/2020	2370	World Bank Commodity data
Average Farm size (ha)	6.15	Gaia Cacao, producer survey
Average Yield (Kg/ha)	565,64	Gaia Cacao, producer survey

Survey sample size and municipalities

Table 49. Total number of producers surveyed per Municipality

Region	Municipality	# of producers
Central	San Antonio de Yamasá	9
	Villa Altagracia	7
East	El Seybo	16
	Hato Mayor del Rey	6
North	Altamira	10
	Gaspar Hernández	14
North Central	Bonao	12
	Tenares	7
Noth-East	Castillo	13
	Cotui	10
	Nagua	18
	San Francisco de Macoris	34
	Villa Rivas	10
South	Barahona	6
	Total	172

Table 50. Total producers surveyed by farm size

Region	Small	Medium	Large	Total
North-East	51	15	19	85
East	15	3	4	22
Central	11	3	2	16
North	11	6	7	24
North Central	9	4	6	19
South	4	0	2	6
Total producers per size	101	31	40	172
%	58.72%	18.02%	23.26%	

Survey questionnaire

Encuesta a Productores de cacao

Número de encuestado:			
Municipalidad			
Fecha de la encuesta:			
Hora de comienzo:		Hora Finalización:	
Entrevistador (a):			
Nombre del productor:			

Gracias de antemano por su participación en esta encuesta. La encuesta es confidencial y las respuestas que proporcione se utilizarán únicamente para la investigación mediante análisis estadístico. El objetivo de la encuesta es comprender mejor qué productos y canales de comercialización ofrecen los mayores beneficios para los productores de cacao en República Dominicana. Tardará unos 30 minutos aproximadamente en completarla.

Responda todas las preguntas. No buscamos las mejores respuestas; estamos interesados en comprender mejor su situación.

1. ¿Es usted el dueño o gerente de la parcela?

- ☐ Dueño
- ☐ Encargado
- ☐ Arrendatario

2. ¿Tiene los documentos legales de propiedad o tenencia de la tierra? (En caso de ser dueño)

☐ Si ☐ No

3. ¿Vendió cacao los últimos 12 meses?

☐ Si ☐ No

Si la respuesta a la pregunta 3 es “No”, detenga la entrevista y diríjase a otro agricultor de la lista o entregue la encuesta a su entrevistador.

I. CARACTERISTICAS PERSONALES

4. Género:

☐ Hombre ☐ Mujer

4. ¿Es usted miembro de una cooperativa o asociación de productores de cacao?

☐ Si ☐ No

Si la respuesta es "sí", responda las preguntas 6,7,8. Si la respuesta es "no", responda la pregunta 10

6. **¿A qué cooperativa / asociación pertenece?_____**

7. **¿Cuántos años lleva como socio(a)? _____**

8. **¿Paga una tarifa o membresía a la organización a la que pertenece?**

☐ Si ☐ No

Si la respuesta es "sí", responder la pregunta 9

9. **¿Cuánto paga anualmente? _____RD$**

10. **¿Por qué decidió no unirse a una cooperativa / asociación de productores de cacao?**

1ra razón:

2da razón:

3ra razón:

11. **¿Cuántos años lleva usted siendo productor de cacao?_____ Año (s)**

12. **¿Qué edad tiene usted? _____ Años**

13. **¿Cuál es su último nivel educativo completado?**

☐ No poseo educación formal

☐ Primaria incompleta

☐ Primaria completa

☐ Secundaria incompleta

☐ Secundaria completa

☐ Instituto / Universidad incompleta

☐ Instituto / Universidad completa

14. **¿Tiene acceso a agua potable en casa?**

☐ Si ☐ No

15. **¿Tiene acceso a servicios de electricidad en casa?**

☐ Si ☐ No

16. **¿Tiene conectividad en casa? (Refiriéndose a servicios de teléfono e internet)**

☐ Si ☐ No

II. CARACTERÍSTICAS DE LA FINCA O PARCELA

17. **¿Cuántas tareas de terreno tiene (en total)? _____ Tareas**

18. **¿Cuántas tareas de cacao tiene, aproximadamente? _____ Tareas**

19. **El terreno de su parcela tiene pendientes (lomas), es llano o tiene ambos tipos de terreno?**

☐ Llano

☐ Con Lomas

☐ Ambos

20. **Cuántos árboles de cacao tiene en su plantación? _____**

21. **¿Usted tiene otros cultivos asociados dentro de su parcela de cacao? Si la respuesta es "si", continúe con la pregunta 20**

☐ Si ☐ No

22. **¿Qué cultivos asociados está sembrando?**

- Plátano
- Yautía
- Yuca
- Zapote
- Mango
- Naranja
- Aguacate
- Maderables
- Otros

23. **Usted genera ingreso de estos cultivos?**

☐ Si ☐ No

24. **Si la respuesta es 'si', Cuánto ingreso genera al año aproximadamente? _____$RD**

25. ¿Cuántos árboles de sombra tiene en su plantación de cacao por tarea?

☐ Ninguno ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ Más de 4

26. ¿Trabaja usted en un sistema agroforestal?

☐ Si ☐ No

Si su respuesta a la pregunta 22 es 'Si', continúe con la pregunta 23.

27. ¿Qué beneficios recibe de estos sistemas agroforestales?

☐ Económico

☐ Sombra

☐ Mejoramiento del suelo

☐ Biodiversidad (presencia de aves, insectos, animales)

☐ Conservación de suelo

☐ Otro

En el caso de que sean otros beneficios, continúe con la pregunta 24

28. ¿Qué otros beneficios recibe de los sistemas agroforestales?

☐ Otros beneficios, especifique: _____

Ahora nos gustaría hacerle algunas preguntas sobre el cacao que produce y vende.

III. INFORMACIÓN SOBRE LA PARCELA O FINCA

29. ¿Usted lleva algún tipo de registro sobre la producción y los costos operativos de su parcela?

☐ Si ☐ No

30. ¿Sabe cuál fue su producción de cacao en los últimos tres años (Quintales/año)?

☐ Si ☐ No

Si la respuesta es "sí", continúe con la pregunta 27.

31. ¿Podría especificar cuánto fue la producción de cacao en los últimos tres años? (en Quintales por Año)

2018: _____ **2019:**_____ **2020:**_____

32. ¿Sabe cuál fue el rendimiento de cacao de su parcela en los últimos tres años (Quintales / tarea)?

☐ Si ☐ No

Si la respuesta es "sí", continúe con la pregunta 29

33. ¿Podría especificar cuánto fue el rendimiento de cacao (quintales /año)?

2018: _____ 2019:_____ 2020:_____

34. ¿Cuáles son las variedades de cacao que más tiene en su finca?

☐ Injerto

☐ Semilla

☐ Ambos

Especifique qué clones tiene en su parcela si lo sabe: _____

35. ¿Cuántos años tiene su plantación de cacao? _____ Años

36. Su plantación de cacao ha sufrido de plagas o enfermedades en los últimos tres años?

☐ Si ☐ No

37. Puede nombrar las plagas o enfermedades que su parcela ha tenido en los últimos tres años? _____ _____ _____

38. ¿Cómo vende su producción de cacao?

☐ Cacao en baba

☐ Cacao Fermentado (Hispaniola)

☐ Cacao seco sin fermentar (Sánchez)

☐ Otro

En el caso de que seleccionó "Otro", continúe con la pregunta 32

39. ¿Qué certificaciones tiene? – Especifique a continuación si tiene y cuánto cacao produce de cada una y cuánto paga por esa certificación.

Certificación	Si / No	Costo de la certificación anual (RD$/año)
Ninguna		
Cacao orgánico certificado		
Cacao certificado Fairtrade		
Cacao orgánico y certificado Fairtrade		
Transición		
Cacao certificado UTZ/Rainforest		
Otro		

40. ¿A quién vendió su cacao la cosecha pasada? ¿Quiénes fueron sus principales compradores? – Indique el nombre del comprador y cuánto vendió.

Nombre	Total quintales vendidos

IV. PROCESO DE DECISIÓN COMERCIAL

41. ¿Cómo decide a quién venderle su cacao?

- ☐ Por el precio
- ☐ Por la seguridad del contrato
- ☐ Por la necesidad de efectivo (dinero) inmediato
- ☐ Porque le dan acceso a insumos
- ☐ Porque le dan acceso a prefinanciación
- ☐ Porque le dan asistencia técnica
- ☐ Por la prima de comercio justo
- ☐ Otro motivo

En el caso de que seleccionó “Otro motivo”, continúe con la pregunta 36

42. Especifique otro motivo por el cual decide vender

43. Para vender su cacao, ¿usted lo vende bajo contrato?

☐ Si ☐ No

V. PROCEDIMIENTOS Y REQUISITOS DE VENTA

44. ¿Puede describir el tipo de acuerdo que tiene para vender?

☐ Contrato formal (Contrato escrito)

☐ Al momento - Sin contrato

☐ Contrato informal – (Ejemplo: cuando los intermediarios dan adelantos)

☐ Otro

En el caso de que seleccionó “Otro”, continúe con la pregunta 39

45. Especifique otro tipo de acuerdo

46. Cuáles son los requisitos que tiene la empresa/organización donde usted vende el cacao?

☐ Calidad

☐ Compromiso con el plan de acopio de la organización (plan de ruta)

☐ Compromiso con la certificación

☐ Ningún requisito

☐ Otro

En el caso de que seleccionó “Calidad”, continúe con la pregunta 41

47. Especifique los requisitos de calidad _____

En el caso de que seleccionó “Otro”, continúe con la pregunta 42

48. Especifique otro requisito/condición _____

VI. DINÁMICA DEL PODER DE NEGOCIACIÓN DE CONTRATOS

Quisiéramos saber más sobre el precio, el producto y las negociaciones de entrega a su comprador.

49. ¿Podría explicarnos más sobre el precio que usted recibe por su cacao?

- ☐ El precio es fijo (un solo precio para toda la campaña)
- ☐ Es precio es flexible (el precio varía en cada entrega al comprador)
- ☐ Otro

50. ¿De qué depende el precio que usted recibe por su cacao?

- ☐ Precios diarios (la bolsa)
- ☐ Calidad
- ☐ Certificación
- ☐ Otro

En el caso de que seleccionó “Otro”, continúe con la pregunta 45

51. Explique otros tipos de marcado de precio

52. En caso de trabajar bajo contrato, ¿cuál es la unidad de medida del término del contrato?:

- ☐ Por cosecha
- ☐ Por año
- ☐ Por volumen
- ☐ Otro, especifique: _____

53. En caso de trabajar bajo contrato, ¿cuál es la duración?:

- ☐ Menor a 1 año
- ☐ De 1 a 3 años
- ☐ Mas de 3 años

54. Si trabaja bajo contrato, ¿La calidad es parte del contrato?

☐ Si ☐ No

Si la respuesta es “Sí”, continúe con la pregunta 49.

55. Especifique de qué depende_____ _____

56. ¿Cuáles son sus condiciones de pago? (¿Cómo le pagan a usted?)

- ☐ Crédito (Se demoran en pagarle)
- ☐ Al momento (Dinero en efectivo)
- ☐ Trueque
- ☐ Otro

En el caso de que seleccionó "Otro", continúe con la pregunta 51

57. Especifique otras condiciones de pago _____ _____

58. ¿De qué nacionalidad son los empleados que usted contrató? (Puede seleccionar múltiples opciones e indicar otras nacionalidades)

- ☐ Haitianos
- ☐ Dominicanos
- ☐ Ambos
- ☐ Otras nacionalidades: _____

VII. COSTOS DE PRODUCCIÓN

Estamos tratando de comprender los costos de producción en República Dominicana. ¿Puede darnos una indicación sobre:

59. ¿Cuántos días al año dedica personalmente a las siguientes actividades en la parcela PRINCIPAL de cacao en la que trabaja? – A veces los dueños de la parcela no incluyen como costo su trabajo, por lo tanto hacemos la distinción en la tabla a continuación:

Actividad	Dueño / Miembros del hogar		Empleados contratados	
	# de personas involucradas (jornales)	Costo por día del jornal RD$	# de personas involucradas (jornales)	Costo por día del jornal RD$
Deshierbado				
Poda				
Aplicación de fertilizantes				
Control de plagas				
Control de enfermedades				
Cosecha				

Picado de mazorcas				
Fermentando (si aplica)				
El secado (si aplica)				
Transporte al comprador/ cooperativa, etc. (si aplica)				
Otro: _____				

60. ¿Qué tipos / marcas de insumos utilizó el año pasado, cuántos de ellos y cuánto le costaron?

	Nombre del producto	Cantidad	Precio por unidad	¿Cómo obtuvo el producto?
Tipo de material de siembra (injerto o semilla)				
Tipo de insecticida (litros)				
Tipo de herbicida / herbicida (litros)				
Tipo de fungicida				
Tipo de fertilizante (Sacos / Litros) (También fertilizante orgánico)				
Otros productos e insumos				

61. ¿Qué tipo de equipo, incluido el equipo de protección, utilizó usted o su trabajador contratado para el cultivo de cacao el año pasado? Y cuál fue el costo de estos artículos?

Instrucción para el entrevistador: si no pueden encontrar más equipo, pida el resto de la lista al productor

Equipo general	¿Usan esto usted y sus trabajadores? (Sí/No)	¿Cuántos artículos compró el año pasado?	Costo por artículo (RD$)
Machete			
Gancho de cosecha			
Hacha			
Azada			
Limas			
Cuchillas			
Estera de secado			
Podadora			
Pulverizador de mochila			
Otros			

62. ¿Paga usted alquiler por el uso de la finca/parcela? (Aplica en caso sea arrendatario)

☐ Si ☐ No

Si la respuesta fue "Sí", continúe con la pregunta 56

63. ¿Cuánto paga de alquiler por la parcela (monto anual en RD$)? _____

VIII. ACCESO A CRÉDITOS

64. ¿Ha recibido un crédito para invertir en su plantación, en los últimos 3 años?

☐ Si ☐ No

65. Cuéntenos por qué no ha recibido crédito?

☐ Falta de documentos

☐ Nunca lo he intentado

☐ No sé cómo hacerlo

☐ Otro motivo

En el caso de que haya seleccionado "Otro motivo", continúe con la pregunta 66

66. Especifique por qué no ha podido acceder a créditos

67. ¿Qué entidad le otorgó dicho crédito?

- ☐ Banco privado
- ☐ Banco del Estado
- ☐ Préstamos formales locales
- ☐ Préstamos informales
- ☐ Cooperativas
- ☐ Familia
- ☐ Otro

En el caso de que seleccionó “Otro”, continúe con la pregunta 61.

68. Especifique la entidad

69. Indique la tasa de interés (rango)

70. Indique el periodo base del cálculo de intereses

- ☐ Anual
- ☐ Semestral
- ☐ Mensual
- ☐ Otro

En el caso de que haya seleccionado “Otro”, continúe con la pregunta 64. En los otros casos, continúe con la pregunta 71.

71. Otro periodo

72. Duración del crédito: _____ meses

IX. OTROS COSTOS: COSTOS DE VENTA, COSTOS DE TRANSPORTE, ETC.

73. ¿Cómo se hace la entrega del producto, en cuanto al transporte?

- ☐ Empresa u organización se hace cargo del producto
- ☐ Yo lo entrego directamente a la empresa u organización

En el caso que usted haga la entrega a la empresa, continúe con la pregunta 67.

74. ¿Cuánto es el costo del transporte? - Indique un estimado anual en $RD

75. ¿Cuánto es el costo del transporte de los insumos? - Indique un estimado anual en $RD

X. Beneficios recibidos (incluidos los ingresos de la agroforestería, cultivos asociados, otros productos y actividades)

76. ¿Cuánto fue su ingreso total el año pasado (RD$)? (incluya todas las actividades económicas, incluido el cacao)

77. ¿Cuáles son sus principales fuentes de ingreso?

- Cultivo de cacao Especifique: ..... RD$/año
- Otras actividades agrícolas Especifique: ..... RD$/año
- Ganado Especifique: ..... RD$/año
- Comercio minorista Especifique: ..... RD$/año
- Otro empleo Especifique: ..... RD$/año

78. ¿Cuál es su ingreso bruto total del cacao por año?

- ☐ No lo sé
- ☐ 50,000 - 100,000 RD$
- ☐ 100,001 - 200,000 RD$
- ☐ 200,001 – 300,000 RD$
- ☐ 300,001 - 500,000 RD$
- ☐ >500,001 RD$

XI.APOYO RECIBIDO

79. En el caso que usted sea miembro de una cooperativa/asociación ¿Qué otros tipos de beneficios recibe de su cooperativa / asociación?

- ☐ Asistencia técnica
- ☐ Entrenamientos y capacitaciones
- ☐ Certificación
- ☐ “Excedente” por los quintales vendidos
- ☐ Inversión en infraestructura (ejemplo: Cajas de fermentación, secadores)

- ☐ Insumos (plantas o semillas)
- ☐ Acceso a financiamiento
- ☐ Inversiones sociales (por ejemplo, acueductos, remodelaciones de colegios o centros comunales, etc.)
- ☐ ¿Otros tipos de apoyo?

En el caso de que haya seleccionado "Otros tipos de apoyo", continúe con la pregunta 73

80. Especifique otro tipo de apoyo

81. ¿Recibe apoyo de compradores u ONG's?

☐ Si ☐ No

En el caso de que haya seleccionado "Sí", continúe con la pregunta 75 y 76

82. ¿Puede nombrar la organización/organizaciones que le presta apoyo? _____
_____

83. ¿Qué tipo de apoyo recibe de compradores u ONG´s?

- ☐ Asistencia técnica
- ☐ Capacitaciones y entrenamientos
- ☐ Inversión en infraestructura
- ☐ Acceso a financiamiento
- ☐ Inversiones sociales (por ejemplo, acueductos, remodelaciones de colegios o centros comunales, etc.)
- ☐ Otro

En el caso de que haya seleccionado "Otro", continúe con la pregunta 84

84. ¿Otros tipos de apoyo?

85. ¿Algún proyecto en el que esté involucrado?

- Si Nombre del proyecto: .....
- No

86. ¿De qué forma le conviene más vender su cacao? Indique el que le genere mayor beneficio económico

- ☐ Cacao en baba
- ☐ Convencional
- ☐ Orgánico
- ☐ Fairtrade o Rainforest A
- ☐ Cacao Sánchez
- ☐ Convencional
- ☐ Orgánico
- ☐ Fairtrade o Rainforest A
- ☐ Cacao Hispaniola
- ☐ Convencional
- ☐ Orgánico
- ☐ Fairtrade o Rainforest A

Explique un poco más _____

CANALES DE MARKETING QUE OFRECEN UNA DIFERENCIA SUSTANCIAL EN LOS INGRESOS

87. ¿Cuál de sus compradores actuales le ofrece mayores beneficios económicos?

- ☐ Intermediario
- ☐ Cooperativa
- ☐ Exportador
- ☐ Fabricante de Chocolate
- ☐ Otro, especifique: _____

Explique un poco más: _____

88. Si compara sus costos de producción de cacao orgánico (insumos y mano de obra) con sus ingresos, ¿qué diría?

- ☐ La producción de cacao orgánico no es rentable, no vale la pena
- ☐ La producción de cacao orgánico es rentable

- ☐ La producción de cacao orgánico es altamente rentable
- ☐ Otro, especifique: _____

89. Si compara sus costos de producción de cacao de Fairtrade con sus ingresos, ¿qué diría?

- ☐ La producción de FT cacao no es rentable, no vale la pena
- ☐ La producción de FT cacao es rentable
- ☐ La producción de FT cacao es altamente rentable
- ☐ Otro, especifique: _____

90. Si compara sus costos de producción de cacao Rainforest Alliance con sus ingresos, ¿qué diría?

- ☐ La producción de Rainforest Alliance cacao no es rentable, no vale la pena
- ☐ La producción de Rainforest Alliance cacao es rentable
- ☐ La producción de Rainforest Alliance cacao es altamente rentable
- ☐ Otro, especifique: _____

EFECTOS PRINCIPALES DE COVID-19

91. ¿En cuál de estos aspectos usted se vio más afectado como resultado del COVID-19?

- ☐ Precio
- ☐ Ventas
- ☐ Producción
- ☐ Costos
- ☐ Disponibilidad de mano de obra (falta de trabajadores)
- ☐ Transporte
- ☐ Compra de insumos
- ☐ Otro, especifique: _____

92. ¿Cuáles son las principales dificultades que usted tiene como productor?

- ☐ Mano de obra (cara/poca)

- ☐ Insumos caros
- ☐ Baja productividades - plantaciones viejas
- ☐ Enfermedades del cacao
- ☐ Cambio climático (huracanes)
- ☐ Otro, especifique: _____

93. ¿Alguna otra cosa importante o relevante sobre la producción de cacao que quiera compartir con nosotros?

94. Notas adicionales que quiera agregar el entrevistador:

Semi-structured interview questionnaire

Questionnaire for Producer Organizations/Manufacturers/ Exporters/

Traders/Chocolate makers in Dominican Republic

Date of interview: .....

Start time: ..... End time: .....

Interviewer:

Company and personal details	
1. Name and address of organization (postal address, email, telephone)	
2. Type of organization including further description if necessary	
3. Name of respondent, including job title/description	
Producer organization information	
4. Main activities (include services to farmers, etc.)	
5. Size (in revenue) 3 last years	
6. Number of employees (both nr. of workers: fulltime, part time, seasonal and contract)	
7. Company foundation (date)	
Number of farmers (men / women)	
Stratification on age	

Company profile (info can be collected in advance)

- Main activities
- Main products and volume
- Varieties of cacao beans used or purchased
- Main customers
- Main distribution channels
- Actual production vs installed capacity? (note for the interviewer: We would like to understand if production is at its full capacity)
- Do you have a quality management system in place?
- Do you have a food safety system in place?

Market Dynamics

Sourcing

- From whom do you source?
  - FBO: How many active / passive producers, is the farmer base growing?
  - Exporter / Processor / Chocolate maker: How many producers / coops? How many active / passive producers does the organization has?
- FBO: Is the farmer base growing? What was the membership in the last 3 years? If yes, why? If not, why?
- Certifications (e.g. Organic, FT, RFA) and/or a quality management and food system in place (e.g. HACCP, BRC, FSSC2200)?
- Market segments (bulk, certified, specialty, other)
- Which procedures does your organization follow for the purchasing of cocoa?
- Which are the relevant market requirements for your organization when purchasing cocoa beans from farmers?
  - Quality - Specify quality parameters.
  - Volume
  - Residues (do you test?)
  - Other...
- Main issues when sourcing cocoa beans? (Quality (pesticides and other contaminants, defects, etc.), consistency, volume as specified in contract, among others.
- To what extent is the post-harvest centralized? and where, who does it?
- We would like to understand the sourcing structure. Can you let us know how many actors are in between? (Example: purchasing agents, aggregators, local trader, etc.)
- Do you only work with beans from DR or do you source from another cocoa producing country? (Cite examples when interviewing: Guatemala & MX, Brazil & IC, etc.) If yes, where from?
- And related to the previous question: Do you know any DR companies that import from another cocoa producing country?
- How are the agreements between you and your buyers (spot market contract, verbal agreement, formal written contract, etc.)?
- Other requirements in terms of quality, certification, packaging, etc.?

Selling:

What's your market breakdown? - Domestic market vs. International market, %

- Main export markets, why?
- Main export products
- Main segments / main final uses
- Level / Frequency of communication with buyers
- Type of contracts (if any) and payment terms
- Main sources of problems with buyers / non-conformities
- Intention to expand domestic and/or export markets, why?
- Awareness of competitors - Who is your biggest competitor and what's your USP (Unique Selling Points)?
- Main challenges to compete in domestic and export markets
- How market information is obtained, how decisions are made, e.g. targeting the right market / buyer; pricing; etc.
- Types of promotional material - Marketing efforts (Note for the interviewer: Check website, social media channels, and prepare!)
  - Do you sell directly, if no, what's stopping you? Are you prepared?
  - What can be a benefit other than the price?

Pricing & Contract | Demand

- How are the agreements between you and your suppliers (spot market contract, verbal agreement, formal written contract, etc.)?
- In case you have contracts with your suppliers of beans, what is stated in these contracts?
  - What's the standard duration (per year, per 5-years, per season, etc.)?
  - Do you have exclusivity
  - Other aspects
- How do you pay your members / non-members for cacao delivered? Cash on delivery? Partial payment on delivery? Bonus payment after export (‹liquidación›)
- What are your contract payment terms? Do you pre-finance production?
- How do you pre-finance? Which are the finance institutions you or your suppliers work with?
- How is the farm-gate price established?
  - Do you calculate the farm-gate price after export price and deduction of administration and export costs (farmer last), or do you use a fixed farm-gate price for certain qualities for a certain amount of time? (How calculated?)
  - Do you pay certain or all farmers a premium, and if so, depending on what?
- Who has determined these prices?
- What is the duration of these price arrangements?
- How do you structure your pricing?
  - Note for the interviewer: What we are trying to understand is if for example prices are related to quality or global prices? Do they implement discounts in relation to lower quality...
- Do you pay a premium? How is it structured and what for?
- Do you have demand cycles established? (peaks and frequency)

Price structure and profit margins/product

- Note for the interviewer: We are trying to understand the cost structure in every part of the cocoa value chain. Can you share with us the overview of the breakdown in %? - Balance sheet.

1. Operational
2. Marketing
3. Raw materials
4. Labor
5. Packaging
6. Energy
7. Depreciation
8. Rent
9. Interests
10. Maintenance
11. Business taxes
12. Profits
13. Other

- Sale price per product:
  FOB | CIF | DDP
- (Note for interviewer: They might not share this info with us but it is important they know that after the analysis we would like to understand whether the processor is making enough margin) - what's affecting their profitability?)

Investments
• Where investments are most needed in order to increase the benefits for the farmers? (Note for interviewer: We would like to understand where can we advise future programs or interventions)
SWOT (strengths, weaknesses, opportunities, and threats)
• Main strengths you offer as a Dominican Republic supplier? • Main challenges of your business?   ◦ Note for the interviewer: we can give examples such as financial, marketing, quality, etc.
Main effects of COVID-19 on operations and main long-term changes due to the pandemic
• How is covid affecting your business? (Example: production interruptions, availability of raw materials, decline of productivity, demand from the market) • Expected recovery? What will change in the medium to long term? Have you seen any market innovation or opportunities triggered by the pandemic that may influence future trends?
Sustainability

• Do you feel that the sector in your country is taking action on sustainability? What is being done about:
  ◦ Deforestation
  ◦ Climate change
  ◦ Child Labor
  ◦ Gender involvement
  ◦ Youth involvement
  ◦ Other?
• What is the view of sustainability in your company/organization? Do you have any priorities?
• What are the current bottlenecks for your company to fulfil your sustainability plans?
• What do you think is needed to make the cocoa sector a more sustainable industry?
  ◦ on social level
  ◦ on economic level
  ◦ on environmental level
• What are the main bottlenecks you see to achieve this in those areas? What would you recommend?
Besides the questions of this interview, are there any other topics that you consider relevant about the cocoa industry in the Dominican Republic?

List of interviewees and Focus groups participants

Actor typology	Company
Farmer Based Organization	FEDECOVERA
Farmer Based Organization	Sierra Leone Produce & Marketing Company
Farmer Based Organization	CACAONICA
Farmer Based Organization	ACOPAGRO
Farmer Based Organization	Cooperativa Central Cacao de Aroma
Farmer Based Organization	ABOCFA
Local exporter	COFINA
Local exporter	SLPMC
Local exporter	Biji Kakao
Multinational - exporter - importer - processor	Olam Cocoa
Multinational - exporter - importer - processor	Tradin Sierra Leone
Multinational - exporter - importer - processor	Twenty Degrees Cacao
Multinational - exporter - importer - processor	Cargill
Multinational - exporter - importer - processor	Itochu
Independent trader	Bohkaf Kolonial GmbH
Independent trader	Albrecht & Dill Trading GmbH
Independent trader	Daarnhouwer
Independent trader	Ascot Amsterdam
Independent trader	Meridian Cacao
Independent trader	Uncommon Cacao
Independent trader	Albrecht & Dill Trading GmbH
Chocolate maker	Rausch
Independent trader	Buena Nota Imports
Processor	JS Cocoa
Processor	ICAM
Chocolate maker	Guittard
Processor	Machu Picchu Food
Chocolate maker	Chocolate del Caribe
Processor	Tulicorp
Processor	República de Cacao
Exporter	Guengala / Anecacao

Processor	Koa Switzerland & Ghana
Chocolate maker	Zotter Organic Chocolate Shanghai Ltd.
Chocolate maker	Tony Chocolonely
Chocolate maker	Choba Choba
Chocolate maker	Chocolate Tree
Chocolate maker	Dandelion Chocolate
Chocolate maker	French broad
Chocolate maker	Lake Champlain chocolates
Chocolate maker	French Broad chocolates
Chocolate maker	Auro Chocolate
Chocolate maker	Krakakoa
Chocolate maker	Shattell Chocolate
Chocolate maker	Cacaosuyo
Chocolate maker	Cacao Hunters
Chocolate maker	Hoja Verde
Industry expert	Tamoe Saveur Co. LTD
Related industries	Lush North America
Industry expert	Cocoa Research Center
Exporter	Agriterra
Industry expert	The Voice Network
Industry expert	Equipoise B.V
Industry expert	Independent consultant
Industry expert	Kakaoplattform
Industry expert	Summit Commercial Cocoa Consultancy GmbH
Industry expert	Independent consultant
Industry expert	Stonex
Industry expert	Rabobank Foundation
Industry expert	Blue and green solutions
Industry expert	CATIE
Industry expert	Peace corps DR
Industry expert	Fine Chocolate Industry (FCIA)

List of interviewees in preparation of trip to the Dominican Republic		
Participant name	Actor typology	Company - Institution
Omar Caraballo	Industry expert	Gaia Dominican Team
Ana Tavarez	Industry expert	Gaia Dominican Team
Abel Fernandez	Exporter	CONACADO
Bienvenido Then	Processor	Cortés Hermanos
Altair Rodriguez	Industry expert	Finca Tierra Negra
Jaime Gomez	Government	Ministerio de Agricultura
Mariolis Castaño	Government	Ministerio de Agricultura
Heriberto Paredes	Field Technician	Zorzal Cacao
Santiago Rivas	Coordinator of Escuelas de Campo	IESC & CEDAF

List of interviewees on the Dominican Republic Case Study		
Participant name	Actor typology	Company
Basilio Almonte	Industry expert	CLAC
Virginio Mueses	Farmer based organization	Fundopo
Yony Molina	Governmental	Comisión Nacional de Cacao
Isidoro De La Rosa	Farmer based organization	Conacado
Eddy De La Rosa	Exporter	Biocafcao
Franklin Gomez Burdier	Farmer based organization	Conacado
Sebastian Cardenas	Industry expert	Cacao Forest project
Janina Segura	Industry expert	Director Executive del CEDAF
Jesus Villar	Intermediary	Villamerc
Franklin Nieves	Intermediary	Hato Mayor | Seybo
Hector Reyes	Farmer based organization	Asociación de Cacaotaleros Acción y Progreso, El Valle, Hato Mayor del Rey
Cosme Guerrero	Processor	Conacado Agroindustrial
Elizabeth Burgos	Processor	Conacado Agroindustrial
Pilar Hernandez	Farmer based organization	Bloque 3 Hato Mayor
Ramón Mota Villa	Farmer based organization	Bloque 3 Hato Mayor
José Moises Gonzalez	Farmer based organization	Aprocaci
Cornelia Vásquez	Farmer based organization	Aprocaci
Eric Reid	Chocolate maker	SpagnVola
Gualberto Acebey	Exporter	Oko Caribe

Adriano Rodriguez	Exporter	Oko Caribe
Leoncio Lopez Valerio	Farmer based organization	Asociación de Cacao Orgánico de Castillo (APCOC)
Elvis Contreras	Farmer based organization	Asociación de Cacao Orgánico de Castillo (APCOC)
María Ortega Ureña	Farmer based organization	Asociación de Mujeres de Chojoba
Elida Vargas	Farmer based organization	Asociación de Mujeres de Chojoba
Yluminada Ortega	Farmer based organization	Cacao Florencio Ortega
Yifat Milz	Chocolate maker	Milz chocolate
Tomasina Sanchez	Farmer based organization	Gaspar Hernández
Sésar Rodriguez	Farmer based organization	Reserva Zorzal
Altair Rodriguez	Industry expert	Finca Tierra Negra
Edward Herrera	Intermediary | Exporter	Hacienda Doña Maria
Melvin Vargas	Farmer based organization	COOPCANOR
Gerónimo Hilario	Machinery supplier	G&N Industrial
Jaime Gomez	Governmental	Ministry Agriculture - Cacao Department
Jose Fernandez Badia	Exporter	Fernandez Badia
Orlando Rodriguez	Industry expert	Research center and germplasm bank in Mata Larga
Jose Efraim Camilo	Farmer based organization	FUPAROCA
Jens Kemin	Chocolate maker	Definite Chocolate
Visitor center	Processor	Cortés Hermanos
Daniel DaletProducer	Exporter	123Finance
Sahylis Duarte	Exporter	Rizek Cacao

List of focus groups participants for the Dominican Republic Case Study		
Participant name	Actor typology	Company
Soraya Rib	Industry expert	Independent consultant
Abel Fernández	Exporter	Conacado Agroindustrial
Yony Molina	Governmental	Comisión Nacional de Cacao
Cosme Guerrero	Processor | Grinder	Conacado Agroindustrial
Mariolis Castaño	Industry expert	Comisión Nacional de Cacao
Ana Tavarez	Industry expert	Ministry of Agriculture
Omar Caraballo	Industry expert	Consultant - GDT
Peggy Aviotti	Project stakeholder	IESC

Jose Badia	Exporter	Fernandez Badia
Harry Esquea	Exporter	Fernandez Badia
Adriano Rodriguez Cruz	Exporter	Oko-Caribe
Eddy De La Rosa	Exporter	Biocafcao
Basilio Almonte	Industry expert	Clac
Diana Munné	Chocolate Maker	Xocolat
Altair Rodriguez	Industry expert | Cocoa producer	Finca Tierra Negra
Bienvenido Then	Processor | Grinder	Cortes Hermanos
Alfredo Mena	Industry expert	CATIE
Mariel Frías Mejía	Governmental	Ministerio de Agrofinanzas y mercadeo
Fumie Hiromitsu	Exporter	Rizek Cacao
Santiago Rivas	Industry expert	CEDAF
Ramon Mosquea	Field technician	Conacado ONG
Alfonso Baldera	Field technician	Conacado ONG
Gualberto Acebey Torrejon	Exporter	OKO-Caribe
Hobi Sanchez	Intermediary	Independiente
Jesus Maria Mosquea	Producer Association	Luz Y Esperanza
Jose Efrain Camilo	Producer Association	FUPAROCA
Manuel Guillermo	Producer Association	APAVA
Virginio Mueses	Producer Association	FUNDOPO
Orlando Rodríguez	Industry expert	Estación Experimental de Mata Larga del IDIAF
Ramon Noel Rojas	Cooperative	
Luis Ezequiel González	Field technician | Producer	Agropecuaria Tobias González
Joan Manuel Heredia	Cooperative	COPROAGRO

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