CBI
Ministry of Foreign Affairs

Multisectoral Value Chain Analysis

'Connecting Central America'

Commissioned by The Centre for the Promotion of Imports from developing countries (CBI)

Profound with support from CATIE

October 2018




About the 'Connecting Central America' project

CBI's "Connecting Central America" initiative aims to strengthen 60 Small and Medium sized Enterprises (SMEs) and cooperatives from Central America, between 2018 and 2021, in becoming (more) competitive on the European market.

The initiative is part of the Central American Regional Economic Integration (INTEC) project, a project financed primarily by the European Union, and coordinated by SIECA, which aims at strengthening the economic integration in Central America and maximizing the benefits of the implementation of the Association Agreement between the European Union and Central America by reducing regional constraints to competitiveness and diversification in Central America. One of its components aims particularly at strengthening Central American capacity to trade in goods and services. Within the context of this component, CBI executes the initiative "Connecting Central America".

The "Connecting Central America" initiative consists of three stages:

1. The preparation stage (August 2017 – June 2018): including the selection and analysis of selected value chains (the current report is the result of this analysis), the final sector selection, and the selection of local partners.

2. The Promotion & Export audit stage (July – December 2018): including promotion and training activities for potential project participants (companies), a call for company applications, and the company selection, including export audit visits by European experts and financial audits by Central American financial experts.

3. The implementation stage (January 2019 – September 2021): including – at micro (company) level - training and individual coaching activities, a European market orientation mission, the development of export marketing plans and corporate social responsibility road maps by and for project participants, and European trade fair participations. This stage also includes – at meso (sector) level facilitation, coaching and training activities to address export bottlenecks or opportunities at meso (sector) level, that require collective action.

This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of CBI and can in no way be taken to reflect the views of the European Union.

Contents

1. Introduction

1.1. Context

As part of the EU-financed Central American Regional Economic Integration (INTEC) project, financed by the European Union and the Netherlands Ministry of Foreign Affairs, the Centre for the Promotion of Imports from Developing Countries (CBI) will support Central American SMEs and institutions in promoting sustainable exports to the European market in a selected number of value chains.

Based on an initial analysis CBI has – in cooperation with the EU Delegation in Managua, Nicaragua, and the Secretariat of the Central American Economic Integration (SIECA) - decided to conduct a Value Chain Analysis (VCA) in the countries of the European Union Central American Association Agreement (EU-CA AA) (Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama), to research the possibilities for support in the following five value chains (VCs):

- Specialty Coffee
- Cacao and Derivatives
- Fresh Fruit and Vegetables
- Processed Fruit and Vegetables
- Fish and Seafood

The VCA was conducted by ProFound – Advisers In Development, selected through a tendering procedure that was supervised by the procurement office of the Ministry of Economic Affairs procurement centre (Inkoop Uitvoeringcentrum EZ). The VCA was carried out between January 2018 and June 2018, from the inception to finalization phases.

The VCA aims at identifying the main constraints and opportunities for sustainable export growth from Small and Medium Enterprises (SMEs) and producer groups from Central America to Europe, and at identifying potential solutions that CBI or CBI partners can offer to address these constraints and opportunities.

Based on the findings of this analysis, CBI and partners will design an intervention strategy to support Central American SMEs and institutions in developing and promoting sustainable exports from Central America to the European market in *four* of the above of value chains.

1.1.1. Institutional background

In March 2017, the EU and SIECA signed the EUR 20 million INTEC project with the aim to strengthen the economic integration in Central America (CA) and maximize the benefits of the implementation of the EU-CA AA by reducing regional constraints to competitiveness and diversification in CA. In this project the EU will support trade facilitation and capacity to trade in Central America through three different components:

- Modernisation and convergence of the regional regulatory framework: implementing EU-CA AA commitments and the roadmap for CA Customs Union (implemented by SIECA)
- Trade Facilitation regional IT infrastructure: the CA digital trade platform (implemented by the Inter-American Development Bank)
- Strengthening CA capacity to trade in goods and services in view of taking advantage of the EU-CA AA (implemented by CBI and the International Trade Centre (ITC)).

1.1.2. CBI's experience in Central America

Between 2012 and 2017, CBI implemented the Agro Food Central America programme, which aimed at enabling around 55 participating Small and Medium-sized Enterprises (SMEs) from four countries: El Salvador, Honduras, Nicaragua and Guatemala. The agro-food sector was selected as the programme's focus sector, as the most important sector for the countries covered by the programme in terms of its contribution to exports to European market, its potential for growth and contribution to poverty alleviation. The added value which CBI expertise could bring to this sector, combined with the momentum for EU-CA trade created by the signing of the Association

Agreement, as well as demonstrated commitment from SMEs and Business Support Organisations (BSOs) from the region constituted a solid justification for CBI investment in this agro-food export programme for the Central American region. The programme covered a wide range of agricultural food products, from coffee, cacao, honey and food ingredients to fresh fruits and vegetables.

In each of the value chains selected, CBI set up a regional project. In these projects the following elements were integrated:

- Giving export coaching to small and medium-sized enterprises
- Overcoming sector-wide issues, by implementing Export Enabling Environment Support Projects
- Helping business support organisations to offer better export services
- Sharing specific market intelligence for different product-market combinations

Export coaching of the SMEs participating in the programme ended at the end of 2016. The final results of the export coaching greatly exceed the programme's original targets. At the end of 2016, 48 SME participants were rated 'competent' by external CBI experts, i.e. their business operations were on the required levels for exports to the EU and they have participated with CBI (and invested financial resources) in at least one European trade fair. Cumulative additional exports to EU/EFTA markets (measured from 2014 onwards, and compared to the baseline year 2013) amounted to € 108 million, much above the original target of € 19.6 million.

1.2. Methodology

The VCA process covered both Central America and Europe, and their inter-connectivity. The main elements researched within the VCA were:

- Key European market characteristics and Central America's competitiveness on the European market
- Structure, governance and sustainability of the value chain
- Value chain bottlenecks, risks and opportunities
- Possible solutions and support actions

1.2.1. Team composition and responsibilities

In Central America, ProFound – Advisers In Development was supported by a team of experts provided by the *Centro Agronómico Tropical de Investigación y Enseñanza* (CATIE). The team consisted of 2 cross-sector experts and coordinators, and one local expert per country (for all 6 countries):

- Cross-sector experts and coordinators: Adriana Escobedo and Sith-Ying Sanchez Mora
- Costa Rica: Evelyn Chávez Jaen
- El Salvador: Jorge Hernández
- Guatemala: María Fernanda Rivera
- Honduras: Delmy Manzanares
- Nicaragua: Samuel Ocon and Norvin Sepulveda
- Panama: José Antonio González

Extra support and advice was provided at a sector level by the experts Claudia Stella Beltrán (Fish and seafood) and Isabel Escalante (Processed fruit and vegetables).

The Central American team provided inputs for the initial desk research, organized interviews and focus groups with private and institutional stakeholders per sector, compiled country reports based on the field research findings and provided feedback on the final report (per sector and per country). These activities were structured around answering the research questions established in the VCA's Terms of Reference. The list of persons, companies and organizations consulted per country and per sector can be found in Annex I.

On the European side, ProFound was supported by a team of experts per sector:

- Specialty coffee and cocoa & derivatives: Jeroen Kruft
- Fresh fruit and vegetables: Jos Leeters
- Processed fruit and vegetables: Kasper Kerver
- Fish and seafood: Willem van der Pijl and Jasmijn Venneman

The European team of experts provided inputs related to the European market, and was responsible for the interviews with European stakeholders for each sector, and the compilation of results according to the structure of the final report – based on the research questions established in the VCA's Terms of Reference. The list of persons and companies consulted per sector can be found in Annex I.

ProFound – Advisers In Development was responsible to consolidate all results from Central America and Europe into this final report, as well as to analyze these results in order to answer the research questions established in the VCA's Terms of Reference. These activities were carried out by ProFound's coordinating expert Gustavo Ferro.

1.2.2. Action Plan

The VCA Action Plan consisted of 3 parts:

1. Desk research
2. Field research
3. Validation of results and reporting

(1) Desk research

The desk research (Inception Report) was compiled using existing materials from the supply side (Central America) and the demand side (Europe):

- Central America: Statistical baseline on the production and trade (regional and international exports, with a focus on Europe) of products or product groups within the selected value chains in the selected countries [use of databases such as FAOSTAT, ITC Trademap (complemented by national statistics agencies), Eurostat and other industry-specific databases such as the International Coffee Organisation and the International Cocoa Organization]. The European sector experts in our team, as well as CATIE's cross-sector experts, were consulted in this process so as to validate and explain the existing data. Existing articles, reports and other sources of information also helped us in elaborating on and validating these results.
- Europe: Statistical baseline on trade (imports from Central America, also compared to competing regions) of products within the selected value chains in the selected countries (using mainly Eurostat, and using CBI's product tree as a basis – Annex I). Statistics were complemented and validated by most recent and specific information on consumption patterns, trends and requirements, mainly from existing CBI Market Intelligence documents. European sector experts and CATIE's cross-sector experts contextualized these developments to the Central American region.

We have analyzed and contextualized the data for each Central American country and, in consultation with the European sector experts and CATIE's cross-sector experts, we have identified strategic points of consideration for each Value Chain. These strategic considerations lead to the selection of specific priorities in country-value chains during the field research phase in Central America.

The focus on specific country-value chain combination were based on three main elements, composed by sub-criteria (where information was available during this inception phase):

- The country has a representative export sector within that value chain:
    - There is significant or sufficient production.
    - There are existing and significant exports within the value chain. Exports are mainly linked to production, not to re-exports.
    - Export products (if applicable) and destinations are diverse (not concentrated in one trade flow / one producer / one buyer / one destination) and allow for involvement of SMEs.
    - There are noticeable trade linkages with Europe and/or potential to expand these linkages.
    - National policies / institutional support which prioritizes the sector.
- The country-value chain combination is suitable to the European market:

    - The product range matches with European market demand and requirements (in consultation with European sector experts).
    - The combination allows for access to (niche) markets offering value-addition opportunities (not bulk).
    - There are needs and opportunities for support through a future CBI programme.
- The country-value chain combination allows for the showcasing of interesting business models for a future CBI programme such as sustainable initiatives, successful market positioning, regional cooperation, etc.

This analysis has been done per value chain, and received validation and feedback from the European sector experts and CATIE's cross-sector experts. All results were reported to CBI in an Inception Report, which served as the basis for the Field research.

(2) Field research

The field research had two geographic focus points: Europe and Central America.

Europe: The information related to the European market was compiled by the European experts and ProFound's project leader through Skype and/or telephone interviews, complemented by interviews at the Fruit Logistica (Berlin, Germany) and BioFach (Nuremberg, Germany) trade fairs. The interviews used semi-structured questionnaires developed in cooperation with the European sector experts, and adapted for each value chain.

A total of 42 European company representatives and experts have been interviewed, covering all value chains. See the complete overview of European stakeholders interviewed in Annex I.

Central America: The collection of information in Central America consisted of interviews with companies and other sector stakeholders, and/or focus groups for specific value chains in each country. ProFound's coordinating expert Gustavo Ferro conducted the field research in the 6 countries together with CATIE's cross-sector experts and coordinators and the local experts (per country). This allowed for the full optimization of the local expert's network, and for the exchange between ProFound's and CATIE's experts through the entire process.

A total of 45 interviews have been conducted, in addition to a total of 10 focus groups covering all value chains. See the complete overview of companies and other sector stakeholders interviewed and involved in focus groups in Annex I.

(3) Validation of results and reporting

The reporting step incorporated the results of all activities described above, and all materials produced in the process such as desk research data, local field research reports, consultation notes with European sector experts, and summaries of interviews. The results for each value chain have been aggregated and specified per country according to relevance and data availability.

The data collected from the selected country-value chain combinations during the field research were validated against all combinations (30 combinations: 5 value chains, 6 countries) during 3 moments of the research, so as to substantiate and detail conclusions from a regional perspective:

- CBI's stakeholder conference in Guatemala City (13-14 March 2018), where representatives of sector associations and business support organizations (BSOs) covering all value chains were present. This event allowed for the contextualization of research findings and collection of further information which was used for the Value Chain Analysis final report.
- The Value Chain Analysis report was sent to CATIE's country experts for a final validation and verification round. The main research findings, particularly in terms of bottlenecks and opportunities for each value chain, were checked and complemented.
- The final Value Chain Analysis report was sent to Central American stakeholders by CBI for an extra validation and comment round, which was incorporated by ProFound.

2. Management Summary

Para el Management Summary en español, vea el capítulo 2.3.

2.1. Context and structure of the VCA document

To explore the potential of a multisectoral programme in Central America in the framework of the EU-financed Central American Regional Economic Integration (INTEC) project, financed by the European Union and the Netherlands Ministry of Foreign Affairs, the Centre for the Promotion of Imports from Developing Countries (CBI) assigned ProFound – Advisers In Development and the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) to conduct a value chain analysis (VCA) for 5 pre-selected sectors in 6 countries: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama.

The VCA was carried out between January 2018 and June 2018, from the inception to finalization phases. The research consisted of both desk and field research in Central America and in Europe.

The VCA Report is structured according to the different Value Chains: 1) Specialty Coffee, 2) Cocoa and Derivatives, 3) Fresh Fruit and Vegetables, 4) Processed Fruit and Vegetables and 5) Fish and Seafood, and addresses the following elements for each Value Chain:

- Key European market characteristics and Central America's competitiveness on the European market
- Structure, governance and sustainability of the value chain
- Value chain bottlenecks, risks and opportunities
- Proposed solutions and support actions

The main findings and conclusions for each value chain are described below:

2.2. Main findings and conclusions

2.2.1. Specialty coffee

Coffee is a highly significant sector, and part of the economic and institutional fabric, in all 6 Central American countries covered in this value chain analysis. The sector involves hundreds of thousands of stakeholders: (small, medium-sized and large) producers and their communities, cooperatives/federations/associations, local traders, processors and exporters; not to mention service providers, technicians, institutional personnel and other value chain actors. As such, coffee has important impact on rural incomes and livelihoods, and on the general economy of Central American countries.

Following the coffee rust crisis, the sector is even more present on the agendas of national governments, as well as in the activities of international cooperation agencies present in the region. It has also spurred research and regional cooperation, especially regarding climate change resilience and related subjects such as genetic varieties.

Central American coffee is of great interest to the quality-oriented European market. The region furnishes complex, high-altitude Arabica coffees with multiple social and ecological certifications which matches current European market trends. This is sought after by both regular and specialty coffee buyers, who are active on a market showing stable growth in the long term – but which is marked by diversity and strong competition.

Central American countries also compete for similar coffee markets. Intra-regional trade is limited in the region, and this is not an aspect that can change in the short term. The coffee industry is highly institutionalized and regulated, and each country invests highly in promoting and positioning their origins and micro-regions on the international market. However, there're increasing opportunities for regional collaboration. The research identified potential in intra-regional cooperation by utilizing existing activities, such as the organization of regional pavilions at international trade fairs, and the involvement of regional organizations and platforms in such activities, most importantly PROMECAFÉ.

In terms of its sustainability risks and opportunities, the coffee sector still presents challenges which halt its development, but which have shown important progress in recent years. An example is child labour, which has received strong attention from several initiatives in Central America involving the private sector. In terms of fair pricing to producers, the lack of minimum price-setting mechanisms and high level of intermediation still pose a challenge in rewarding producers for their coffee in some countries. The environmental impact of the sector is also negative when it comes to waste management and chemical use; in spite of existing efforts, the sector still has problems in these areas. On the other hand, the high level of shade-grown coffee in Central America mitigates the impact on forest and biodiversity.

The main bottlenecks and opportunities identified on the specialty coffee value chain, as well as the possible solutions and support actions for the CBI programme were:

SPECIALTY COFFEE

Bottlenecks

A. *Insufficient technical assistance for quality and productivity improvement*

B. Strong presence of intermediaries affects quality and traceability

C. Producers have limited access to credit

D. Insufficient knowledge of the international/ European market

E. Lack of managerial capacities at cooperative and SME level

F. Disconnected initiatives at national level

G. Some Central American countries have coffee-branding issues

Opportunities

A. Cooperatives in Central America create scale and capacities for small producers

B. Central America has several success cases in market positioning

C. Regional collaboration for Central American coffee has an existing platform

D. Coffee is high on the international cooperation agenda

E. Soil management is crucial, and Central America has experience on the subject

Proposed solutions and support actions

A. Inclusion of cooperative-exporter partnerships in the Export Coaching Programme (ECP)

Related to constraints:
- (A) Insufficient technical assistance for quality and productivity improvement
- (B) Strong presence of intermediaries affects quality and traceability
- (D) Insufficient knowledge of the international/European market
- (E) Lack of managerial capacities at cooperative and SME level

Related to opportunities:
- (A) Cooperatives in Central America create scale and capacities for small producers

B. Technical training and dissemination of best practices

Related to constraints:
- Mainly (E) Lack of managerial capacities at cooperative and SME level
  But also related to:
- (A) Insufficient technical assistance for quality and productivity improvement
- (B) Strong presence of intermediaries affects quality and traceability
- (D) Insufficient knowledge of the international/European market

Related to opportunities:
- (A) Cooperatives in Central America create scale and capacities for small producers
- (B) Central America has several success cases in market positioning

- (C) Regional collaboration for Central American coffee has an existing platform
- (E) Soil management is crucial, and Central America has experience on the subject

C. Support regional participation at SCAE; support the involvement of PROMECAFÉ

Related to constraints:
- (G) Some Central American countries have coffee-branding issues
- (F) Disconnected initiatives at national level

Related to opportunities:
- (C) Regional collaboration for Central American coffee has an existing platform
- (B) Central America has several success cases in market positioning

D. **Organize buyers' missions in Central America**

Related to constraints:
- (G) Some Central American countries have coffee-branding issues
- (D) Insufficient knowledge of the international/European market
- More indirectly: (A) Insufficient technical assistance for quality and productivity improvement

Related to opportunities:
- (C) Regional collaboration for Central American coffee has an existing platform

E. Digital directory of tools and best practices

Related to constraints:
- (A) Insufficient technical assistance for quality and productivity improvement
- (F) Disconnected initiatives at national level

Related to opportunities:
- (C) Regional collaboration for Central American coffee has an existing platform
- (B) Central America has several success cases in market positioning
- (D) Coffee is high on the international cooperation agenda
- (E) Soil management is crucial, and Central America has experience on the subject

2.2.2. Cacao and derivatives

The cacao sector in Central America has faced structural problems in the last decades. Production and productivity remain low, and the sector's economic impact is limited when compared to other value chains investigated. However, cacao is experiencing a phase of revival in the region, further incentivized by a growing international market and a number of national and international programmes and projects. The presence of European companies in Central America, notably Ritter Sport and Chocolats Halba, has further benefitted the sector and safeguarded an export market for the region's cacao. While Nicaragua and Honduras register the highest production volumes in Central America, each country has ongoing activities related to cacao bean exports and processing.

Generally, cacao is one of the sectors in this multi-sectorial value chain analysis providing most growth potential, also in terms of impact. Cacao is grown in agro-forestry systems, and engages thousands of small producers (and their families), commonly organized into cooperatives and secondary cooperatives. It is also a natural alternative for lower regions affected by global warming, and where higher-quality coffees can no longer be produced. In fact, many cooperatives in Central America are already starting to grow and export cacao in addition to their current core business of coffee. This transition is also increasingly receiving institutional attention.

In terms of market demand, cacao profits from an international (particularly European) market which offers continuous (and growing) demand for the product. In addition, a severe shortage worldwide is expected in the coming years due to ageing plantations and population growth, fueling demand further. The decline of Venezuelan plantations during its lingering political and economic crisis and the decline of Ecuador's reputation may offer extra opportunities to Central America.

Central American cacao has nutty and complex flavour characteristics that are sought after in the high-quality chocolate market, which is the fastest-growing segment in Europe. The focus for

Central American suppliers should be on quality (not quantity), as the region is not competitive in volume-oriented markets.

Cacao also provides potential in value addition processes. Currently, cacao beans are exported from neighbouring countries to a professional and certified chocolate plant in Northern Honduras and processed into semi-finished products (derivatives) like liquor, butter and couverture. However, the industry is still restricted by insufficient cacao bean supplies and an immature export market for value-added cacao products.

The level of intra-regional trade and cooperation in cacao is the highest among the different value chains investigated. On the one hand, competition amongst Central American countries causes no serious issues, since cacao production is limited. On the other hand, the industry has organized itself around regional organizations, a milestone being the creation of the cacao sector association AMACACAO with its trademark CUNAKakaw.

The sustainability risks and opportunities in the cacao value chain are mainly affected by social elements. There are mixed reports on the representativity of women within the sector. There is an evident engagement in the first steps of the value chain, and in the production of artisanal chocolate, but a limited role in decision-making positions. On the other hand, the sector is widely covered by certifications which improve its sustainability record. In addition, the cacao sector shows a high level of community engagement and technical assistance to producers, particularly in chains developed for export markets in Europe. However, the research also showed that there are producing communities which remain excluded from export chains and do not profit from support.

The main bottlenecks and opportunities identified on the cacao and derivatives value chain, as well as the possible solutions and support actions for the CBI programme are:

CACAO AND DERIVATIVES

Bottlenecks

A. Cadmium: a non-tariff trade barrier for Central America's cacao to Europe

B. Low production and productivity fail to meet demand

C. Quality issues arising from post-harvest processes diminish export offer

D. Low diversification and knowledge of export markets

E. Lack of managerial capacities at cooperative level

F. Value addition faces supply and demand issues

Opportunities

A. Central American cacao is sought after for its quality

B. Cacao as a diversification strategy for coffee

C. Central American cacao benefits from projects and private investments

D. Local initiatives create social impact

E. Possibility for value addition, but market needs to be developed

F. Regional organization and quality standard

Proposed solutions and support actions

A. Inclusion of small producers into export chains

Related to constraints:
- (B) Low production and productivity fail to meet demand
- (C) Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (B) Cacao as a diversification strategy for coffee

- (D) Local initiatives create social impact

B. **Organize buyers' missions in Central America**

Related to constraints:
- (D) Low diversification and knowledge of export markets
- (F) Value addition faces supply and demand issues
- To a smaller extent (C) Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (A) Central American cacao is sought after for its quality
- (E) Possibility for value addition, but market needs to be developed

C. Technical training and dissemination of best practices

Related to constraints:
- (F) Lack of managerial capacities at cooperative level
- To some extent (C): Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (D) Local initiatives create social impact

D. Mapping the risks and solutions for cadmium

Related to constraints:
- (A) Cadmium: a non-tariff trade barrier for Central America's cacao to Europe

Related to opportunities:
- (A) Central American cacao is sought after for its quality

E. Development of quality protocols, harmonization of quality

Related to constraints:
- (C) Quality issues arising from post-harvest processes

Related to opportunities:
- (A) Central American cacao is sought after for its quality
- (F) Regional organization and quality standard

F. Mapping of cacao varieties and flavours

Related to constraints:
- (C) Quality issues arising from post-harvest processes

Related to opportunities:
- (A) Central American cacao is sought after for its quality
- (F) Regional organization and quality standard

G. Digital directory of tools and best practices

Related to constraints:
- (B) Low production and productivity fail to meet demand
- (C) Quality issues arising from post-harvest processes

Related to opportunities:
- (C) Central American cacao benefits from projects and private investments
- (D) Local initiatives create social impact

H. Trade fair participation and regional representation

Related to constraints:
- (D) Low diversification and knowledge of export markets
- (F) Value addition faces supply and demand issues

Related to opportunities
- (A) Central American cacao is sought after for its quality
- (E) Possibility for value addition, but market needs to be developed

2.2.3. Fresh fruit and vegetables

The fresh fruit and vegetable sector is very significant to the development of Central America's rural areas, highly influenced by government policies and programmes related to agricultural production and exports. Central America's production and exports of fresh fruit and vegetable (and export-competent companies in this sector) are mainly concentrated in Costa Rica, Guatemala, Honduras and, to a certain extent, in Panama. Nicaragua and El Salvador may have isolated success cases, but the wider sector is still restricted by productivity and infrastructural issues.

The types of companies involved in the sector are mixed. Central America is marked by a strong presence of 4 multinationals (Del Monte, Chiquita, Dole and Fyffes) which are vertically integrated and dominate the chains for bananas, pineapples and partially for melons. However, there are also independent producers and SME exporters who are able to take a position in niche markets. In addition, there are interesting opportunities in other products/product groups in which producers/SMEs are engaged such as leguminous vegetables, Asian vegetables, berries, avocados and sweet potatoes.

The European market for fresh fruit and vegetables shows growth prospects for Central America. European importers foresee an ongoing growth of the market for exotic and tropical fruit in the next years, and the risk of market decline is generally very low. There's continuous demand for larger product categories like banana and pineapple, but also increasing opportunities for products such as (Hass) avocado, blueberries, exotics (examples: passion fruit, papaya, granadilla, maracuya, kiwano, cherimoya and carambola), mini-vegetables and leguminous vegetables (sugar snaps and mangetouts). Organic assortments also show potential, with examples in passion fruit, citrus, ginger and sweet potatoes. However, Central America has limitations in organic production.

European importers are generally interested in fruit and vegetables from Central America, but concerns related to illegal activities in drug trade and identity fraud were mentioned during the interviews. In addition, Central American suppliers can only remain competitive on the European market under strict conditions related to quality, low MRLs and certifications. GlobalG.A.P. is a minimum requirement and an unnegotiable condition for market access. Social certifications like GRASP and SMETA are becoming market entry requirements as well. Efficiency, which results in a competitive pricing, will also be essential for Central America's competitiveness. The research showed that Central America is not competitive in the price aspect when compared to Asian suppliers, for example.

Central America shows some activity in intra-regional trade for fresh fruit and vegetables. But the trade flows mainly indicate that these products are imported for domestic consumption; physical consolidation of supplies (for exports) amongst suppliers in different countries is currently not realistic.

In spite of several initiatives in government programmes and certifications, the sustainability performance of this sector is still affected by the overuse of agrochemicals and deforestation, the latter mainly resulting from the expansion of production areas. From the social perspective, child labour and decent work aspects also affect the value chain, even though the private sector is taking actions at national and regional levels to tackle these issues. Fair pricing and land ownership show mixed reports.

The main bottlenecks and opportunities identified on the fresh fruit and vegetables value chain, as well as the possible solutions and support actions for the CBI programme are:

FRESH FRUIT AND VEGETABLE

Bottlenecks

A. Inconsistency in quality

B. Limited implementation of certifications: GAP, social and organic

C. Lack of managerial capacities at cooperative and SME level

D. Producers have limited access to finance

E. Insufficient attention to logistics and cold chain management

F. Limited knowledge of the European market

G. Low volumes and little consolidation

H. Lack of connection to food industries

I. Phytosanitary controls halt exports

J. Lack of harmonized food safety measures and controls in Central America

Opportunities

A. Technical cooperation and capacities are strong at the regional level

B. National initiatives for the sector can be optimized

C. Identification of niche markets and new segments

Proposed solutions and support actions

A. Support technical and scientific exchange in Central America

Related to constraints:
- (A) Inconsistency in quality
- (B) Limited implementation of certifications: GAP and social
- (C) Lack of managerial capacities at cooperative and SME level

Related to opportunities:
- (A) Technical cooperation and capacities are strong at the regional level

B. Technical assistance for certification

Related to constraints:
- (B) Limited implementation of certifications: GAP and social

Related to opportunities:
- (A) Technical cooperation and capacities are strong at the regional level
- Somewhat related to (B) National initiatives for the sector can be optimized

C. Participation in trade fairs and guided visits

Related to constraints:
- (E) Insufficient attention to logistics and cold chain management
- (F) Limited knowledge of the European market

Related to opportunities:
- (C) Identification of niche markets and new segments

D. Sector strategy for logistical improvement

Related to constraint:
- (E) Insufficient attention to logistics and cold chain management

E. Tailored market studies

Related to constraints:
- (E) Insufficient attention to logistics and cold chain management
- (F) Limited knowledge of the European market

Related to opportunities:
- (C) Identification of niche markets and new segments

F. Management training and dissemination of best practices

Related to constraints:
- (C) Lack of managerial capacities at cooperative and SME level

Related to opportunities:

- (B) National initiatives for the sector can be optimized

G. Support the regional harmonization of phytosanitary control

Related to constraints:
- (I) Phytosanitary controls halt exports
- (J) Lack of harmonized food safety measures and controls in Central America

H. Support a pilot on volume consolidation at the regional level

Related to constraints:
- (G) Low volumes and little consolidation
- (J) Lack of harmonized food safety measures and controls in Central America

Related to opportunities:
- (B) National initiatives for the sector can be optimized

2.2.4. Processed fruit and vegetables

The European market for juices, dried, frozen, canned or otherwise processed fruits and vegetables offers many opportunities for Central American suppliers of natural and healthy products, such as fruits and vegetables which are preserved without sugar syrup or other additives. Currently, Central America is already a main supplier of processed pineapple, banana and (water) melon. The processing industries around these products are concentrated in Costa Rica and Guatemala and mainly consist of large companies with access to large volumes of raw materials supplied by fresh fruit and vegetable producers. In addition to these large companies, SMEs also have opportunities to access the European market and contribute to creation of exports and employment. SMEs offer interesting niche products such as healthy and exotic processed fruits and vegetables.

By definition, processing adds value to products. The most highly valued processing methods in Europe are those that preserve nutrients and appearance of fruits and vegetables, while maintaining a low microbiological activity. European standards on such quality characteristics are strict and only companies able to comply with those product standards can benefit from the market opportunities. Compliance requires advanced food safety and quality management systems such as ISO 22000, BRC or IFS. Certificates of compliance with such process standards is becoming an important requirement to enter the European market.

To improve compliance by companies with international standards on food safety and quality, the governments in Central America must first harmonize their current standards. This reduces the burden on companies to comply with different standards and stimulates intra-regional as well as intercontinental trade. Support from CBI and local BSOs with knowledge and implementation of standards and respective certification followed by trade fair participation considerably improves their access to European markets.

Processors of commodities such as pineapple, banana and melons require scale to be price competitive in the European market. Only a few Central American companies currently have such scale and many SMEs which aim to compete in these markets are struggling to achieve the required scale. First of all, they need improved access to finance for investment in scaling-up facilities and certification and for working capital to cope with European payment terms. Some banks in Central America are already providing solutions to these financial problems. Expansion or replication of these solutions is crucial to increase the number of internationally competitive SMEs in the processed fruits and vegetables sector.

Secondly, processors must collaborate with producers of fresh fruits and vegetables in clusters to improve their access to sufficient volumes of raw materials. Adding value to products which are not suitable for the fresh market is a mutual benefit for producers and processors. This provides a strong incentive to organize themselves in clusters with support from BSOs. These clusters enable collaboration on production planning, sorting and grading, and financing of production. Technical Assistance from experts of CBI and other BSOs on these topics further supports cluster development.

Niche markets are less price competitive and require less scale. Improvement of access to such markets requires distinction from competitors. Plenty of Central American SMEs already distinguish themselves with unique exotic processed products, such as hand-cut broccoli and processed products from unique varieties of pineapple. Market analysis by CBI can determine if additional products from Central America have opportunities in European niche markets.

CSR offers additional possibilities for Central American suppliers to distinguish themselves from competitors and access niche markets. In Europe, CSR is gaining importance and compliance with one or more of the following standards adds significant value to products: GlobalGAP (GRASP), Sedex Members Ethical Trade Audit, Sure Global Fair International Raw Material Assurance, EU organic. The 'Juice CSR Platform' is one of the driving forces behind compliance with these standards in the European juices sector and is a potential partner in programmes such as those of CBI which aim to improve CSR performance in Central America. SMEs will benefit strongly from programmes which improve their knowledge on relevant standards in European markets and provide support with implementation of CSR measures and respective certification.

The main bottlenecks and opportunities identified on the processed fruit and vegetables value chain, as well as the possible solutions and support actions for the CBI programme are:

PROCESSED FRUIT AND VEGETABLES

Bottlenecks

A. High volume requirements are barrier to entry for SMEs

B. High investment costs for SMEs in certain sub-sectors limit market entry

C. High raw material labour costs

D. Lack of a reliable, competitively priced, stable, and good quality supply of raw material

E. Lack of access to finance

F. Expensive transport

G. Lack of knowledge on European market

H. Lack of compliance with international standards

I. Lack of knowledge on CSR by processors

J. Underdeveloped legal framework for exports

Opportunities

A. Waste stream valorisation

B. Market development for producers of fresh fruits and vegetables

C. European demand for natural, healthy and convenient foods

D. CSR for positive distinction from competitors

E. Organic certification

F. Niche markets

Proposed solutions and support actions

A. Strengthening collaboration between producers and processors in clusters

Related to constraints:
- (A) High volume requirements are barrier to entry for SMEs
- (C) High raw material costs
- (D) Lack of a reliable, competitively priced, stable, and good quality supply of raw material

Related to opportunities:
- (A) Waste stream valorisation
- (B) Market development for producers of fresh fruits and vegetables

B. Improving access to finance

Related to constraints:
- (B) High investment costs for SMEs in certain sub-sectors limit market entry
- (E) Lack of access to finance

C. Reducing costs and time of transport

Related to constraints:
- (F) Expensive transport

D. Improving coherence in food safety standards

Related to constraints:
- (H) Lack of compliance with international standards
- (J) Underdeveloped legal framework for exports

E. Dissemination of food safety standards

Related to constraints:
- (H) Lack of compliance with international standards
- (J) Underdeveloped legal framework for exports

F. Reduction of bureaucracy

Related to constraints:
- (J) Underdeveloped legal framework for exports

G. Supporting certification of food safety management

Related to constraints:
- (H) Lack of compliance with international standards

H. Capacitating certifiers and laboratories

Related to constraints:
- (H) Lack of compliance with international standards

I. Providing guidance on more advanced quality management

Related to constraints:
- (H) Lack of compliance with international standards

J. Improving market knowledge

Related to constraints:
- (G) Lack of knowledge on European market

Related to opportunities:
- (C) European demand for natural, healthy and convenient foods

K. Supporting companies to improve social responsibility performance

Related to constraints:
- (I) Lack of knowledge on CSR by processors

Related to opportunities:
- (D) CSR for positive distinction from competitors
- (E) Organic certification

2.2.5. Fish and seafood

The fish and seafood market in Central America can be generally divided into artisanal and industrial production. Most export chains, particularly in aquaculture, are those related to industrial production, where food safety systems are well-established and companies have sufficient scale and connection to markets. Within fishery, a range of semi-industrial and larger industrial companies are active in the sector, and the chain is less vertically integrated and faces more

serious certification and traceability issues. In both cases, industrials and semi-industrial players are important employment and income generators in their areas of activity. However, several larger scale/ industrial companies are foreign-owned and cannot be included in a CBI programme.

All Central American countries report activity within the fish and seafood sector, but at different scales and potential to export markets. Honduras and Nicaragua are the largest Central American exporters in this sector, concentrating the largest shrimp companies in the region (main export product in this sector), and also exporting significant amounts of rock lobster (Nicaragua and to a smaller extent Honduras), tilapia (Honduras) and yellowfin tunas (Nicaragua). Panama is also an important player in this sector, also supplying shrimps (from aquaculture and capture) to export markets, as well as frozen fish. Costa Rica (particularly for tilapia, trout, fresh/chilled fish and shrimps) and Guatemala (predominantly shrimps) also report export activities in the sector. El Salvador has an interesting domestic market, but exports (including to Europe) are mainly related to a Spanish-owned tuna company.

Opportunities on the European market for fish and seafood vary widely per product group. Considering aquaculture, Central American shrimp is suitable for higher-end markets, and will have difficulties competing with cheaper-priced peeled treated shrimps from Asia. Central America's edge lie on its high-quality and "clean" shrimps, and ability to offer flexibility and customer service. Regarding tilapia, the European market is in decline and offers little growth opportunities for Central America. Opportunities for cobia are mainly concentrated around high-end, high-quality and high-priced markets. Within fishery, rock lobster offers interesting opportunities due to its high price and low availability, and Central America could compete by exporting mixed containers. However, competition comes from cold-water supplies from Canada. In addition, the product presents sustainability concerns. For reef fish, opportunities on the European market can be found mainly in niches such as ethnic markets and a limited number of food service markets.

There's little and sporadic activity in regional trade for fish and seafood amongst Central American countries, and most of this trade relates to illegal cross-border trade. Problems in the harmonization of standards and controls by health and food safety authorities, as well as their capacities for inspection, is an important challenge. However, there is interesting potential in integrating fisherfolk, processing plants and exporters in a regional value chain to export to Europe, taking advantage of the Association Agreement between the European Union and Central America, as well as in complementing CENPROMYPE's pilot project on regional fisheries value chains.

Most sustainability concerns for the fish and seafood sector can be found on the fisheries segment; Central America's aquaculture segment is highly regulated and certified. Decent work aspects, related to dangerous fishing methods, negative social impact and unfair payment systems especially affect the sustainability performance of rock lobster. Illegal/over-fishing is also a significant sustainability concern in this sector, affecting several species (shrimps, rock lobsters, snails, sailfish, etc.) and leading to trade restrictions.

The main bottlenecks and opportunities identified on the fish and seafood value chain, as well as the possible solutions and support actions for the CBI programme are:

FISH AND SEAFOOD

Bottlenecks

A. Production does not meet demand

B. Small producers are excluded from export market chains

C. Quality and food safety issues in artisanal sector

D. Lack of interest of fishing companies in the European market

E. Lack of sustainability certification in fisheries

F. Weak support capacities in market information

G. Lack of proper financial services and governmental support

H. Insufficient implementation of sectorial strategies for fishery and aquaculture

Opportunities

A. Strengthening trade framework Europe − Central America

B. Strengthening ties within Central America

C. There are options for inclusion of small producers in export chains

D. Compliance to certification and health standards is high in industrial segments

E. There are existing Fishery Improvement Programs (FIPs) in Central America

F. Development of aquaculture cultivation and diversification

Proposed solutions and support actions

A. Inclusion of small producers in the Export Coaching Programme (ECP)

Related to constraints:
- (A) Production does not meet demand
- (B) Small producers are excluded from export market chains
- (C) Quality and food safety issues in artisanal sector
- Creating market mechanisms to tackle (G) Lack of proper financial services and governmental support

Related to opportunities:
- (C) There are options for inclusion of small producers in export chains
- (D) Compliance to certification and health standards is high in industrial segments

B. Participation in trade fairs in Europe

Related to constraints:
- (D) Lack of interest of fishing companies in the European market
- (B) Small producers are excluded from export market chains

Related to opportunities:
- (A) Strengthening trade framework Europe − Central America

C. Support the regional strategy for European market entry and consolidation

Related to constraints:
- (H) Deficient national sector strategies for fishery and aquaculture

Related to opportunities:
- (A) Strengthening trade framework Europe − Central America
- (B) Strengthening ties within Central America

D. Support to the implementation of Fishery Improvement Projects (FIPs) and certification in fisheries

Related to constraints:
- (E) Lack of sustainability certification in fisheries

Related to opportunities:
- (E) There are existing Fishery Improvement Programs (FIPs) in Central America

E. Tailored market studies and import intelligence for Central American species

Related to constraints:
- (F) Weak support capacities in market information
- (H) Insufficient implementation of sectorial strategies for fishery and aquaculture

Related to opportunities:
- (A) Strengthening trade framework Europe − Central America

2.3. Final conclusions and value chain selection

In the context of the INTEC project / CBI's programme, each sector has potential to generate impact in terms of increased European exports and sustainability performance by Central American SMEs, in different ways and at a different pace.

The assessment of the potential impact in terms of increased exports to Europe and sustainability performance by SMEs from the Central American region, which could be brought about by a CBI programme in each sector, was consolidated according to the following elements:

- Geographical distribution in Central America
- Export potential and competitive advantage of Central America
- Number of companies involved along the value chain, especially in exports
- Value addition opportunities
- European market demand and opportunities for Central America
- Opportunities for intra-regional trade (as part of an extra-regional export value chain to Europe) and intra-regional cooperation
- Sustainability risks and opportunities
- Alignment with national strategic priorities
- Potential impact on employment generation
- Opportunities to make a positive impact on rural incomes and livelihoods

For each one of these elements, the value chains investigated in this analysis were scored from 1 to 5 (1 being lowest, and 5 being highest). The final scoring revealed the value chains which have most potential and least potential within the framework of the INTEC project / CBI's programme.

Processed fruit and vegetables scored the lowest among all sectors, with a total score of 27 points, and is the sector providing the least opportunities for a CBI programme in the region. The weakest aspects of this sector can be found in its geographical distribution in Central America and in opportunities for intra-regional trade. It also scored very low in terms of alignment with national priorities, due its low level of representation in terms of associations and other sector-specific organizations and policies, and potential impact on employment generation – related to its more capital-intensive character when compared to the other sectors.

While cacao and derivatives scored very low in the number of eligible companies, the sector's potential impact and market opportunities raised its final score, as well as its potential to spur regional trade and collaboration. Other sectors had more balanced scores, though fish and seafood's general scores were lower than specialty coffee, cacao and fresh fruit and vegetables. Market opportunities in Europe are narrower for this sector, and there are more sustainability risks involved – especially in fisheries.

Value Chain Analysis per sector

3. Specialty Coffee Value Chain

3.1. Key European market characteristics and Central America's competitiveness on the European market

3.1.1. Supply from Central America

Coffee production in Central America

Coffee is an important value chain in all Central American countries, and an important income and employment generator in the region. In Guatemala, for example, coffee accounts for over 6% of total exports, and it's the third largest agricultural export product. In El Salvador, coffee is the second largest agricultural export product, only behind sugarcane; in Nicaragua, coffee exports are only lower in value than beef exports. Honduras was the main green coffee producer in Central America in 2017[1], and coffee is the country's main agricultural product exported (22% of total exports). Honduras was followed by Guatemala and Nicaragua. In total, Central American countries produced the following volumes, with the following yearly growth or decline in relation to 2014:

Table 3.1. Central American production of coffee, in volume, 2017

Country	Production 2017 (60 kg bags)	Production 2017 (tonnes)	Growth/decline since 2014
Honduras	8,349,000	500,940	+58%
Guatemala	3,800,000	228,000	+15%
Nicaragua	2,500,000	150,000	+32%
Costa Rica	1,560,000	93,600	+6%
El Salvador	740,000	44,400	+11%
Panama	106,000	6,360	0%

Source: International Coffee Organization (ICO), 2018

Central America is known worldwide for its high-quality Arabica coffee; in Costa Rica, production of Robusta varieties was even prohibited by law until recently. The focus on high-quality Arabicas matches the European trend towards high-quality specialty coffee and ensures that Central America's product offer finds a market especially in Northern Europe.

One of the exceptions is Nicaragua, where Robusta production is currently developing. Most of Nicaragua's coffee production is of Arabica varieties (shade-grown) and is concentrated in the North Central Region of the country. The growing importance of the production of Robusta varieties in Nicaragua is geographically bound in the South of the country. Robusta production in 2016/2017 achieved a record harvest of an estimated production of 2.3 million bags which is a 7% increase compared to the previous year[2]; total coffee production in the country had a decrease of -2.9% in the same period[3]

In Guatemala, the Asociación Nacional de Café (ANACAFÉ) is also planning on investing in the production of Robusta coffees in conflict and lowland areas[4].

Coffee rust and developments in production

Several countries in Central America continue to struggle with the coffee rust outbreak[5] that first lowered output 5 years ago. The vulnerability of coffee to diseases is related to the effects of climate change on the region, as well as to the varieties grown; high-quality varieties such as Bourbon are very susceptible to plagues. Production has recovered in Costa Rica[6], Honduras, and Nicaragua during this period, but remains depressed in El Salvador and Guatemala.

The coffee sector has profited from research and several initiatives to renovate coffee farms and introduce varieties which are more resistant to diseases and generally more resilient to climate

[1] http://www.ico.org/prices/po-production.pdf
[2] https://www.coffeeandcocoa.net/2017/07/24/robusta-importance-nicaragua
[3] http://www.ico.org/prices/po-production.pdf
[4] https://www.centralamericadata.com/es/article/home/Caf_en_Guatemala_Apuesta_por_la_variedad_robusta
[5] http://www.fews.net/sites/default/files/documents/reports/AMERICA%20CENTRAL%20Informe%20Especial%20-%20sector%20cafetalero%20-%202016.pdf
[6] https://www.centralamericadata.com/es/article/home/Costa_Rica_Se_recupera_produccin_de_caf

change. At a regional level, and in cooperation amongst different government agencies and coffee institutes in target countries, the Programa Centroamericano de Gestión Integral de la Roya del Café (PROCAGICA) (ongoing: 2016-2021) has been the most comprehensive initiative in this direction.

The different approaches of different countries/coffee institutes have had mixed results in Central America, thus explaining their recovery rates. The introduction of more resistant varieties in Honduras is perceived to have lowered the cup quality, but they have stabilized and increased production[7]. El Salvador renewed its commitment to quality with the introduction of new Bourbon trees and Pacamara varieties, and production is expected to be normalized in 2020 or 2021. For Guatemala, production numbers are also improving at a gradual rate. The Asociación Nacional del Café (ANACAFÉ) is working with the Ministerio de Agricultura, Ganadería y Alimentación (MAGA) in order to improve the renovation of coffee estates, and a constantly growing production is expected in the coming four years.

With better practices and other (more resistant) varieties, we now see production increasing, especially in Honduras. However, with climate change looming over the coffee sector, it is not unlikely that outbreaks of the same rust or other plagues will be seen in the future. In addition, hybrids previously immune to rust (example: Lempira) are gradually losing resistance to the changing fungi in the region, which is a further threat to the coffee sector.

Certified coffee production in Central America

Central America's coffee production is multi-certified. The main certification schemes for coffee worldwide, and the position of Central American countries, are:

- UTZ Certified & Rainforest Alliance (merged in January 2018)[8]: Honduras, Nicaragua and Guatemala are in the top 6 countries supplying UTZ coffee to the market of around almost 5 million 60 kg bags globally. Guatemala (5.9% of total worldwide Rainforest Alliance production), Honduras (5.1%), Nicaragua (4.1%) and El Salvador (1.7%) are among the largest producers of Rainforest Alliance-certified coffee worldwide[9].
- Fairtrade[10]: Honduras (6% of total worldwide Fairtrade production, in volume), Nicaragua (5%) and Costa Rica (4%) were among the top 10 producers of Fairtrade-certified coffee worldwide in 2017[11].
- Organic[12]: Honduras has the largest area of organic coffee production in Central America, at 23,500 ha. (6.1% of the country's total coffee production in 2016), followed by Nicaragua (12,257 ha. / 10.2%), Guatemala (8,425 ha. / 3.1%), El Salvador (1,240 ha. / 0.9%), Panama (953 ha. / 5.7%) and Costa Rica (696 ha. / 0.8%)[13].
- The Common Code for the Coffee Community (4C) (verification rather than a certification scheme; acquired in 2018 by MEO Carbon Solutions)[14]: Honduras accounted for 3% of total worldwide supplies of 4C coffee in 2017[15].

Specific companies also have their own certification/verification schemes. The most important ones are C.A.F.E. Practices (Starbucks)[16], present in all Central American countries[17], and Nespresso AAA[18].

Coffee exports from Central America

[7] https://medium.com/@FalconCoffees/honduras-specialty-agronomy-project-3fa55c3d48a1
[8] https://utz.org/merger/
[9] https://www.rainforest-alliance.org/sites/default/files/2018-03/RA_Impacts_2018_0.pdf
[10] https://www.fairtrade.net/
[11] 2018 FLO stats
[12] https://www.ifoam.bio/
[13] https://shop.fibl.org/CHen/mwdownloads/download/link/id/1093/?ref=1
[14] http://www.globalcoffeeplatform.org/latest/2018/new-ownership-for-the-4c-verification-scheme-will-result-in-benefits-for-the-coffee-sector#newsarticle
[15] 4C Data Year 2017
[16] https://www.starbucks.com/responsibility/sourcing/coffee
[17] https://www.conservation.org/publications/Documents/2011_2012_Starbucks_CAFE_Practices_Results_Assessment.pdf
[18] https://www.nestle-nespresso.com/newsandfeatures/nespresso-aaa-sustainable-quality-tm-program-a-triple-win-collaboration-between-nespresso-and-the-rainforest-alliance

The coffee that is being exported from Central America to Europe is in the form of raw material. The amount of processed (roasted) coffee is negligible. The European coffee-roasting industry is robust, traditional and technology-intensive, presenting a great barrier for exporters in producing countries. The speciality coffee segment is fragmented into small European roasters, who themselves compete with the mainstream market. Their proximity to the market and knowledge on specific consumer tastes gives them an important competitive advantage over roasters from outside of Europe. The few success cases usually equate heavy investments in marketing, strong partnerships in Europe and well-thought of strategies for market entry and consolidation. As such, roasted coffee is not included in this analysis.

Regarding green coffee, a differentiation can be made between regular and specialty coffee. Subsequently, specialty coffee can be divided in Full Container Load (FCL) and Less Container Loads (LCL) or so-called micro lot coffee. However, micro lot coffee represents such small volumes that it does not have a real impact on exports.

Green coffee exports for Central America are forecast nearly flat at 16.2 million bags. Approximately 40% of the region's exports are destined for the United States, followed by 35% to the European Union[19]. Within Europe, Germany and Belgium count as the main export markets. Honduras is not only the main Central American supplier of coffee, it is also perceived as the sleeping giant of Central America within the organic market. There is a significant potential for organic coffee supplies, which largely explains why 60% of Honduras' coffee exports are destined to Europe (and specifically Germany). Europe is the world's largest organic market, behind the United States.

Table 3.2. Central American coffee exports and main export markets, 2016

Country	Exports 2016 (volume / value)		Growth/decline since 2014	Main export markets
Honduras	309,923 tonnes	USD 858 million	+5%	Germany (29%), USA (22%), Belgium (9%)
Guatemala	181,799 tonnes	USD 650 million	+5%	USA (33%), Japan (20%), Canada (13%)
Nicaragua	116,113 tonnes	USD 422 million	+12%*	USA (60%), Canada (8%), Germany (5%)
Costa Rica	75,495 tonnes	USD 308 million	+19%	USA (52%), Belgium (14%), Germany (4%)
El Salvador	29,308 tonnes	USD 109 million	-7%	USA (43%), Japan (13%), Germany (8%)
Panama	813 tonnes	USD 4 million	-28%*	USA (30%), Chinese Taipei (15%), Japan (10%)

Source: ITC Trademap, 2018
**2015 data*

3.1.2. European demand

European coffee demand and imports from Central America

Europe accounts for nearly 30% of the global coffee consumption. European consumption increased slightly by an annual rate of 0.5% between 2011 and 2015. In 2015, coffee consumption in the European Union amounted to 2.5 million tonnes (41.6 million 60 kg bags).

Together, all Central American suppliers accounted for around 9% of total European coffee imports in 2016 (3.4 million tonnes or € 8.0 billion). The overview of European imports of green coffee from Central America reveals the following figures:

Table 3.3. European green coffee imports from Central America and main European markets, 2016

Country	European imports from Central America 2016 (volume / value)		Growth or decline since 2012, annual (volume / value)		Share of total exports destined to Europe and main European markets[20]
Honduras	196,977 tonnes	€ 549 million	+0.2%	-7%	62% (Germany, Belgium)
Guatemala	37,166 tonnes	€ 140 million	-11%	-12%	22% (Belgium, Germany)
Costa Rica	24,406 tonnes	€ 103 million	-1%	-2%	32% (Belgium, Germany)
Nicaragua	25,234 tonnes	€ 84 million	-3%	-6%	24% (Belgium, Germany)
El Salvador	7,610 tonnes	€ 26 million	-25%	-28%	27% (Germany, UK)
Panama	1,001 tonnes	€ 4.5 million*	4%	3%	17% (Germany, Netherlands)

Source: Eurostat, 2018
*Inconsistent with ITC Trademap data on Panama's exports: Eurostat data indicate a much higher value of Panama's coffee supplies to Europe.

[19] https://apps.fas.usda.gov/psdonline/circulars/coffee.pdf
[20] Calculations ITC Trademap (HS code: 0901)

Even though Europe represents a large coffee market, it is also a saturated one. As a result of saturation, consumption is expected to remain stable in the long term. Increased opportunities can however be found for high-quality and specialty coffees, especially those of Arabicas varieties. Central American furnishes complex, high altitude Arabica coffee with multiple social and ecological certifications which matches current European market trends. This is sought after by both regular and specialty coffee buyers.

Especially for European buyers of mainstream certified coffee, marketed in Full Container Loads (FCL), price is important – but without compromising quality. When dealing with microlots, marketed in Less than Container Load (LCL), price is less of an issue to European buyers, and quality is by far the most important factor.

European market developments

As pointed out above, the coffee market in Europe is steady, but there is a trend of substituting the lower quality for higher quality and/or certified product. The high quality Central American coffee (particularly known is Guatemala) will work well in this trend. However, this trend is a slow process and the top quality segment remains a niche market.

For the conventional bulk coffee there are buyers as well, mostly for Southern and Eastern European roasters that roast the coffee darker to get rid of defects. For producing countries where volume is traditionally high (and increasing rapidly, like in Honduras) conventional coffee for large roasters of supermarket coffee or French and Italian espresso are therefore also interesting.

However, quality seems to be an overriding factor for most European buyers; in a study conducted by Boot Coffee Consulting and Daniel Humphries for Central America, only 0.7% responded that they look at the lowest price and not quality[21]. An opportunity may also be to invest in relationships with buyers: 37% of 50 respondent coffee companies stated that "direct relationships with producers are key for our purposes".

In terms of sustainability, even mediocre quality coffee will need some sort of certification nowadays[22]; it's becoming quite standard. 51% of the interviewed companies in the study by Boot Coffee Consulting and Daniel Humphries state that they buy "considerable quantities certified coffee". The importance of each certification scheme in Europe varies from country to country:

- Rainforest Alliance: Total global sales of Rainforest Alliance-certified coffee amounted to 229,564 tonnes in 2017. Around 54% of total sales took place in Europe, plus 11% in the United Kingdom. Germany, The Netherlands and France are also important European markets. European sales had a 19% increase in relation to 2016, but declined by 15% in the United Kingdom.
- UTZ: Demand for UTZ-certified coffee comes mainly from private labels in Western Europe and brands in Northern Europe. It is most popular in the Netherlands, Germany, Belgium, Switzerland and Nordic markets[23]. Most of the retailers (examples: Ahold, Aldi, Edeka, Lidl, Jumbo, Migros, Rewe etc.), as well as coffee roasters and brands (examples: Jacobs Douwe Egberts, Lavazza, Paulig, Tchibo, etc.) in these countries offer UTZ-certified coffees.
- Organic: Europe accounts for 36% of the total organic products consumption worldwide[24]. The popularity of organic certification for coffee in specific countries follows the general market for organic products in Europe. The largest national markets for organic foods are Germany (28% of the European market), France (20%) and Italy (8%).
- Nearly 80% of Fairtrade products were sold in Europe in 2015[25]. The market for Fairtrade coffee is largest in the United Kingdom and Germany.

[21] El Mercado Para Cafés Centroamericanos - San Pedro Sula, Honduras; Mayo 2014 - Daniel Humphries and Boot Coffee Consulting
[22] https://www.cbi.eu/market-information/coffee/sustainable-coffee/
[23] https://utz.org/wp-content/uploads/2017/05/List-of-UTZ-certified-coffee-supply-chain-actors.pdf
[24] https://shop.fibl.org/CHen/mwdownloads/download/link/id/1093/?ref=1
[25] http://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/State-of-Sustainable-Market-2017_web.pdf

Note that there is currently an oversupply of certified coffees on the market, creating a so-called "certification gap"; as a result, not all certified production is sold as certified coffee with a premium on European/international markets.

In addition, the most high-end coffee (micro lot coffee) is the type that does NOT need certification, as its quality and traceability to farm level is so high that it goes "beyond certification". Increasingly, HACCP protocols are asked for to avoid toxins.

European market segmentation

Market segmentation in terms of qualities can be described as: mainstream coffee (may be a blend of Robusta and Arabica, contains more defects), specialty coffee (100% Arabica, may be of origin), certified coffees (overlap mainstream and specialty), micro lot coffee (high-end specialty and beyond certification).

A geographic segmentation in Europe is visible when looking at the different coffee varieties that are most consumed. In Northern Europe, Arabica varieties are most prevalent. In Southern Europe, where a taste for strong espresso coffee is favoured, the stronger Robusta coffee is commonly used in blends. Robusta also gives more "cream" in the coffee, which is sought after in these markets.

Due to technological advantages, there are new ways of processing Robusta coffees, which are becoming more popular for a wider range of European buyers[26]. Famous are, for instance, the "Monsoon Malabar" from India, a washed Robusta. The growth of Robusta within the specialty coffee market also makes it an increasingly attractive market. For example, the Coffee Quality Institute[27] has introduced training and capacity to R-graders, which is the Robusta analogue to Q-graders (in charge of assigning a score according to cupping protocols of Arabica varieties).

3.1.3. Market trends

Opportunities and threats

Within the market for specialty coffee, the following developments which have implications for Central American suppliers stand out[28]:

Single origin: The origins of coffee are receiving increasing attention from the industry and consumers. Single origin is associated to high-quality and unique coffees from a certain region or country, and it is strongly linked to story-telling and marketing aspects.

In Central America, Guatemalan Antigua[29] and Acatenango, Honduran Marcala[30], Panama's Café de Renacimiento and Café de Boquete, and Costa Rican Tarrazú[31], for example, have a Designation of Origin. In principle, Designation of Origin is an opportunity for Central American producers/exporters to get better prices and potentially combine single origin coffee production with agro-ecological tourism. But this combination of factors is not a feasible opportunity for a large share of the producers, since not all are situated in these areas which can combine high-quality, unique coffees with a touristic experience. In other countries like Nicaragua, there are several initiatives (and potential[32]) which highlight the coffee production zones and their particularities (example: Jinotega).

While not new to the market (the single origin trend has been developing over the last 20 years), there are still a lot of potential customers that have not yet been exposed to single origin coffee. With the increase in travel worldwide, a higher interest in single origin coffees is expected, which will make up for the higher price single origin coffees typically retail at.

[26] http://www.cei.org.ni/images/export_value_coffees_nicaragua.pdf
[27] http://www.coffeeinstitute.org
[28] https://www.cbi.eu/market-information/coffee
[29] http://marketingsimulator.net/ncampos/2016/04/15/cafe-de-antigua/
[30] http://cafemarcala.blogspot.com
[31] https://www.facebook.com/DOCAFETARRAZU/posts/760673157394603
[32] https://www.elnuevodiario.com.ni/economia/340540-cafe-nica-se-queda-denominacion-origen/

Micro lots: The specialty coffee market has also led to an increase in *micro lots*. These higher-quality coffee beans are sold separately, in quantities of up to 50-75 bags, for a much higher price, sometimes reaching 5 times the New York futures market (commodity) price. Micro lots require a more direct trade between producers and smaller buyers such as specialized traders and smaller-scale roasters, as the story about the farm or cooperative is paramount to selling the coffee (besides its sublime quality). This development opens up an interesting opportunity for top-quality and value-added coffees, but volume is low in comparison with the other coffee segments.

Micro lot coffee does not always mean more profit for exporters / cooperatives; there is a lot more work to preparing them so the added income may not always offset the increased production costs. In addition, the volumes are low so it cannot become the "core business" of any exporter. Micro lots have above all given an exporter a marketing advantage; importers will highly respect the mere ability to produce and export micro lots – it is a testament to the professionalism of the producer / exporter, which in turn may increase "regular" coffee contracts[33].

Direct trade: Direct trade is a term used by coffee roasters who buy directly from the growers, cutting out the traditional middlemen on the side of buyers as well as sellers. Most roasters engaged in direct trade are located in Northern Europe, where the concept appeals most to consumers. More and more coffee houses and sustainability-driven brands try to create a direct link to the farmer, in the process satisfying consumers' demands to be more closely connected to the source. There's an opportunity for exporters in Central America to engage in closer relationships with international/European roasters, and trigger their interest to visit farms and installations – which in turn can generate their interest in the coffee and its origin.

According to multiple sources interviewed, direct trade between small roasters and growers is not seen as something that will grow substantially; for pre-finance, logistics and quality control, the role of the importer seems to remain imperative. Of course large roasters do buy directly and, in this case, it will be well-advised to seek the direct relationship (for example: selling to Starbucks directly is a lot more lucrative than to an importer in the middle).

Certification: Certification showed a dramatic growth[34] within the coffee market in recent years. Both production and sales of sustainably produced coffee have grown significantly more than conventional coffee. The European market plays a major role in the market for certified coffee. Certification has become a market requirement of several buyers and retailers, becoming essential for medium and large coffee companies. Smaller coffee roasters in the specialty segment are more interested in building trust with suppliers, and increasingly in direct trade, rather than in third-party certification. Organic certification could still be very interesting for the specialty market as a niche opportunity.

For the high-end specialty market (micro lots) certification is NOT important; the quality and traceability (story) counts above all. During the field research, several suppliers of high quality coffees (usually with cupping scores exceeding 85 points) pointed out the decreasing requirements of their buyers for certification. Suppliers working with such coffees receive constant visits from buyers, who reportedly do ask several questions as part of their own internal audit.

In addition, coffee cooperatives and exporters in Central America are already very much multi-certified. With the exception of isolated groups that could (should) be included in the export programme, extra certification is not something that is highly needed. For smaller coops, a HACCP certification may be a good addition to their existent social and ecological (organic, Fairtrade, etc.) certifications.

Other sustainability and climate change issues: The greater demand for sustainability in the coffee sector stimulates various industry players to take action. This development affects not only the private sector but also international organizations and governments. Examples: Global Coffee Platform[35], Sustainable Coffee Challenge[36], carbon-neutral coffee production and trade (example:

---

[34] https://hivos.org/sites/default/files/coffee_barometer_2014_report_1.pdf and http://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/State-of-Sustainable-Market-2017_web.pdf

[35] http://www.globalcoffeeplatform.org

[36] https://www.conservation.org/stories/sustainable-coffee-challenge/Pages/overview.aspx

Leading coffee producers in Costa Rica have organized a long-term effort to make production in the country's coffee sector carbon neutral by 2021[37]). One of the first Nationally Appropriate Mitigation Actions (NAMA) projects in the world, aiming at a climate-friendly transformation of the entire value chain, is also being currently implemented in the Costa Rican coffee chain[38]. Similar climate change-resilience initiatives are of important relevance and an opportunity for Central America, especially following the coffee rust crisis.

Increasing power of transnationals due to mergers (example: Douwe Egberts and Jacobs into JDE): These transnationals wield power with capital resources to either acquire local post-harvest processing units or to establish their own (Nestlé, OLAM, etc.) to compete with local exporters by offering a better price (even if the operations result in losses for a few years) in order to corner the market. Although this happens more with conventional coffee and less with the smaller-scale specialty and certified products, the transnationals are also moving into certification and may eventually outcompete any national companies. In Nicaragua, for example, the local exporter Atlantic lost a lot of market when Olam entered (and distorted) the national market. In Eastern Africa, Olam is buying local companies as well. There is a real threat for agricultural workers worldwide to become landless workers on the payroll of these large companies.
A trend that may expedite this is the growth of supermarket power, which tend to be a lot more price sensitive than the local organic store or specialty coffee corner. In Germany, 55% of all organic products are sold in the supermarket, in the UK 70%[39]. So in the last 15 years, the 450% increase in organic sales in Europe has been coming mostly from supermarket participation, especially in the last years. A large Benelux wholesaler of organic consumer goods estimated the indexing of 2017 sales on 95 in comparison with the previous year.

Increase in EU food safety measures: The maximum levels of ochratoxin and aflatoxins, as well as polycyclic aromatic hydrocarbons (PAH) for coffee have decreased in the EU, which is a threat to all suppliers of coffee worldwide. The opportunity for Central America to be a frontrunner is to have analyses done prior to presentation of samples / at trade fairs, where business support organizations (BSOs) / sector associations can play a role. Few exporters provide a priori the documentation for food safety to their buyers.

Innovations
The coffee sector is fairly traditional on the production side. One identified innovation which brings opportunities to Central American exporters is the use and experimentation with coffee exports in big bags (examples: 1-tonne polypropylene "super sacks" or 21.6-tonne polyethylene liners) or vacuum-packed coffee; these two techniques tackles two changes in coffee trade, which is increasing efficiency and maintaining/preserving quality.

3.1.4. Competition

Main rivals, new entrants and substitutes

Central America's product offer consists of mainly Arabica varieties. The region established itself as one of the world's leading specialty coffee producers and exporters. In most of the countries in the region, more than half of the coffee production can be classified as highest quality.

As such, competition from global producers is also related to Arabica production. In 2017, these countries produced the following amounts of Arabica coffees:[40]

- Brazil: 38,800,000 60 kg bags (2,328,000 tonnes)
- Colombia: 14,700,000 60 kg bags (882,000 tonnes)
- Ethiopia: 6,545,000 60 kg bags (392,700 tonnes)
- Peru: 3,800,000 60 kg bags (228,000 tonnes)
- Mexico: 3,600,000 60 kg bags (216,000 tonnes)

The strongest competition in high quality coffee for Central American producers will come from Peru, due to its high volumes of certified coffees and similar quality levels of washed coffees.

[37] https://dailycoffeenews.com/2015/12/09/little-costa-ricas-huge-plans-to-become-coffee-carbon-neutral/
[38] http://www.nama-facility.org/projects/low-carbon-coffee-nama
[39] https//organicdatanetwork.net
[40] https://apps.fas.usda.gov/psdonline/circulars/coffee.pdf

Peruvian coffee is produced at low cost with a focus on quantity instead of quality. Peru's organic coffee is usually the cheapest certified organic coffee available on the market. Cooperatives, exporters and experts therefore mention that Peruvian coffee is the main competitor of Honduras (and Honduran Marcala coffee).

Colombia may also become a strong competitor to Central American coffee, since it is reviving its production after a long rejuvenation project[41]; it also relies on strong institutional support and reputation among European buyers, supported by a Designation of Origin for "Café de Colombia".

Competition amongst Central American suppliers

In Central America, there is a plethora of regions with corresponding qualities which compete with each other for markets. The European specialty coffee industry tends to recognize the differences between a Huehuetenango from Guatemala, the Jinotega region of Nicaragua, and Copán coffee of Honduras. In terms of price, Nicaragua has comparative advantages over other Central American countries due to lower land and labour costs[42]. But the competition may be offset by synergies that are seen when buyers start to buy coffees of origin and wish to make their offering more complete. An increasing number of origins is seen with small and medium-sized importers from the UK (e.g. Wakefield) to Greece (e.g. Cafetaf), from Holland (e.g. Daarnhouwer) to Spain (e.g. Mare Terra).

3.1.5. Benchmarking

The study by Boot Coffee Consulting and Daniel Humphries, that addressed the perception among 144 surveyed/interviewed European importers, roasters and retailers (2014[43]) on Central American coffee, demonstrated great variability among the Central American countries themselves. The main elements considered in this analysis were maintenance of quality, taste profile, defects and reliability.

Overall, Guatemala scored the highest scores in all those elements, corresponding to rates that Colombia would get, and Nicaragua and Honduras worst, corresponding more or less with Peru's reputation. There is still a great need to increase Honduras' and Nicaragua's guarantee for good quality coffee. Some more details on this benchmarking study were:

- Maintenance of quality of coffee stored ranged from 36% (Nicaragua) to 82% (Guatemala);
- Taste profile met the expectations from 32% (Nicaragua) to 79% (Guatemala);
- Too many defects ranged from 41% (Honduras) to 6% (El Salvador);
- Reliability of the exporter in terms of pre-shipment sample and the container delivered ranged from 75% (Guatemala, comparable to ratings for Colombia) to 38% (Honduras, comparable to Peru).

3.2. Structure, governance and sustainability of the value chain

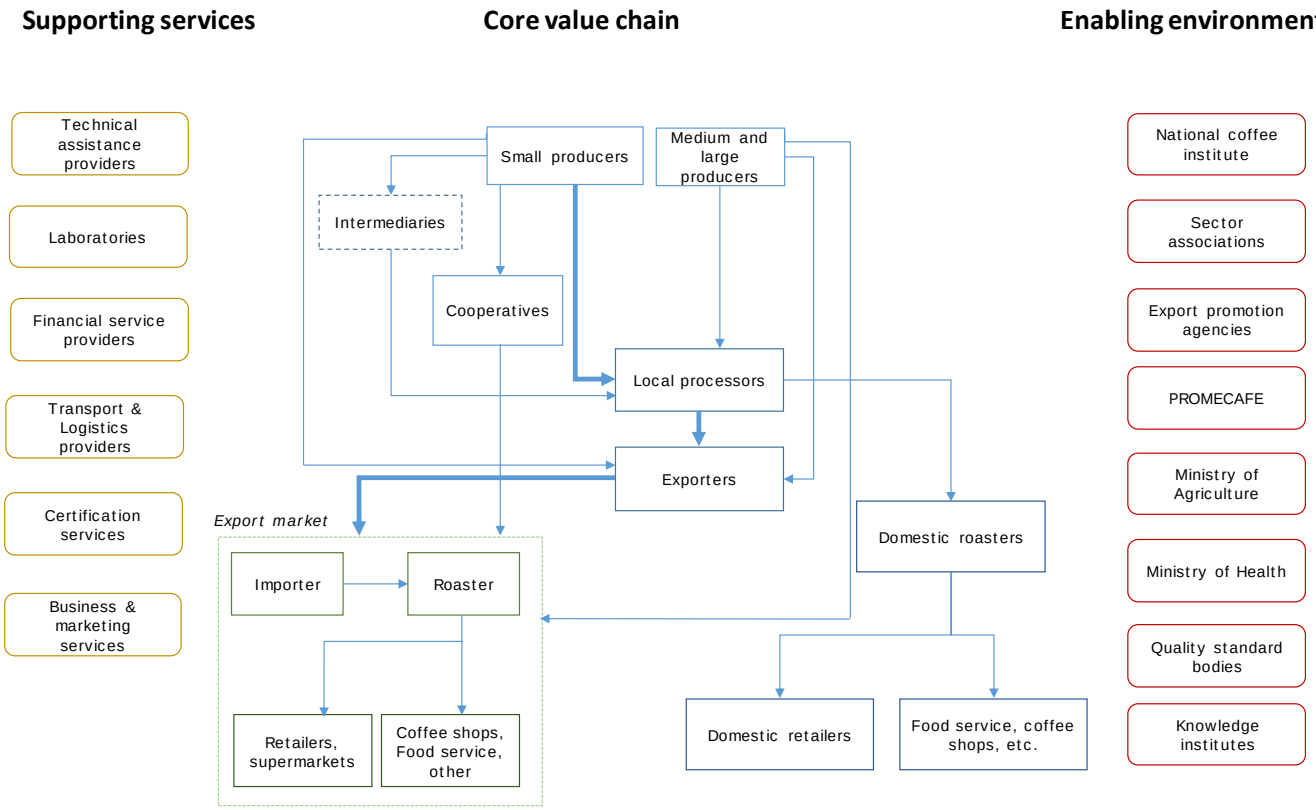
3.2.1. Structure

Actors in the value chain

The coffee chain in Central America consists of three basic functions: production, processing and exports. Whereas these functions are sometimes performed by large-scale actors in a vertically-integrated manner, in most cases the chain is fairly fragmented. This fragmentation requires the support services of different actors such as collectors and intermediaries, and organizations such as cooperatives. Central American coffee roasters play an important role in the chain as well, but their participation in European markets is very low, as elaborated in the previous section.

Figure 3.1 Visual representation of the coffee value chain in Central America

[41] http://www.cafedecolombia.com/cci-fnc-es/index.php/comments/renovacion_de_cafetales_nuestra_ventaja_competitiva_frente_al_mundo/
[42] http://www.renida.net.ni/renida/iica/e14-j60-ca.pdf
[43] This year still represents the time in which coffee quality suffered a great deal due to the rust epidemic.



Producers and collectors

Coffee is produced by small, medium-sized and large producers. In some Central American countries, such as in Guatemala, these different categories are defined by law (Ley del Café[44]) and according to their production levels.

Coffee production in Central America is mostly carried out by small producers, reaching 70-90% or even higher in countries such as Honduras and Nicaragua. In these countries, a large share of small producers is not organized and perform pre-harvest and harvest processes as a household and/or with the assistance of (temporary) coffee collectors.

Independent producers usually have low investment capacity, and low access to technology and markets. In more mature markets such as Costa Rica, however, small producers have good access to technical assistance and financing from exporters, and usually hire migrant/immigrant coffee collectors during the harvesting months.

In some cases, small producers are organized into cooperatives (or associations), which have the capacity to aggregate larger volumes and have a better market position (and competitiveness). Cooperatives are also able to provide services to producers, such as technical assistance and credit. Cooperatives can also be organized into larger secondary cooperatives or federations.

In Nicaragua, the cooperative movement is very strong; cooperatives operate under Law 499 (Ley General de Cooperativas y su Reglamento-Decreto N° 91-2007), and have an institutional structure of: 1) Federation of Cooperatives; 2) Central/Union of Cooperatives; 3) Secondary Cooperatives; 4) Cooperatives).

In Costa Rica, cooperatives account for 40% of the coffee production and involve more than 30 thousand small producers into the value chain[45]. Guatemala has federated cooperatives, and independent cooperatives, each category representing about 20 to 30 thousand small producers.

[44] http://www.marn.gob.gt/Multimedios/9809.pdf
[45] https://www.nacion.com/economia/agro/cooperativas-de-cafe-suben-participacion-en-cosecha-nacional/ASXU5N5LLRHJPAN4OUTSM57NK4/story/

An additional 20 thousand producers are not organized into cooperatives, but rather Associations and GATs (Grupos de Amistad y Trabajo). In addition, there are approximately 40 thousand small producers in Guatemala who are not organized.

El Salvador has several cooperatives and secondary cooperatives that were formed as part of the country's Land Reform. They centralize the purchasing of the coffee cherry and its processing from several small and medium-sized producers, also providing credit for preparation and renovation of production.

Medium-sized producers are able to sell their coffee directly to processors or exporters. Depending on their processing capacities and/or connections to the international market, they may also be able to export directly.

In some countries such as Nicaragua, large producers play an important role in coffee production, such as Atlantic Exportadora (part of the ECOM Coffee Group), and La Cumplida. In Guatemala, large producers are only around 500, but together with medium-sized farms, they account for around 55% of the total production. Large producers export directly.

Intermediaries
Especially for small producers located in isolated regions of countries such as Honduras and Guatemala, intermediaries play an important role in channelling their products to further levels of the value chain. In most cases, no (price) differentiation is made between different qualities or origins. In other countries, such as Costa Rica and Panama, the role of intermediaries is much less important, and producers are more directly connected to processors/exporters.

Processors
The step in the value chain where the coffee is processed (fermented and dried) varies widely among different Central American countries, and there are often different models within the same country.

Some small and medium-sized producers do their own processing, and have the know-how and facilities to carry out these steps within their own farm. In Costa Rica, for example, micro-processors account for around 5 to 10% of the coffee sector; at the same time, the 6 largest processors in the country process more than 40% of the national production[46]. In Guatemala, for example, most small producers sell their coffee as cherry, without any processing, due to the lack of washing stations in more isolated areas. Costa Rican cooperatives also buy the unprocessed coffee cherry from producers, but this is to standardize post-harvest processes and quality. However, there is a gradual increase in more value added processes at producers' level.

Independent coffee processors may have more than one collecting center and processing unit, and are responsible for the reception, processing and selling (when they are not an exporter themselves) of the coffee. In some cases, they have pre-finance or credit-provision agreements with producers. In the case of Costa Rica, both cooperatives and independent coffee processors/buyers, implement a system of pre-payment of the delivered and received cherries known as "mancha", where producers receive up to 50% of the payment during harvesting season. In Guatemala, pre-financing of producers is also common, and intermediaries also provide it (at higher interest rates). In El Salvador, credit is provided to producers either by the National Bank or by cooperatives and processors. The credit from the National Bank is triangulated between the bank, the processor and the producer.

In countries where intermediaries are active, some level of processing, such as drying, is sometimes carried out by these actors. It depends highly on how the coffee is collected from producers (in cherry, fermented, wet/dry-processed).

Cooperatives commonly carry out wider and more centralized processing functions, from fermentation to drying. Second-level organizations, which aggregate different cooperatives, may also centralize processes such as drying and fermentation in strategically-located collection centers. In Honduras, smaller cooperatives usually do not export coffee themselves, but do dry the parchment coffee to a degree. Due to the large surge of production and low investments in drying

[46] http://www.icafe.cr/wp-content/uploads/informacion_mercado/informes_actividad/actual/InformeActividadCafetalera.pdf.pdf

capacity, their coffee still arrives partially "wet" at the exporter. During this transition, the coffee will take on the infamous Honduran "phenol" taste, which is an off-note for cuppers.

Producers and cooperatives can also outsource the last processing steps (mainly cleaning and packaging) to coffee processors/exporters, but take care of all other export steps themselves, such as direct contact with the buyer, logistics, documentation, etc.

In more vertically-integrated chains, all processing steps are carried out by the exporter, often in organized aggregation and processing centers.

Exporters
The exporter is the link with the international market; their main function is to prepare and supply volumes of coffee to importing companies and / or roasters that operate in consuming countries.

Most small producers in Central America do not have the knowledge or capacity to export coffee directly. In most countries, export licenses are issued by the coffee institutes or councils, which also determine the conditions for a value chain actor to export. This usually excludes small producers. Even in cases where producers are also engaged in micro-processing, such as in Costa Rica, exports are normally carried out by exporting companies and cooperatives. ANACAFÉ (Guatemala) issues two types of licenses: producer – exporter or Exporter, which determine some of the conditions for a value chain actor to export, mainly to safeguard quality.

Exporters can be cooperatives, secondary cooperatives/federations, processors or independent exporters. Their market participation and shares vary per country, as well as their dynamics. In Nicaragua, for instance, there are larger exporting companies (CISA, Atlantic, Olam) which purchase and collect coffee from various cooperatives. However, some of these cooperatives decided to export directly, seizing the exposure opportunity at international trade fairs.

There is a significant overlap between the role of processors and exporters; most coffee exporters in Central America are also processors, and there's little intermediation between these two capacities. The fact that coffee is normally negotiated with future prices, which are regulated with contracts, binding and regulated by local authorities, makes it almost imperative for the exporters to be at the same time processors, since they need to guarantee the availability of contracted coffee on the delivery date of futures contract. If the exporter does not buy and process the cherries, then there is a risk of no show with the product in the term of the futures contract, with legal penalties (including loss of export license) and reputational implications.

3.2.2. Governance

Coffee is the one of the most regulated agricultural sectors in Central America; as such, the institutional environment for this sector is intricate, and the interactions amongst different actors are often regulated by law.

Regulating organizations
All Central American countries investigated in this VCA have a coffee institute, council or a similar regulating agency, with the exception of Panama. Nicaragua, at the time of research, hah a unique situation, whereby the institutionalization of coffee was shared by two organizations with overlapping mandates.

- Costa Rica: Instituto del Café de Costa Rica (ICAFÉ)
- El Salvador: Consejo Salvadoreño de Café (CSC)
- Guatemala: Asociación Nacional del Café (ANACAFÉ)
- Honduras: Instituto Hondureño del Café (IHCAFÉ)
- Nicaragua: Consejo Nacional Del Café (CONACAFÉ) and Comisión Nacional de Transformación y Desarrollo de la Caficultura (CONATRADEC)

These institutions have been established and mandated by the national laws of their respective countries. Normally, the steering committees of these institutions will include representation from the production, processing and export sectors, as well the government. However, in many cases, like in Costa Rica, the coffee institute can be seen as a Ministry (specialized in coffee), since their roles and activities overlap with the capacities of the Ministry of Agriculture and Ministry of Industry – but the Ministry of Agriculture is still a permanent member of ICAFÉ's steering committee.
The roles and responsibilities of the coffee institutes and councils vary slightly in scope and activities, but have these common characteristics:

- Representing the country's coffee sector, including institutional representation at the International Coffee Organization (ICO).
- Establishing national norms for the production and marketing of coffee.
- Granting export licenses.
- Developing and carrying out policies related to the coffee sector at the national and international levels.
- Contributing to decision-making processes and transparency within the coffee market.
- Investigating and developing technologies related to coffee production and processing.
- Providing technical assistance to coffee producers and processors.
- Strengthening national and international cooperation related to the sustainability of the coffee sector.
- Promoting the country's coffees, including the domestic market.

In Panama, different sector organizations, mainly the Asociación Nacional de Beneficiadores y Exportadores de Café (ANBEC) and the Specialty Coffee Association of Panama (SCAP), perform political, commercial and technical assistance roles similarly to the above-mentioned institutions, but do not have the same regulating status or resources derived from withholdings.

In some cases (example: ICAFÉ) more than in others, these institutions regulate minimum prices paid to the coffee producer as well as export price differentials (above stock exchange prices) related to the country's coffee exports. In addition, and in order to protect the reputation and quality of the coffee exported, the institutions have a level of control over who is allowed to export. The recent tightening of these requirements in Honduras, for example, has led to a decrease from 70 to 42 exporters.

The different Central American countries also have different withholding tax structures, which are paid at either production/processing or export levels. The withholding is managed by the existing institutes, councils and regulating agencies; they provide liquidity for producers to be able to access services including commercial contacts, technical assistance in production and processing, etc[47]. Their structure and mechanisms also define the expectations and relationships between institutions and the private sector (producers, processors and exporters).

In Honduras, there is a fixed withholding tax of USD 13.25 per quintal (46 kg bag) exported, of which IHCAFÉ receives USD 1 and the Fondo Cafetero Nacional (FCN) receives USD 1.75; 68% of this tax is returned to the producer at the end of the harvest. Because this tax is charged at a flat rate regardless of the export prices that are subject to stock exchange fluctuations, this has had repercussions among Honduran producers and processors/exporters in recent years[48]. Especially due to the low international prices for coffee, the situation has led to protests and reported illegal trade through Guatemala[49] and Nicaragua. For these reasons, there is a current debate on the elimination of the withholding taxes for coffee in Honduras[50].

In Guatemala, the withholding amounts to 1% of the exported value, thus the contribution is not fixed and is subject to stock exchange fluctuations. However, it puts the liquidity risk on the manager of the withholding, ANACAFÉ. In Nicaragua, the Dirección General de Ingresos (DGI) also retains 1% of total export sales. In El Salvador, the government retains USD 0.50, but at the coffee processing level[51]. In Costa Rica, there is a 1.5% tax over the FOB price paid to ICAFÉ[52].

Private sector associations and export promotion agencies
On the private sector side, the coffee chain in different Central American countries has organized itself through associations. These associations aggregate and advocate for the interests of its members at different levels of the value chain.

[47] https://www.fews.net/sites/default/files/documents/reports/Centroamerica%20-%20Informe%20Especial%20-%20Sector%20Cafetalero%202017.pdf
[48] https://lta.reuters.com/article/domesticNews/idLTAKCN1G503Z-OUSLD
[49] http://www.latribuna.hn/2018/02/05/retenciones-fomentan-contrabando-cafe
[50] http://hondudiario.com/2018/03/09/acuerdan-eliminar-retenciones-a-productores-de-cafe-por-venta-del-aromatico/
[51] https://www.fews.net/sites/default/files/documents/reports/Centroamerica%20-%20Informe%20Especial%20-%20Sector%20Cafetalero%202017.pdf
[52] http://www.icafe.cr/wp-content/uploads/simplificacion_tramites/Pago%20del%20Impuesto%20del%201.5%20al%20ICAFE%20II%20Avance.pdf

Producers are organized into cooperatives and secondary cooperatives/associations. As described above, these organizations are involved in commercial activities, as well as financing to producers, sales of inputs, among other. There are several examples of such associations per country. Exporters have created strong lobbying and political power through associations of exporters, which usually aggregate the interests of large-scale players and sometimes include smaller/family-owned coffee companies as well. The interests and activities of these associations, mainly in terms of international market access, building of country image and participation in international events interacts/overlaps with the capacities and responsibilities of export promotion agencies.

In Guatemala, for example, 80% of the coffee exported by the country is represented through the members of the Asociación de Exportadores de Café (ADEC)[53], which together defend the interests of the private coffee sector; members don't include cooperatives. ADEC operates within the regulatory spectrum of ANACAFÉ, but ANACAFÉ itself doesn't have exporters in its steering committee (by law). Coffee producers/exporters are also supported in terms of international market access by Agexport (private, non-profit)[54], which has a Specialty Coffees Committee. In turn, Agexport is part of the Consejo Nacional de Promoción de Exportaciones (CONAPEX)[55], which is integrated by both public and private actors – thus defining the country's export strategy.

In Honduras, coffee exporters are also organized into a an association called Asociación de Exportadores de Café de Honduras (ADECAFEH)[56]; its nature and area of activity is private, and aggregates the main coffee-exporting companies in the country (more than 70% of total Honduran exports). Similarly to Guatemala, the association does not include cooperatives. The regulatory structure of coffee in Honduras, including the withholding tax, have been a source of institutional distancing between ADECAFEH and IHCAFE. The Fundación para la Inversión y Desarrollo de Exportaciones (FIDE)[57], also supports coffee producers/exporters, but its activities are more related to export capacity-building to smaller exporters and cooperatives.

El Salvador also has an exporters' association through the Asociación Salvadoreña de Beneficiadores y Exportadores de Café (ABECAFE), but which mainly aggregates and covers the interests of large-scale exporters. ABECAFE is part of the steering committee of the Consejo Salvadoreño de Café; the institutions maintain a good level of dialogue and relationship. The Corporación De Exportadores de El Salvador (Coexport)[58] and the Export and Investment Promotion Agency of El Salvador (PROESA) also have independent support activities and member companies in the coffee sector.

In Costa Rica, ICAFÉ has strong promotional capacities and activities, and export-related activities are highly integrated into this organization. The Cámara de Exportadores de Costa Rica (CADEXCO) and Procomer do not have a specific department for the promotion of coffee exports, but are active in this sector when required.

In Nicaragua, the main exporters' association is Asociación de Exportadores de Café de Nicaragua (EXCAN), whose (large) members include CISA Exportadora, Exportadora ATLANTIC, OLAM, BENCAFE, CAFENIC S.A., SAJONIA, Cafetalera NICAFRANCE, S.A., under the brand Cafés de Nicaragua. Other agencies involved in exports of coffee are: Federación de Cámaras de Exportadores de Nicaragua (CANEXPORT), Alianza Nacional de Cafetaleros de Nicaragua (ANCN), Asociación de Cafés Especiales de Nicaragua (ACEN), among others. The Asociación de Productores y Exportadores de Nicaragua (APEN) supports the capacity-building and exports of coffee cooperatives and companies as well.

Apart from the above-mentioned associations, the specialty coffee sector has the support of specialty coffee organizations, which usually have strong interaction with the regulatory coffee institutes and councils, and focus on specialty coffee quality standards, capacity-building, barista certificates, coffee schools and other capacities related to this specific sub-sector. The specific associations per country are:

- Specialty Coffee Association of Honduras[59]
- Specialty Coffee Association of Nicaragua[60]

[53] http://adecgt.com
[54] http://export.com.gt/agexport
[55] http://www.mineco.gob.gt/conapex
[56] https://www.facebook.com/ADECAFEH
[57] http://hondurasinfo.hn/?lang=en
[58] http://www.coexport.com.sv
[59] https://www.facebook.com/Specialty-Coffee-Association-of-Honduras-209253729096515

- Specialty Coffee Association of Panama[61]
- Asociación Cafés Finos Costa Rica[62]
- Agexport: Comité de Cafés Diferenciados[63]
- Asociación de Cafés Especiales de El Salvador[64]

Regional

At the regional level, the Central American (and Caribbean) coffee sector is represented by PROMECAFÉ[65], which promotes the exchange of technology among national coffee institutes, and the execution of joint research projects, with a view to increasing the importance attached to coffee growing as a socioeconomic activity. The different Central American countries are represented by their coffee institutes and councils (Guatemala: ANACAFÉ; El Salvador: Consejo Salvadoreño del Café; Costa Rica: ICAFÉ; Honduras: IHCAFÉ), with the exception of Panama (represented through the Ministerio de Desarrollo Agropecuario de Panamá - MIDA) and Nicaragua (represented through the Instituto Nicaragüense de Tecnología Agropecuaria - INTA). Whereas PROMECAFÉ has focused mainly in common themes related to scientific research and climate change such as strategies to address the coffee rust crisis, as well as in the coordination of regional programmes and projects, it's increasingly introducing commercial subjects through roundtable discussions.

Another regional/ inter-governmental organization of relevance to the coffee sector is the Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA)[66] (with Headquarters in San Salvador, El Salvador), which focuses on phytosanitary (and animal health) and food safety issues through scientific and technical assistance. OIRSA has a specific programme to deal with the coffee rust and other coffee-related plagues (Programa Regional de control de la Roya y otras plagas del café)[67]. State members of OIRSA are represented through their Ministries of Agriculture and Livestock.

International cooperation

Coffee is one of the sectors receiving most support from international cooperation in Central America; the coffee rust crisis brought even more focus to this sector and to the vulnerable populations which depend on this product for their livelihoods. Projects and programmes in the coffee sector vary in approach and focus, but normally have strong emphasis on production/productivity and research (including themes related to coffee rust and sustainability) on the one hand, and social impact and marketing on the other hand. The main initiatives identified during the field research in Central America, at regional and country levels, were:

- Programa Centroamericano de Gestión Integral de Roya del Café (PROCAGICA)[68] [January 2016 – January 2021]: supported with European Union funds[69] and implemented by the Instituto Interamericano de Cooperación para la Agricultura (IICA), with the objective of contributing to targeting climate change and variability, and their environmental effects, through the adoption of adaptation, mitigation and disaster risk reduction measures. The programme supports local authorities and scientific institutions in developing specific tools and mechanisms to help small and medium-sized coffee producers to increase production and resilience capacities.
- CAFÈ Y CAFFÈ - Agenzia Italiana per la Cooperazione allo Sviluppo (AICS)[70] (formerly Istituto Agronomico d'Oltremare di Firenze) [2016 - ongoing]: Works mainly in connecting small producers with final coffee consumers, with the idea of contributing to more equal relations along the coffee value chain and more traceability of the product. It promotes capacity-building of small producers in subjects such as coffee-roasting, and contact with Italian/European stakeholders. Different activities are currently carried out in El Salvador, Nicaragua, Costa Rica, Honduras and Guatemala. Examples: Ruta del

---

[60] http://nicaraguanspecialtycoffee.com
[61] http://scap-panama.com
[62] http://www.sca.cr
[63] http://host-agexport.com/agritrade/sectores.html
[64] https://www.cafecontibio.com/es/cafe-de-el-salvador
[65] https://www.facebook.com/promecaferegional/ or http://promecafe.org
[66] https://www.oirsa.org
[67] https://www.oirsa.org/informacion.aspx?id=28
[68] http://procagicard.com
[69] https://ec.europa.eu/europeaid/projects/programa-centroamericano-de-gestion-integral-de-la-roya-del-cafe-procagica_en
[70] https://www.cafeycaffe.org

Café (Honduras)[71]; Pilot Programme for Women Producers' Empowerment (Guatemala)[72]. Dominican Republic is also included in CAFÈ y CAFFÈ.

- Coffeelands Projects – Catholic Relief Services (CRS): CRS is active in Guatemala, El Salvador, Honduras and Nicaragua, working on various programmes for coffee through funders such as Keurig Green Mountain, MAC Foundation, USAID and Howard G. Buffett Foundation. Main projects are: Blue Harvest (El Salvador, Honduras, Nicaragua 2014-2016); Café Verde (Guatemala, 2013-2016); From Coffee to Chocolate (2013-2017); Carbon-In-Setting (2011-2015); Rust to Resilience (2014-2016).
- Trifinio Regional Program – Hanns R. Neumann Stiftung [2014-2019]: Program in the tri-border area of Guatemala, El Salvador and Honduras to support smallholder coffee farmers in the production and marketing of coffee. The goal of the program is to improve family incomes and reduce the impact of coffee farming on the environment. Works in partnership with the Plan Trifinio and international companies such as Tim Hortons, International Coffee Partners, Tchibo, Nestlé and Costa Foundation.
- PROCAMPO – USAID and ANACAFÉ project in West Highlands in Guatemala (just started).
- USAID – Guatemala implemented by FEDECOCAGUA[73] (USD 20 Million)
- The GIZ-EU programme CLIFOR (Adaptation to Climate Change in the Forestry Sector of Honduras), concentrates on community forest management and collaborates closely with the Honduran National Institute for Forestry (ICF), the national government forestry authority[74].

These international cooperation initiatives and stakeholders complement CBI's initial list of international players active within the coffee sector in Central America:

- Under the IDH umbrella, major coffee roasters have set a goal of increasing global sustainable coffee sales from 8% to 25% by 2015. This ambitious target can only be met through coordinated effort on the part of stakeholders and targeted investments at different stages in the supply chain
- Global Coffee Platform (GCP)[75], including representatives of UTZ, Rainforest Alliance, IDH (founder). All active in the Central American coffee sector. The GCP is the leading facilitator of the coffee sector's journey towards sustainability
- ICCO is working in all six countries[76]
- Solidaridad is working in Guatemala, Honduras, and Nicaragua in the coffee sector[77]
- GIZ has a NAMA project in Costa Rica to introduce climate-smart cultivation and processing methods and supports local farmers in agricultural communities to produce and sell coffee in Guatemala[78][79]
- Swisscontact: project in Honduras improving management of the value chains for coffee, cocoa and cashews through an inclusive public-private dialogue aimed at reducing the risks and increasing the benefits to producers[80]
- SNV is working on 'Access to Sustainable Markets & Food Security for Nicaragua's Coffee & Cocoa Producers'[81]
- UTZ has multiple offices and projects in Central America.
- Between 2012-2017 RUTA/USAID executed the Programa Agroalimentario Sostenible, including the coffee and cocoa sectors[82]

[71] https://www.ihcafe.hn/?page_id=3738
[72] https://www.cafeycaffe.org/chi-siamo/progetto-iao-istituto-agronomico-doltremare/
[73] http://www.fedecocagua.com.gt/
[74] http://clifor.hn
[75] https://www.globalcoffeeplatform.org
[76] https://www.icco-cooperation.org/en/Countries
[77] https://www.solidaridadnetwork.org/supply-chains/coffee
[78] https://www.giz.de/en/worldwide/33738.html
[79] https://www.giz.de/entwicklungsdienst/en/html/2282.html
[80] http://www.swisscontact.org/en/projects-and-countries/search-projects/project-finder/project/-/show/competitive-inclusive-and-sustainable-development-of-supply-chains-for-coffee-fino-de-aroma-cocoa-and-cashews-producers-progresa.html
[81] http://www.snv.org/project/access-sustainable-markets-food-security-nicaraguas-coffee-cocoa-producers
[82] https://www.slideshare.net/RUTAslideshare/programa-agroalimentario-sostenible-informe-final

3.2.3. Intra-regional trade

There's very little activity in regional trade for coffee amongst Central American countries, excluding illegal cross-border trade (example: Honduras to Guatemala) to circumvent withholding taxes, for example.

The main intra-regional trade flow for (green) coffee is happening from Honduras, Nicaragua and, to a smaller extent, Guatemala into Costa Rica. Costa Rica exports a high share of its high-quality coffee, and uses coffee from neighboring countries for domestic consumption. Imports are subject to a 15% duty[83].

Not only is coffee a highly regulated sector in most producing countries, thus affecting export policies and pricing, but some countries have also implemented barriers to tackle competition. The Ministry of Agriculture in El Salvador, for example, has proposed a tax on coffee imports into the country[84].

However, the research identified potential in intra-regional cooperation in commercial subjects by utilizing existing activities, such as the organization of regional pavilions at international trade fairs, and the involvement of regional organizations and platforms in such activities, most importantly PROMECAFÉ.

3.2.4. Sustainability of the value chain

For each one of its programmes, CBI develops a Corporate Social Responsibility (CSR) tool that is used to assess and monitor the sustainability performance of specific sectors in specific countries or regions. These results are consolidated within a CSR risk assessment matrix, which will be completed next to this value chain analysis. Child labour was identified by CBI in its pre-assessment phase as one of the most important sustainability risks within the coffee sector in Central America. Other issues were prices, chemical use, waste management, and impact on forest and biodiversity.

Child labour
Child labour has been culturally common in coffee-producing regions in Central America, mainly because children accompany their parents through the productive cycle of coffee. Small producers account for as much as 90% of the coffee production in some Central America countries, and the management and maintenance of farms happens within the nuclear family. The sector also relies on a high share of migrant and/or immigrant (indigenous) populations, which move temporarily (as a family) to coffee-producing regions to assist in coffee-picking activities. In Costa Rica, for example, around 60% of the coffee collectors during the harvesting months come from communities in Nicaragua (40%) and Panama (20%). In Guatemala, migration to coffee-producing areas such as Costa Sur and Tapachula (Mexico), as well as to Copán (Honduras) is estimated to affect around 100,000 from El Quiché, Huehuetenango, Totonicapán, Baja Verapaz, Alta Verapaz, y Quetzaltenango[85].

The concern related to child labour in coffee is consistent with the views and interventions of the different coffee institutes, councils and other organizations in the region. The main projects and programmes identified in the region dealing with the mitigation of child labour are carried out with the private sector itself, which indicates a high level of awareness and urgency the subject is dealt with. They revolve around 3 main areas of intervention: awareness raising, education and active protection of children.

In Honduras, the Asociación de Exportadores de Café de Honduras (ADECAFEH) signed an agreement with World Vision in 2017 to implement the project *Prevención de Trabajo Infantil*[86], with an initial budget of USD 250,000. This project points toward a replicable model for children's educational centers at coffee farms. At the moment, this model is implemented in 3 coffee-

[83] https://www.nacion.com/economia/agro/costa-rica-importara-este-ano-el-50-del-cafe-de-consumo-interno/PVM6NK4Q6NF7RLY6VY2W6YAOSA/story
[84] https://www.centralamericadata.com/en/article/home/El_Salvador_Protection_for_Local_Coffee
[85] https://www.fews.net/sites/default/files/documents/reports/Centroamerica%20-%20Informe%20Especial%20-%20Sector%20Cafetalero%202017.pdf
[86] http://www.wvi.ngo/es/article/world-vision-honduras-y-adecafeh-implementan-en-conjunto-proyecto-para-prevenir-el-trabajo

producing communities: Agua Caliente, El Zarzal and Los Naranjos[87]. The idea of the project is to provide a space for exchange, learning and entertaining for children during coffee-harvesting months. Reportedly, a similar project is being currently elaborated for El Salvador. IHCAFÉ is also implementing other activities in the framework of the Estrategia Nacional de Combate al Trabajo Infantil en la Agroindustria del Café[88].

Guatemala has implemented a similar initiative with a broader reach; since 2012, the Fundación de la Caficultura (Funcafé, linked to ANACAFÉ) has established the program "Coffee Kindergarten" as an education strategy to prevent child labor in Guatemala and contribute to school readiness in rural coffee-growing areas. The content and methodology used in the readiness centers aim to teach 4 to 7 year old children of farm workers develop skills and abilities to read and write[89]. Other Funcafé programmes, such as Active Rural School Program (ERA), further link youth protection to education. Another initiative is ANACAFÉ, Catholic Relief Services and Verité to prevent child labour. The Asociación de Exportadores de Café de Guatemala (ADEC) promotes the above-mentioned programmes among its members, and has its own programmes linked to Mobile Clinics and Monthly Support which also benefit children, elderly and other groups in coffee-producing communities.

Costa Rica has addressed the structural problems underlying child labour and other social issues in coffee production through the (to be implemented) Fondo Nacional de Sostenibilidad Cafetalera (Fonascafé)[90] managed by ICAFÉ. It will consist of a permanent financing programme with a special emphasis on small producers and coffee collectors, which will also cover temporary/migrant workers. The Fonascafé's model promotes CSR through a social insurance system, thus creating a safety net for vulnerable groups. Costa Rica also has a model (since 2014) for children's educational centres at coffee farms, so as to prevent their exposure to risk, and offer health and educational services. There are currently 17 of these centers in Costa Rica[91].

In Nicaragua, CONACAFE has worked in specific interventions with the International Labour Organisation (ILO) and with producer organizations in order to address the issue of child labour in coffee.

Waste management

Recent years have witnessed important progress in Central America in the development of environmentally sound measures in the management of waste material from coffee: pulp, residual matter and parchment. This includes composting coffee husks mixed with farm animal manure to use as organic fertilizer in farming practices[92].

Waste management (and re-use) has become an important subject in the technical assistance of different coffee institutes and councils in Central America. See examples of ANACAFÉ (Manejo de Subproductos[93]) and IHCAFE (Alternativas para El Aprovechamiento Energético de la Pulpa[94]).

However, coffee is still seen as a highly polluting industry in its post-harvest processing phase, since several companies, cooperatives and producers channel their contaminated residual waters to rivers and other waterways.

Unfair pricing

Pricing in Central America's coffee sector[95] is a multi-dimensional subject which varies per country according to:

- Price fixing laws, and their implementation, at producer and exporter levels.
- Withholding tax structures.

[87] La Prensa http://laprensa.hn – Edición Especial (19 de enero de 2018)
[88] https://www.ihcafe.hn/?page_id=3780# Revista Cosecha IHCAFE 16 17
[89] http://www.funcafe.org/education/
[90] http://www.aselex.cr/boletines/Proyecto-20485.pdf
[91] https://presidencia.go.cr/comunicados/2017/01/poblacion-ngabe-y-bugle-es-atendida-en-centros-de-cuido-infantil-en-coto-brus
[92] https://www.sustainablebusinesstoolkit.com/environmental-impact-coffee-trade/
[93] https://www.anacafe.org/glifos/index.php?title=Caficultura_ManejoSubproductos
[94] http://www.icafe.cr/icafe-informa-a-sector-beneficiador-sobre-alternativas-para-el-aprovechamiento-energetico-de-la-pulpa/
[95] https://www.fews.net/sites/default/files/documents/reports/Centroamerica%20-%20Informe%20Especial%20-%20Sector%20Cafetalero%202017.pdf

- Price differentials in relation to stock exchange prices, and how these differentials are established and regulated − and how much they are reverted back to producers.
- Volatilities in international coffee prices.

Countries where there's a higher degree of intermediation in the coffee chain (example: Honduras and Guatemala) tend to have more problems with unfair pricing to producers. This is both because small producers are unware of price fixing mechanisms, as well as because intermediaries, and sometimes exporters, do not distinguish prices according to quality. Not only was this mentioned during the field research, but also validated on a value chain analysis conducted in Honduras by the Wageningen University and Research Centre for DEVCO, as well as other research conducted in other countries such as Guatemala[96].

In Costa Rica, a more regulated market with less intermediation, prices between producer and processor are regulated by law and implemented strictly. Guatemala does not have a price fixing system, but ANACAFÉ promotes programmes aimed at establishing closer relationships along the chain, like business meetings with buyers, tasting labs, and education. On the other hand, Nicaragua doesn't have any price fixing mechanism, and producers are subject to international prices. In El Salvador, prices paid to producers are also determined by the stock exchange, but with deductions based on the costs to process the beans.

Impact on forest and biodiversity
Central America is known for its shade-grown coffee, which is by far the predominant production method used in the region. According to the Smithsonian Migratory Bird Center (SMBC), and supported by more than 50 studies on shade-grown coffee farms in regions ranging from Central and South America to Indonesia over the past 15 years, shade-grown coffee production is the next best thing to a natural forest[97]. In this respect, shade-grown coffee offers an environmentally-friendlier alternative to sun-coffee systems. Among different Central American countries there is a higher share of coffee areas grown under shade. In Guatemala and Honduras, for example, 98% of the coffee is shade-grown[9899]; 95% in El Salvador[100]. As such, this is not a particular sustainability problem for coffee-producing regions in Central America.

Chemical use
The use of chemicals / fungicides in coffee is generally most common in the production of high-quality varieties in Central America. This is because higher-quality coffees such as Bourbon are more susceptible to coffee rust and other diseases, thus creating a need for inputs to combat such diseases. There is also a correlation between increased nitrogen fertilizer application and the widespread removal of shade cover from Central American coffee plantations, since coffee agro-forestry systems requires less chemical inputs. Heavy synthetic fertilizer inputs increase contamination of waterways and aquifers[101].

In all countries in Central America, the use of chemicals in coffee production remain a similarly significant problem. For example, Nicaragua saw a 15% increase in agrochemical trade in 2016, the year in which plantations were affected by coffee beetle infestation.

There have been important improvements due to the expansion of certification systems in the region (example: UTZ, Rainforest Alliance), which have good agricultural practices components in their standards. In addition, soil management, together with shade-grown techniques, are a crucial a crucial aspect in avoiding diseases such as coffee rust. In parallel, these factors decrease the need for chemical inputs such as fungicides.

3.3. Value chain bottlenecks, risks and opportunities

3.3.1. Bottlenecks

A. Insufficient technical assistance for quality and productivity improvement

[96] http://www.marn.gob.gt/Multimedios/9809.pdf
[97] https://nationalzoo.si.edu/scbi/migratorybirds/coffee/bird_friendly/ecological-benefits-of-shade-grown-coffee.cfm
[98] https://www.anacafe.org/glifos/index.php/13NOT:NT_Importancia_sombra_cafe
[99] http://www.hondurastips.hn/2016/10/01/el-cafe-de-honduras-en-cifras-y-logros-en-2016/
[100] http://ecocafesal.blogspot.com/2009/10/importancia-del-cafe.html
[101] https://www.sustainablebusinesstoolkit.com/environmental-impact-coffee-trade

In spite of the strong presence of coffee institutes and councils in Central America, a general lack in technical assistance to small producers and cooperatives prevails in the region. The insufficient technical assistance, mainly related to harvest and post-harvest processes such as fermentation, drying and storage, influences the quality/cupping score of coffees. Problems such as over-fermentation and phenolic defects are still very common in the region. These problems will only worsen with the onslaught of droughts as a result of global warming, as seen again this season in Central America. There are also concerns over the introduction of new varieties and renewal of plantations in the region, which also affect quality and productivity.

Coffee institutes and councils have a limited number of staff available for working on the ground to serve all producers and cooperatives. During interviews in Central America, stakeholders often recognize the importance of technicians. At the same time, they mention their limited scope of action and possibilities to reach more isolated producers, especially in more geographically-challenging countries such as Honduras (confirmed by the VCA conducted by the Wageningen University and Research Centre (WUR) for DEVCO), Guatemala and Nicaragua. In Guatemala, ANACAFÉ is using ICT tools and Early Warning Systems to gather better and more information so that technicians are more efficient, and producers become more efficient in decision-making.

In Honduras, specifically, the rapid increase in production has also come with quality problems due to insufficient training or infrastructure (example: driers). As also elaborated in the WUR research in Honduras, drying properly at the producers' level could already attain a higher value for the product.

In Panama, the lack of a coffee institute or council made producers/exporters invest in their individual know-how. Even though Panama is known to supply high-quality coffees to the international markets, this individual approach prevented a sector-wide strategy for quality improvement and management.

In Costa Rica, many producers reportedly ask for more research and implementation of new varieties with higher production yields, and which are better prepared for climate change.

Quality improvement also relates to the contact between producer and exporter. In more fragmented value chains, and with a high level of intermediation, processors/exporters are not able or interested to provide technical assistance to producers.

B. Strong presence of intermediaries affects quality and traceability

In some Central American countries (Honduras, Guatemala) more than in others (Costa Rica, Panama), intermediaries play and important role in the coffee value chain. However, the presence of intermediaries has had a strong implication to the quality of the coffee and on the traceability of batches. This also means lack of transparency in prices.

In most producer-intermediary trade relations, there is no categorization or price differentiation according to quality. The different qualities are mixed together, and sold to a coffee processor. It was also reported during the field research that this also happens sometimes in producer-exporter relationships, but only in less-regulated countries. This leaves producers with very low incentives to invest in quality and quality improvement, and it is also detrimental to the traceability and separation of batches.

Buyers and consumers in Europe increasingly require traceability of their coffees, which goes in line with the focus on origin and sustainability.

C. Producers have limited access to credit

Small producers have limited access to formal credit. For this reason, they are highly dependent on informal or alternative mechanisms. This limits their capacity to invest in the improvement of the crop, automation processes and in the quality of post-harvest processes.

In fact, some producers in Central America resort to intermediaries to pre-finance their production and harvest. But again, the relationship between producers and intermediaries have an effect on fair pricing and quality.

In markets with a high level of intermediation, there is also less contact between producers and processors/exporters. In some cases, processors/exporters are able to provide advance payments to producers. In Costa Rica, this relationship and minimum prices therein are regulated by law.

D. Insufficient knowledge of the international/European market

Among cooperatives and small (and sometimes medium-sized) farmers/exporters, there is a general lack of knowledge about international markets and how to access them. For example, knowledge about future markets, insurance and market mechanisms is lacking. This is mostly due to inadequate or insufficient entrepreneurial assistance and indirect contact with exporters and with the end-market. In most Central American countries, exporters do not always connect the producer/cooperative and the importer directly, though this is changing quickly.

Even for larger companies which express an interest in exporting smaller volumes (at higher prices) directly to roasters, there is a lack of know-how. Most Central American companies have been working through traders in Europe and other international markets. As such, there is a lack of knowledge on where these smaller (importing) roasters are located, how to approach them, and how to handle the logistics involved. This prevents Central American suppliers to connect further to end-buyers/roasters, and to profit from the growing trend towards direct trade in Europe.

E. Lack of managerial capacities at cooperative and SME level

The lack of managerial capacities of cooperatives and small/medium-sized producers, some which are in fact exporting small quantities of coffee, has been mentioned during the field research as one of the main challenges for the coffee sector in Central America.

When present, technical assistance from coffee institutes and councils focuses on subjects related to production and post-harvest processes. Business support, and long-term business management capacity are rarely on the agenda of these institutions.

For development agencies, cooperatives usually serve as ideal partners, as this form of enterprise is owned by and directed by farmers themselves. The drawback is sometimes a lack of expertise in running an enterprise and politics among farmer leaders. Especially in the coffee business, with heavy fluctuations in the New York futures market (a reference even for specialty coffee), management skills such as hedging and future options are necessary. A well-functioning oversight commission is paramount with cooperatives; if absent, cooperatives tend to fall prey to corruption within the leadership, where suddenly large sums of money disappear.

F. Disconnected initiatives at national level

Most Central American countries have strong and influential coffee institutes and councils. As pointed out in earlier sections, these institutions have a broad range of activities within the coffee sector. However, the different national organizations involved in coffee still reveal weak strategic linkages. In addition, in almost all countries, producers feel the national institutes do not do enough for them, considering the taxes they pay to these institutes. This goes from a feeling that technical assistance and infrastructure support is inadequate, to the feeling that the institutes do not represent them sufficiently at international trade fairs or within their board of directors.

Some examples: in Nicaragua, the two coffee institutions CONACAFÉ and CONATRADEC have overlapping roles and responsibilities, thus creating confusion in mandates and scopes of action. On the other hand, Panama doesn't have a coffee institute or council to represent this sector, leading to a lack of institutional support and strategy. In Honduras, the Asociación de Exportadores de Café de Honduras (ADECAFEH) has little contact/discord with the IHCAFÉ; activities from these different initiatives are disconnected and unsynchronized. In El Salvador, there are disagreements between the Asociación Cafetalera de El Salvador (ACAFESAL) and the Consejo Salvadoreño de Café (CSC) which affected the response to the coffee rust crisis.

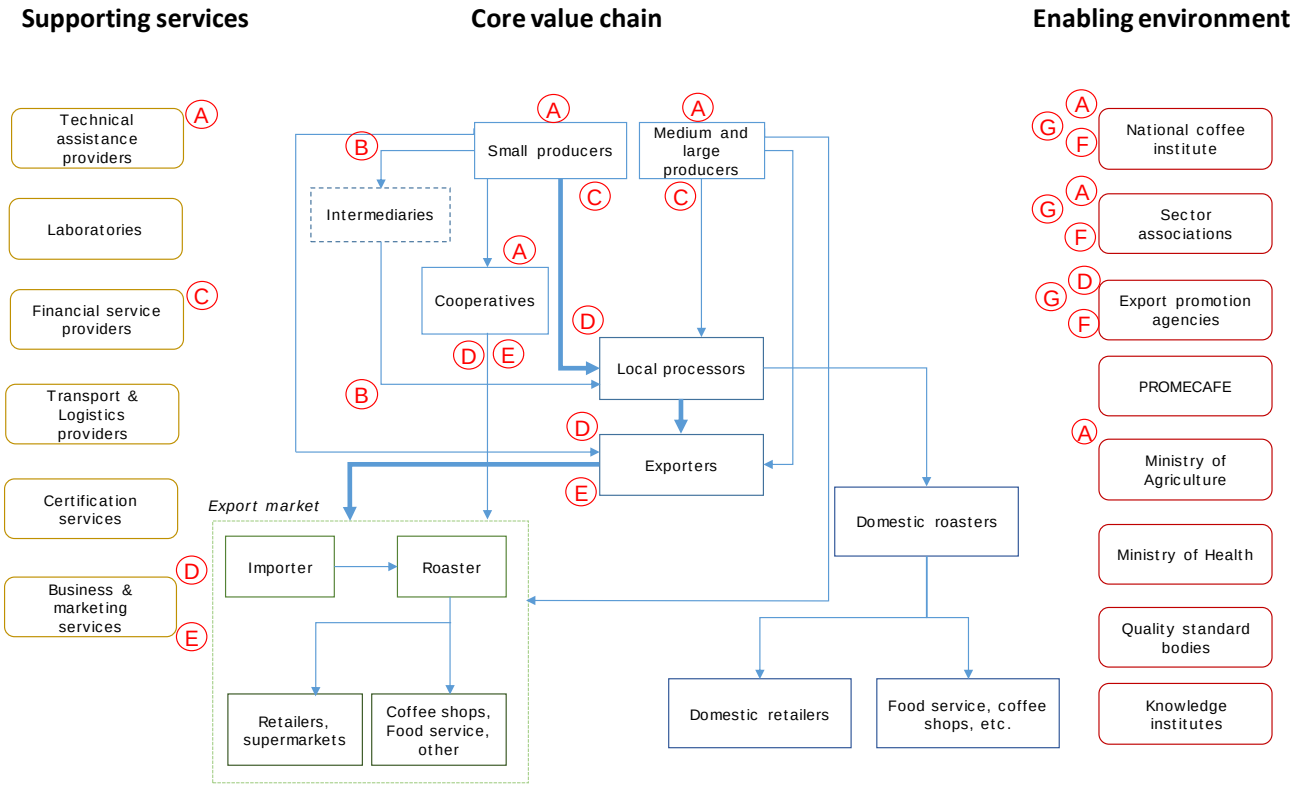
In Costa Rica, ICAFÉ centralizes and leads all activities related to the coffee sector, and makes sure that all alliances are coordinated with the national strategy.

G. Some Central American countries have coffee-branding issues

The lack of associativity and sector synchronization has also halted the efforts to promote and develop a country brand for the national coffee, which is most apparent in Nicaragua and Panama. In Nicaragua, the national coffee brand is not well regulated or operationalized. In Panama, individual producers/exporters have brought the reputation of the national specialty coffee forward (particularly for Geisha[102]), but the lack of a coffee institution has prevented the creation of a national and common brand among sector stakeholders.

Even for countries with strong coffee institutions and good international reputation, there are problems related to promotion of the national coffees internationally. For example, Guatemala (through ANACAFÉ) doesn't have a representative office in Europe due to the lack of resources, which partly resulted from low international coffee prices. This has prevented the country to focus on the European market in terms of promotion and marketing; Guatemalan coffee is not often distinguished by its single origin in Europe, but rather used to improve the cupping of Arabica blends.

Figure 3.2 Visual representation of the main bottlenecks on the coffee value chain



Bottlenecks

(A) Insufficient technical assistance for quality and productivity improvement
(B) Strong presence of intermediaries affects quality and traceability
(C) Producers have limited access to credit
(D) Insufficient knowledge of the international/ European market
(E) Lack of managerial capacities at cooperative and SME level
(F) Disconnected initiatives at national level
(G) Some Central American countries have coffee-branding issues

3.3.2. Opportunities

A. Cooperatives in Central America create scale and capacities for small producers

While many small producers in Central America remain disconnected from the market due to their geographical position, low production volumes, low investment capacity and low quality, producers who are organized into cooperatives have better positioned themselves. Central America has a strong cooperative culture in coffee, with some interesting characteristics per country, as described previously.

[102] http://pty.life/geisha-coffee-wins-international-tasting-competition/

Cooperatives bring leverage to the market, both in terms of connecting small producers, but also in making it operational for international buyers to purchase from them. They are able to solve, in a collective manner, several problems faced by small producers related to supply volumes, quality, technical assistance and access to finance.

The work with cooperatives, however, still offers much space for entrepreneurial capacity-building and (European) market orientation. During the field research, some examples of cooperative federations/secondary cooperatives were identified. These organizations provide scale and capacities to smaller cooperatives.

B. Central America has several success cases in market positioning

While some Central American countries have had more success than others in positioning themselves on the international coffee market, each country has a few success cases that merit replicability. These cases are especially relevant to the European market, where origin and sustainable impact are becoming important elements to direct buyers and consumers. For example:

- Costa Rica has the first carbon-neutral coffee in the world, produced by Cooperativa Coopedota[103], and has one of the most successful cases of Designations of Origin for Café de Tarrazú. One of the first NAMA projects in the world, aiming at a climate-friendly transformation of the entire value chain, is also being currently implemented in the Costa Rican coffee chain[104].
- Guatemala has managed to have two regions with Designation of Origin, Antigua and Acatenango, and ANACAFÉ is striving to have all 8 regions registered as such. The coffee sector has been able to get the political attention of the government, and has had a cohesive and inclusive functioning through the Politica Cafetera[105].
- Nicaragua's Asociación de Cafés Especiales de Nicaragua (ACEN) and Asociación de Exportadores de Café de Nicaragua (EXCAN) have managed to bring and promote Nicaraguan coffees at Cup of Excellence, resulting in the visibility of small producers from Jinotega, Matagalpa and Dipilto.
- In El Salvador, the Consejo Salvadoreño del Café (CSC) developed a coffee profile for each of its 6 mountain ranges (*cordilleras*), with the support of CBI during the Central America Agro Food Programme. Currently, there are Designation of Origin projects for all mountain ranges, and 3 of them are already organized around administrative bodies.. These coffee profiles are used in El Salvador's export marketing, including PROESA's newly launched Guía de Comercio Internacional de Café[106].
- Panama's Geisha coffee has strong marketing power within the specialty segment, and has managed to attract the interest of upper-end segments of Asian markets.

C. Regional collaboration for Central American coffee has an existing platform

As mentioned previously, Central America's coffee sector is institutionalized at the regional level by PROMECAFÉ[107], where national representation happens through the coffee institutes and councils (or ministries of agriculture and other agriculture-related organizations) of each country, also involving regional research institutions.

Especially in light of the coffee rust crisis in 2012-2013, PROMECAFÉ has focused mainly on common themes related to scientific research, climate change and barismo/cupping. Commercial themes have been gradually introduced in roundtable discussions. However, there is potential to engage PROMECAFÉ further in international and trade-related events, and optimize this organization as a platform for regional commercial collaboration.

D. Coffee is high on the international cooperation agenda

[103] http://www.crhoy.com/archivo/cafe-carbono-neutro-costa-rica/nacionales/
[104] http://www.nama-facility.org/projects/low-carbon-coffee-nama
[105] http://www.anacafe.org/glifos/images/c/c2/Decreto_19-69.pdf
[106] http://www.proesa.gob.sv/exportaciones/centro-de-documentacion/gu%C3%ADas
[107] https://www.facebook.com/promecaferegional/ or http://promecafe.org

As mentioned previously, coffee is one of the most donor-intensive sectors in Central America. While each international cooperation institution has its own approach and activities, the clustering of interventions also results in several tools, good practices and resources which CBI can use in its Export Coaching Programme (ECP). Notably for organizations working on commercial and market entry themes, there are opportunities to agglutinate resources to support the sector and increase the impact capacity of the activities.

E. Soil management is crucial, and Central America has experience on the subject

Malnutrition of soils is the largest threat to the Central American coffee farmer; with sufficient compost the soil will sustain periods of drought, as they will retain water and nutrients better. Most of Central America's soil is sandy (used to be ocean) and apart from some volcanic nutrients is depleted from nutrition, especially in impoverished areas, where coffee is cultivated without any proper care. The lack of investment in proper composting activities causes a vicious cycle in which the farmer does not have enough production to pay for proper nutrition, which in turn does not provide enough production.

With certain cooperatives in Central America, there is knowledge in the region of compost production based on effective microorganisms, which should be extended region-wide; examples:

- COCAFCAL-Capucas and COCAFELOL (Honduras)
- UCPCO (Nicaragua)
- ACODIHUE (Guatemala)

3.4. Possible solutions and support actions

3.4.1. Solutions and support actions

A. Inclusion of cooperative-exporter partnerships in the Export Coaching Programme (ECP)

Related to constraints:

- (A) Insufficient technical assistance for quality and productivity improvement
- (B) Strong presence of intermediaries affects quality and traceability
- (D) Insufficient knowledge of the international/European market
- (E) Lack of managerial capacities at cooperative and SME level

Related to opportunities:

- (A) Cooperatives in Central America create scale and capacities for small producers

The involvement of producers and smaller cooperatives in CBI's Export Coaching Programmes (ECPs) is not usually done or feasible. However, CBI can encourage the inclusion of cooperative-exporter partnerships, a model which could make it possible for more isolated and weaker cooperatives to access export markets.

Existing partnerships between smaller cooperatives and exporters were identified during the field research, for example in Honduras and Guatemala (example: Cooperativa Integral Agricola "Sostenible Toneca" Responsabilidad Limitada ASIAST R.L. and Bicafe[108]). In these models, the contact is made between cooperative and international buyer, but the exporter is used as a (necessary) channel to the market to manage contracts, logistics, etc. Trust is a pre-condition for this model to work, so ideally there is an existing contact and business relationship between the candidates.

It is recommended that both cooperative and exporter participate jointly in CBI's activities, such as international trade fairs, but only if there is sufficient trust between the exporter and cooperative to jointly present themselves at trade fairs. Generally, however, this willingness will be there, as the exporter's ultimate marketing tool is to bring an actual producer to the fair. For the cooperative, it will be valuable to gain first-hand insight and contacts at trade fairs. For the importer, the combination of meeting the producer (cooperative) together with a reliable exporting partner will be attractive.

[108] http://www.bicafe.com.gt/

This type of partnership was tested successfully in the Central America Agro Food Programme[109], where one of the most remarkable examples was between Honduran exporter Beneficio Santa Rosa[110] and cooperative Café Capucas[111]. CBI's role and added value was to facilitate the contact between cooperative and exporter, as a neutral party. The initiative created moments for these two partners to discuss concrete issues and solutions, such as price transparency, but also to attract the interest of buyers by presenting this partnership at trade fairs.

B. Technical training and dissemination of best practices

Related to constraints:

- Mainly (E) Lack of managerial capacities at cooperative and SME level
  But also related to:
- (A) Insufficient technical assistance for quality and productivity improvement
- (B) Strong presence of intermediaries affects quality and traceability
- (D) Insufficient knowledge of the international/European market

Related to opportunities:

- (A) Cooperatives in Central America create scale and capacities for small producers
- (B) Central America has several success cases in market positioning
- (C) Regional collaboration for Central American coffee has an existing platform
- (E) Soil management is crucial, and Central America has experience on the subject

Support the technical capacities of cooperatives/SMEs and BSOs, with a view on export markets for specialty coffee. Training modules can be linked to a wide range of subjects, from production to marketing, such as:

- Guided cupping sessions with specialty coffee importers and other sector experts/Q-graders.
- Corporate Social Responsibility (CSR): components can include issues like chemical inputs and waste water, but can also address issues which address economic and sustainability issues at the same time (e.g. fair pricing, child labour, etc.).
- Composting training, with dissemination of best practices from the region. CBI has sponsored compost trainings before, and could cooperate with other agencies in delivering the modules or hiring experts in the field.
- Hedging and future options, also delivered previously by CBI experts in previous programmes.
- Smart marketing techniques, with best practices from Central America and/or other regions.

The options for subjects which could be relevant for cooperatives/SMEs are plenty. It's recommended that training and training materials are made available through webinars, so as to benefit other companies in the sector beyond ECP participants. More innovative solutions for presentation and delivery of the training material can be considered in formats such as TED Talks (when applicable).

This is also an opportunity to enhance regional collaboration, where regional guests can be invited to share best practices and solutions to specific bottlenecks faced in other countries.

C. Support regional participation at SCAE; support the involvement of PROMECAFÉ

Related to constraints:

- (G) Some Central American countries have coffee-branding issues
- (F) Disconnected initiatives at national level

Related to opportunities:

- (C) Regional collaboration for Central American coffee has an existing platform
- (B) Central America has several success cases in market positioning

It's important to continue bringing together the various Central American countries' coffee boards and exporters in a regional Specialty Coffee pavilion during the World of Coffee (SCAE) events,

[109] https://www.cbi.eu/projects/central-america-agro-food-programme/
[110] http://www.beneficiosantarosa.hn/
[111] http://www.mycapucascoffee.coop/

which was supported by CBI from 2014 -2016 and which was continued by the countries independently in 2017, and led by coffee institutes.

CBI could at this point give minimum guidance (monitoring, perhaps some facilitation) in order to make this collaboration between the countries sustainable into the future. However, it's recommended to work further on a common regional image (as mentioned previously), and support the involvement of PROMECAFÉ in these events. The individual country representatives could be encouraged to present a pavilion that has a more unitary presentation in terms of design, while still distinguishing national countries.

Due to the importance of the coffee sectors in Central American countries, the coming together of the various national coffee entities may serve as a catalyst for the countries to come together on other issues. These issues range from free-trade to common responses to disease outbreak or global warming resilience programmes, which are subjects high on the agenda of PROMECAFÉ as well as national coffee institutions.

D. ***Organize buyers' missions in Central America***

Related to constraints:

- (G) Some Central American countries have coffee-branding issues
- (D) Insufficient knowledge of the international/European market
- More indirectly: (A) Insufficient technical assistance for quality and productivity improvement

Related to opportunities:

- (C) Regional collaboration for Central American coffee has an existing platform

During the field research, it was mentioned several times by interviewed stakeholders that the organization of buyers' missions in Central America could bring much profit to the sector.

Buyers' visits already organized independently by stakeholders in some Central American countries such as El Salvador (CSC cooperates with smaller importers; mainly in micro lots) and Panama (companies organize this individually with their buyers). Honduras, for example, still has problems in bringing in buyers, partly because of the security situation.

CBI could organize visits from European importers and roasters to Central America to strengthen the relationships between buyers and suppliers (producers/cooperatives), and provide a platform for direct trade. Importantly, a shorter, more direct chain will also take care of a lot of quality issues: improved levels of traceability from the producer to the exporter will help shorten the transition and layover time of coffee lots and it can help prevent the coffee from developing "baggy" notes while in transit.

The SCAE trade fair could be used as a platform to make buyers more interested in visiting the region, and this could be done in a regional context with the support of PROMECAFÉ and the individual national coffee institutions. Buyers' missions can be combined with a regional (specialty coffee) festival, where exporters, roasters and importers come together. National festivals of this type are already organized in Guatemala, Honduras, El Salvador and Costa Rica.

E. Digital directory of tools and best practices

Related to constraints:

- (A) Insufficient technical assistance for quality and productivity improvement
- (F) Disconnected initiatives at national level

Related to opportunities:

- (C) Regional collaboration for Central American coffee has an existing platform
- (B) Central America has several success cases in market positioning
- (D) Coffee is high on the international cooperation agenda
- (E) Soil management is crucial, and Central America has experience on the subject

The array of donor programmes and national initiatives in Central America's coffee sector has left a rich legacy of tools and best practices. This material can be found in a fragmented way in various (online) platforms and in the hands of specific organizations active in this sector. In light of reactivating regional cooperation through this programme, it's recommended that CBI implements an early intervention to inventorize, centralize and categorize this information through a digital directory, possibly in cooperation with PROMECAFÉ.

One of the challenges of such a platform, and probably one of its potentials, is to close the technical assistance gap for coffee producers and exporters in Central America. A digital tool, accessible in the form of an app, for example, can be considered to reach a broader audience. An example could be a self-assessment and strategy for climate change resilience, which is currently one of the most challenging topics for coffee producers and exporters.

3.4.2. Possible participants for the CBI programme

It's not possible to determine the exact number of potential participants to the CBI programme, especially when considering the hundreds of cooperatives which could be engaged directly or indirectly in the programme. However, it is possible to provide an indication based on the pool of coffee exporters in different Central American countries.

A point of departure to select exporters could be to investigate the members' lists of exporters' associations in specific countries such as Guatemala's Asociación de Exportadores de Café (ADEC)[112] and Asociación de Exportadores de Café de Honduras (ADECAFEH)[113]. Although these associations typically focus on larger exporters, some affiliated members are small and medium-sized companies with potential to participate in the programme.

The broader databases of coffee institutes and export-promotion agencies of specific Central American countries were also consulted to make initial estimates:

- Costa Rica: 50+ registered coffee exporters on the ICAFÉ directory[114].
- Nicaragua: statistics were last registered in 2012-2013; but 50+ coffee exporters can be identified on the CETREX directory[115]. Another possible source is the directory of the Centro de Exportaciones e Inversiones (CEI)[116].
- Honduras: 30+ registered differentiated coffee exporters, derived from IHCAFÉ's statistics[117]. FIDE - Honduras Si Exporta[118] has a complementary directory of coffee exporters.
- Guatemala: All registered exporters are available on request through ANACAFÉ[119]; additionally, around 15 registered cooperatives and exporters on the directory of Agexport – Productors Agrícolas Diferenciados[120].
- Panama: 20+ exporters are registered on the directory of Panama's Embassy[121].
- El Salvador: the online directory of PROESA[122] lists around 10 exporters of green coffee. Additionally, all registered exporters are available on request through the Consejo Salvadoreño del Café[123].

An initial analysis of the pool of exporters in each Central American country indicates that there are at least 20 to 30 eligible companies in the region.

Cooperatives are usually not members of exporters' associations, but are registered in the list of coffee institutions in their countries. To select suitable cooperatives for the programme, CBI firstly

[112] http://adecgt.com
[113] https://www.facebook.com/ADECAFEH
[114] http://www.icafe.cr/wp-content/uploads/directorios_sector/DirectorioExportadores.pdf
[115] https://www.cetrex.gob.ni/website/servicios/cafe/cosecha2012-2013/empresa.html
[116] http://www.cei.org.ni/exportadores.php?lvl=16&lvl2=26
[117] https://www.ihcafe.hn/?mdocs-file=4357
[118] http://www.hondurassiexporta.hn/directorioexportadorescafe/elementos/directoriocafev3.pdf
[119] https://www.anacafe.org/
[120] http://export.com.gt/agexport/directorio/#/directorio/1/6/////
[121] http://embajadadepanama.com.co/wp-content/uploads/2016/12/0549_161004145702_001.pdf
[122] https://drive.google.com/file/d/1WLZ5DDbgLiMsp1QPepNh473501_baWRy/view
[123] http://www.csc.gob.sv/

will need to establish its selection criteria. The list of registered cooperatives can be long, and the setting of parameters can help filter out candidates for the programme.

In the specific selection of women-led cooperatives, there are isolated cases of organizations and initiatives with a gender focus. In Guatemala, for example 8 women-led exporters/cooperatives are listed on the database of Mujeres de Guatemala[124].

Following the proposed solution "(A) Inclusion of cooperative-exporter partnerships in the Export Coaching Programme (ECP)", both cooperatives and established exporters should be encouraged and allowed to apply as candidates for the programme. They could apply independently or as a consortium, as long as they make the supply chain and the proposed partnership clear in the application. This can include, for example, the type of partnership and the roles and responsibilities of each partner of the consortium.

3.4.3. Risk mitigation strategies in sustainability performance

In order to specifically address the most important sustainability risks identified during this value chain analysis, and contribute to a positive sustainability performance of the sector, the following mitigation strategies are recommended:

- Child labour:
  - As part of the parameters for company selection for the ECP, CBI should consider each company's existing participation in national projects or individual initiatives to tackle child labour in coffee, such as coffee kindergartens and farm schools.
- Waste management
  - During the selection phase, CBI's sector expert can investigate waste management practices of specific candidates as part of the pre-auditing protocols.
- Prices:
  - Price Risk Management workshops should be continued – coaches should have knowledge of the matter, or if not, hire professionals.
- Impact on forest and biodiversity / chemical use:
  - Mitigation strategy suggested by CBI coffee expert Sebastién Lafaye: CBI could require candidate companies for the ECP sign a commitment letter to implement an extension plan carried out by a professional organization (such as CATIE) to stimulate the sustainability of the crop and to increase efficiency and quality. This agricultural agency would carry out individualized assessments based on the local agro-ecology of the farm(s) and work out a plan to avoid plagues, diseases and increase resilience against climate change. CBI, together with this agency, should find a few parameters that should be implemented by the candidate-company. (European) roasters could also be involved in these activities, such as Falcon and ECOM, who already carry out projects in this direction.
  - Introduce organic composting practices through training modules and best practices, which not only mitigate forest and biodiversity risk but also improve production and quality.
  - Another strategy to mitigate the forest / biodiversity risk is to pay more attention to research carried out (by for instance World Coffee Research) on new coffee varieties with more resilience to global warming and diseases such as coffee rust.

[124] https://mujerescafeguatemala.org/directorio-de-asociadas/wpbdp_tag/exportadoras

4. Cacao and derivatives Value Chain

4.1. Key European market characteristics and Central America's competitiveness on the European market

4.1.1. Supply from Central America

Cacao production in Central America

Cacao production in Central America is low compared to other producing countries worldwide. The collapse of Central America's production began in the early 80s, and it was caused by a mix of diseases (mainly Moniliasis), low international cacao prices, poor yields and government programmes with weak scientific support. These aspects were followed by hurricane Mitch that left plantations in disarray in the late 1990s, mainly in Honduras. Revitalization programmes in the region, supported by CATIE's Proyecto Cacao Centroamérica (PCC) (2007-2013)[125], helped the recovery of the sector at a time when international prices increased again.

The latest production figures provided by FAOSTAT (2017)[126] do not match with other official sources per country. For this reason, we use more accurate estimates for Central American cacao bean production provided by the Meso-American Association of Fine Cacao and Chocolate (AMACACAO), which are displayed in the table below:

Table 4.1 Production of cacao beans in Central America, 2017, in tonnes

Country	Production cacao beans 2017 (tonnes)
Nicaragua	4,500- 5,500
Honduras	900-1,200
Guatemala	900-1,100
Costa Rica	650-700
Panama	200-300 (revised to 500-600)
El Salvador	25-35

Source: Juan Francisco Mollinedo, president of AMACACAO, 2018

Nicaragua is leading Central America's cacao production, which resulted in 2017 in around 5,000 tonnes of production. It is estimated that cacao production in Nicaragua will develop towards 8,000 tonnes within three years, mainly because of investments of big private European companies like La Rosita (France), Ritter Sport (Germany), Ingemann (Denmark), Bean & Co. (Israel) and Exportadora Atlantic (part of ECOM Agroindustrial, Switzerland).

For Panama, industry sources adjusted the production estimates to around 500-600 tonnes in 2017 during CBI's Stakeholder Conference held in Guatemala in March 2018, which was confirmed during the field research. Within the next three years, a growth of at least 8% is foreseen.

El Salvador's production is also expected to pick up due to the efforts of Catholic Relief Services-supported programme Alianza Cacao[127]. The programme estimates an increase of 1,000 tonnes in 5 years. Nowadays, domestic demand is met through imports from Guatemala, Honduras and Nicaragua.

Central America is divided in countries producing the quality cacao beans, like Nicaragua and Honduras, and countries that have specialized in the transformation of the beans, like El Salvador Guatemala, Costa Rica (chocolate) and Honduras (for cacao derivatives). They are adding value to production and opening regional and international markets.[128]

[125] http://orton.catie.ac.cr/repdoc/A4950e/A4950e.pdf
[126] http://www.fao.org/faostat/
[127] http://www.alianzacacao.org/es
[128] https://d2vmpwbfz8sj1e.cloudfront.net/sites/default/files/paragraph/attachments/analisis_regional_0.pdf

Certified cacao production in Central America

A large share of cacao production in Central America is certified, and most producers or exporters have multiple certifications. The two largest cacao-producing countries in Central America (Nicaragua and Honduras) are also the countries with the highest certification numbers. The main certifications are:

UTZ, Rainforest Alliance
Nicaragua tops the certified producers' list in Central America for UTZ certification with 17 certified producers. In Honduras, only one producer is certified (Cacao Fino y Maderables de Honduras S. de R.L. de C.V.), and none in other countries. A detailed list of UTZ certified producers per country[129] can be downloaded from the website of UTZ.

Other value chain actors that are UTZ certified can also only be found in Nicaragua (a total of 2 exporters: Kakaw Export and Ritter Sport Nicaragua) and Honduras (only 1: Chocolate del Caribe); no other Central American countries have actors that are UTZ certified. For a detailed list of certified value chain actors[130], refer to the website of UTZ.

Rainforest Alliance certification for cacao is less common in Central America, but also present[131]. However, the organization announced a merger with UTZ, from which a new single standard will be launched in 2019.[132] This organization will utilize the respective strengths of the current Sustainable Agriculture Network (SAN) and UTZ standards while creating a single auditing process for certificate holders.

Organic
Organic production is not necessarily related to fine flavor or high-quality cacao nor is it always the norm in high-end markets. There is, however, a niche market for organic-certified cacao within the specialty segment.

In total production area, Panama has the largest share of organic area in Central America with 14,023 hectares, followed by Nicaragua (3,666 ha.) and Honduras (753 ha.). Looking at the share of organic cacao production in relation to total cacao production, Nicaragua (56.4%) and Honduras (44.3%) are leading[133].

Fairtrade
Regarding Fairtrade, there is one cooperative and association that is Fairtrade certified in Panama and Costa Rica respectively. Honduras and Nicaragua again top the list, with both six certified cooperatives and/or exporters. A list of the cooperatives, associations and operators per country that are Fairtrade certified can be found on the website of FLOCERT[134], the certification body for Fairtrade.

In Nicaragua, five cooperatives and associations are Fairtrade-certified, next to the German company Ritter Sport. The strong presence of the company Ritter Sport in Nicaragua explains this high occurrence of certification. Ritter Sport has a strong focus on sustainable production, aiming to achieve 100% sustainable production by 2025. Farmers that are producing cacao in Nicaragua are therefore also required to be certified.

Cacao exports from Central America

Central America exports cacao in raw material form, cacao beans. A development is visible of processed cacao export like liquor, butter, powder and chocolate, but these numbers are negligible and export of these products remains low.

[129] https://utz.org/?attachment_id=12594
[130] https://utz.org/?attachment_id=12595
[131] https://www.rainforest-alliance.org/sites/default/files/2016-08/SAN_RA_Impacts_Report.pdf
[132] https://www.rainforest-alliance.org/articles/rainforest-alliance-utz-merger
[133] https://shop.fibl.org/CHen/mwdownloads/download/link/id/785/?ref=1
[134] https://www.flocert.net/about-flocert/customer-search/

Nicaragua is the main exporter of cacao beans, followed by Panama, Honduras and Costa Rica. The other Central American countries show great potential, but there will be limited export quantities for these countries in the near future. Export numbers in 2016 show the following country division:

Table 4.2. Central American exports of cacao beans, per country, main export markets

Country	Exports of cacao beans, 2016 (volume / value)		Growth/decline since 2014, annual (value)	Main export markets
Nicaragua	3,904 tonnes	USD 6.2 million	-29%	Germany (55%), El Salvador (17%), Guatemala (12%)
Panama	502 tonnes	USD 2.0 million	+21%	Germany (56%), Belgium (36%), South Africa (8%)
Honduras	577 tonnes	USD 1.4 million	+30%	Switzerland (47%), El Salvador (18%), USA (17%)
Costa Rica	410 tonnes	USD 1.3 million	+20%	Netherlands (36%), Honduras (33%), Panama (17%)
Guatemala	73 tonnes	USD 325,000	+120%	USA (62%), Netherlands (21%), France (11%)
El Salvador	9 tonnes	USD 38,000	+13%	USA (45%), Honduras (37%), Italy (16%)

Source: ITC Trademap, 2018

Panama, Honduras and Costa Rica show similar export figures and all display growth since 2014. Europe is the main export market for Nicaragua, Panama and Honduras. Cacao exports from Costa Rica are destined to other Central American countries and to the Netherlands. For Guatemala and El Salvador, the USA is the main destination.

Fine flavour cacao exports from Central America

Fine flavour cacao[135] accounts for around 5% of the world's cacao production (200,000 tonnes per year)[136]. The following overview provides the share of total exports of the country classified as fine and flavour cacao in Central America. At the last meeting of the International Cocoa Organization (ICCO) panel in September 2015, the following Central American countries were defined as exporters of fine flavour cacao (at the indicated share of total exports), and subsequently approved by the International Cocoa Council at a meeting in May 2016:

- Costa Rica: 100%
- Guatemala: 50%
- Honduras: 50%
- Nicaragua: 100%
- Panama: 50%
- El Salvador is on the "waiting list" as the production currently is too low. The small amounts produced in the country are of good quality – including *Criollo rojo*, a rare native species to the region that is being propagated.

Cacao derivative exports from Central America

When looking at cacao derivatives, the modest figures that are being exported from Central America evolves around semi-finished cacao products from Panama destined to Poland and to the Netherlands, mainly from Kokoa del Istmo[137]. Next to this, the Honduras-based processing plant Chocolate del Caribe (former participant of the Central America Agro Food Programme[138]) is starting to export semi-finished cacao products to Europe, using cacao beans from neighboring countries such as Nicaragua's.

Guatemala's own chocolate production ensures strong regional chocolate exports (USD 11 million in 2016), due to the country's strong chocolate industry. Chocolate has a traditional importance to Guatemala[139], and the country has high-end chocolate makers such as Danta Chocolate and Carlos

[135] http://www.icco.org/about-cocoa/fine-or-flavour-cocoa.html
[136] http://www.icco.org/about-us/international-cocoa-agreements/cat_view/290-world-cocoa-conference-2016-bavaro/291-presentations-world-cocoa-conference-bavaro-2016/293-fine-and-flavour-cocoa-forum-at-wcc3.html
[137] https://www.cocoapanama.com.
[138] https://www.cbi.eu/projects/central-america-agro-food-programme/
[139] https://elperiodico.com.gt/inversion/2018/01/18/cacao-guatemalteco-un-producto-con-mercado-pero-con-poca-oferta/

Eigenberger. Most Guatemalan chocolate exports are destined to regional markets. Similarly, Costa Rica's and El Salvador's exports of chocolate are oriented towards regional markets.

4.1.2. Current demand in Europe

European cacao demand

In Europe, there will always be demand for cacao. A severe shortage worldwide is expected in the coming years due to aging plantations (depleted soils) and increasing population (growing consumption), as well as changing consumption patterns in fast-growing economies like China. In 2016, European imports of cacao beans reached 2.0 million tonnes (€ 6.1 billion), growing in both volume (at an annual rate of 5% since 2012) and value (12%).

Europe is a dominant force in the cacao sector, representing more than half of global cacao bean imports. The Netherlands, Belgium and Germany are the largest importers within the European market and European demand for premium/specialty/fine flavour cacao is increasing.[140]

Most cacao beans in Europe are supplied by West Africa (mostly bulk cacao of *Forastero* variety). The main origins are Ivory Coast (35% of market share in 2016) and Ghana (17%), others are Liberia and Guinea[141]. These supplies are essential for the production of standard-quality chocolates and are used by most large companies worldwide. The market in Western Europe offers most opportunities for high-quality cacao.

Compared with other suppliers worldwide, Central America accounts for a very small share of total cacao beans imported into Europe. Out of the 2.0 million tonnes (€ 6.0 billion) of cacao beans traded into Europe in 2016, Central American suppliers accounted for 1,801 tonnes (€ 6.5 million). This represents less than 1% of total cacao bean supplies to Europe in 2016.

Central American supplies of *cacao beans* to Europe in 2016 were distributed according to the following:

Table 4.3 European cacao bean imports from Central America and main European export markets

Country	European imports from Central America 2016 (volume / value)		Growth or decline since 2012, annual (volume / value)		Share of total exports destined to Europe and main European markets
Nicaragua	1,100 tonnes	€ 4.0 million	-1%	8%	67% (Germany)
Panama	500 tonnes	€ 1.7 million	2%	14%	90% (Germany, Belgium)
Costa Rica	98 tonnes	€ 360,000	-17%	-13%	42% (Netherlands, Germany)
Honduras	66 tonnes	€ 307,000	239%	284%	58% (Switzerland, Netherlands, Sweden)
Guatemala	34 tonnes	€ 165,000	329%	292%	32% (Netherlands)
El Salvador	0.4 tonnes	€ 7,300	n/a	n/a	15% (Italy)

Source: Eurostat, 2018

Central American supplies of semi-finished cocoa products (cocoa derivatives) have an even more modest role in European imports. For all product groups, Central America accounts for less than 1% of total European imports. European imports of cocoa derivates are sporadic and change substantially each year.

Some exports of semi-finished cocoa products from Panama (mainly cocoa paste and butter) are destined to Poland[142]. A northern Honduras processing plant is starting to export semi-finished cacao products to Europe, using beans from neighbouring countries such as Nicaragua, which explains Honduras' increasing role in exports of cacao derivatives.
Cacao paste: Total European imports in 2016 amounted to 536 thousand tonnes / € 1.7 billion. 51% of European imports in 2016 were sourced directly from cacao-producing countries. The largest suppliers were: Ivory Coast: 30%; Ghana: 13%; Indonesia: 3.7%. Imports from suppliers in Central American were the following:

Table 4.4. European cacao paste imports from Central America and main European export markets

[140] https://www.cbi.eu/market-information/cocoa/trade-statistics
[141] Eurostat 2017
[142] Possibly following the trade flows of a few companies such as https://www.cocoapanama.com.

Country	European imports from Central America 2016 (volume / value)		Growth or decline since 2012, annual (volume / value)		Share of total exports destined to Europe and main European markets[143]
Honduras	70 tonnes	€ 421,801	n/a	n/a	n/a (Belgium)*
Panama	60 tonnes	€ 189,001	n/a	n/a	87% (Poland)
Guatemala	n/a	€ 210	n/a	n/a	n/a

*Import data (Eurostat) not consistent with export data (ITC Trademap)

Cacao butter: Total European imports in 2016 amounted to 517 thousand tonnes / € 2.8 billion. 32% of European imports in 2016 were sourced directly from cacao-producing countries. The largest suppliers were: Ghana: 3.5%; Indonesia: 3.2%. Imports from suppliers in Central American were the following:

Table 4.5. European cacao butter imports from Central America and main European export markets

Country	European imports from Central America 2016 (volume / value)		Growth or decline since 2012, annual (volume / value)		Share of total exports destined to Europe and main European markets[144]
Honduras	216 tonnes	€ 1.4 million	n/a	n/a	n/a (UK, Netherlands)
Panama	40 tonnes	€ 177,309	n/a	n/a	94% (Netherlands, Poland*)

*Import data (Eurostat) not consistent with export data (ITC Trademap)

Cacao powder: Total European imports in 2016 amounted to 295 thousand tonnes / € 672 million. 13% of European imports in 2016 were sourced directly from cacao-producing countries. The largest suppliers were: Ivory Coast: 5.4%; Ghana: 4.6%; Indonesia: 0.8%. Imports from suppliers in Central American were the following:

Table 4.6. European cacao powder imports from Central America and main European export markets

Country	European imports from Central America 2016 (volume / value)		Growth or decline since 2012, annual (volume / value)		Share of total exports destined to Europe and main European markets[145]
Guatemala	19 tonnes	€ 49,364	n/a	n/a	31% (Netherlands)
Panama	25 tonnes	€ 38,085	n/a	n/a	59% (Poland)
Honduras	n/a	€ 245	n/a	n/a	n/a (France, Sweden)*
Nicaragua	n/a	€ 220	n/a	n/a	n/a (Belgium)*

*Import data (Eurostat) not consistent with export data (ITC Trademap)

Chocolate, including industrial chocolate: Total European imports in 2016 amounted to 2.8 million tonnes / € 12 billion. 2.0% of European imports in 2016 were sourced directly from cacao-producing countries. The largest supplier was Ivory Coast (1.0%). Imports from suppliers in Central American were the following:

Table 4.7. European chocolate imports from Central America and main European export markets

Country	European imports from Central America 2016 (volume / value)		Growth or decline since 2012, annual (volume / value)		Share of total exports destined to Europe and main European markets[146]
El Salvador	2 tonnes	€ 6,166	n/a	125%	<1% (Spain)
Honduras	1 tonne	€ 4,520	n/a	347%	2% (Spain, Portugal?)*
Guatemala	n/a	€ 2,686	n/a	-5%	<1% (Denmark, UK, Belgium)*
Nicaragua	n/a	€ 597	n/a	-17%	50% (Germany)
Panama	n/a	€ 193	n/a	n/a	n/a (Spain)*

*Import data (Eurostat) not consistent with export data (ITC Trademap)

Central American cacao is relatively expensive, even for low grade cacao, due to its regional demand (confectionery industry in El Salvador and Mexico). European buyers are probably not willing to pay premium prices for low or medium quality Central American cacao, or even higher prices for well-processed quality cacao. Substitute countries in West Africa or Ecuador are seen as better options. However, Central American cacao has characteristics that are sought after in the fine flavour chocolate market, since it has a nutty, complex flavour. Therefore, the possibility of

[143] Calculations ITC Trademap (HS code: 1803)
[144] Calculations ITC Trademap (HS code: 1804)
[145] Calculations ITC Trademap (HS code: 1805)
[146] Calculations ITC Trademap (HS code: 1806)

supplying well-processed quality cacao is there in spite of the challenges in reaching higher production volumes.

European market developments

The increase in European imports of fine flavour cacao happens currently at a small scale and within a niche market, but it follows the consumer trend for higher quality chocolate. In 2016, around 8% of European cacao imports came from Latin American countries, bringing fine flavour *Trinitario* and *Criollo* varieties into the market. European consumption is replacing its cheap, milk chocolates of the past century for higher quality (and higher cacao content) chocolate with certifications.

There is currently more demand than supply in the European market, which provides good market expansion opportunities for Central America as soon as the region's production increases. Europe is also the market that (together with the US and Japan) pays the highest prices for high-quality cacao. As for the increasing European demand of single origin cacao, Central America brings an interesting marketing story as it is one of the 'cradles of cacao' (the word chocolate comes from the Mayan word xocolatl). The export in recent years of FTO-certified cacao from Guatemalan producers federation FEDECOVERA to Dutch buyers is evidence of this scenario.

4.1.3. Market trends

Opportunities and threats

Within the market for high quality cacao, the following developments which have implications for Central American suppliers stand out[147]:

Fine flavoured cacao: Cacao supply in volume has low opportunities; interesting opportunities are more in the niche, certified, high-end market segments. The so-called gourmet segment of the world chocolate market is considered the highest added value that the product could have. The price of the product and the possibility of entering the market represent a unique opportunity for the achievement of significant premiums (high prices) on the international markets. Fine flavoured cacao is typically perceived as having a more intense flavour and aroma. They originate from Creole or Trinitarian trees and depend on the post-harvest process to reach quality standards. The International Cacao Organisation (ICCO) has designated all Central American countries as producers of fine flavoured cacao, with the exception of El Salvador (which is on the waiting list); Costa Rica and Nicaragua are exporters of 100% fine flavour cacao.

The idea of terroir: This idea is much present in the wine market and is developing in the specialty coffee market, but it is still in its infancy for fine flavour cacao. However, the industry is creating mechanisms such the International Cocoa Awards (ICA) of the Cocoa of Excellence (CoEx)[148]. This rewards flavour, quality and diversity of different origins. The Cocoa of Excellence is also involved in the development of standardized procedures and language around assessing cacao bean quality[149] (with the example of those for coffee, wine and olive oil). And also in its direct relation to high quality chocolate for buyers and for consumers to understand. Currently, consultations with industry actors worldwide are being carried out by Bioversity International, so as to investigate existing tools and methodologies to assess cacao quality. The first consultation was carried out in Managua (Nicaragua), 19 – 21 September 2017, followed by one in Paris during the Salon du Chocolat (October 2017).

The Meso-American Association of Fine Cacao and Chocolate (AMACACAO) is a co-founder of this effort, and is planning to have the first pilot project along with strategic alliances with key partners to validate much of these Standards and apply them to its CUNAKakaw protocol[150]. AMACACAO is also working alongside the most important companies and cooperatives in each of the regions in Central America to identify and study each "terroir" and other differentiations related to genetics, soil, climate and processes.

[147] https://www.cbi.eu/market-information/cocoa
[148] http://www.cocoaofexcellence.org/
[149] http://www.cocoaofexcellence.org/about-us/quality-and-flavour-assessment/
[150] http://www.cunakakaw.com/

Single origin cacao: Single origin cacao chocolate is gaining popularity on the European market[151]. This is linked to the attention given to the production areas, as well as to the story of producers and their communities. This development can also contribute to the demand for cacao products processed at origin. The rise in single origin chocolate products is reflected by events such as Origin Chocolate[152], Chocoa[153] and Salon du Chocolate[154]. The increasing production of single origin chocolate products by speciality brands as well as by mainstream retailers and brands[155] also supports this trend.

Traceability plays an important role in the production of single origin chocolates[156]. This usually means that the origin of the cacao beans is known and safeguarded along the chain.

Micro lots: The market for micro-lots also attracts a growing interest from the high-quality chocolate industry. Small volumes of top-quality cacao are used in special editions and for high-end markets in Europe, which is a very small share of the market. These products attain very high prices, which is itself a limiting factor for the expansion of the consumer base. The cacao sector follows tendencies of the specialty coffee sector, which has its own-micro lot platform through the Cup of Excellence[157].

Certification: Demand for certification of cacao and chocolate is growing[158]. Even mediocre quality cacao will need some sort of certification because it has become quite the standard. In some European market channels (particularly in supermarket chains), certification is becoming a minimum requirement. Certification is an important tool of commitment to sustainability, and usually provide a premium to producers and exporters.

- *Fair Trade cacao:* The main characteristics of this market are direct relationships between buyers and suppliers, a fixed base price that protects producers when world prices fall, and the fair trade reward. This fair trade reward supports social investment in development processes of producer communities. For example, APPTA (Costa Rica) supplies to the organic markets and fair trade markets of cacao, banana and other tropical fruits in Europe, the United States and the domestic market. It has therefore both fair trade and organic certification which has led to the obtainment of stable and superior market prices.
- *Organic cacao:* There is a niche market for organic-certified cacao within the specialty segment. Organic production maintains and improves the health of soils, ecosystems and people. Technical assistance is important in order to be able to produce according to the principles of organic production, including methods for the control of pests, diseases and for the improvement of soil fertility.
- *Other sustainability schemes:* Two leading certifications for cacao in social, environmental, quality aspects and the model for continuous improvement are Rainforest Alliance and UTZ. Cacao plantations that are Rainforest Alliance certified are currently located in the Ivory Coast, Ecuador, the Dominican Republic, Peru, Colombia, Brazil and Costa Rica. UTZ is known mainly for its certification of coffee products, but it also certifies cacao. In 2017, these two organizations announced a merger into a single organization and certification body named Rainforest Alliance. This organization will utilize the respective strengths of the current Sustainable Agriculture Network (SAN) and UTZ standards, while creating a single auditing process for certificate holders. The new single standard will be launched in 2019[159].

Micro lot cacao is the only type that does not need certification as its quality and traceability to farm level is so high that is it goes 'beyond certification'.

Direct trade: Direct trade between producers and small and medium-sized chocolate makers is also an ongoing trend on the fine flavour cacao market. In its strict sense, direct trade eliminates the traditional role of European traders. However, this is not always feasible for chocolate makers

[151] http://www.telegraph.co.uk/food-and-drink/features/national-chocolate-week-the-rise-of-single-origin-bars/
[152] http://www.originchocolate.eu/
[153] http://www.chocoa.nl/
[154] http://www.salonduchocolat.fr/accueil.aspx
[155] http://www.telegraph.co.uk/food-and-drink/features/national-chocolate-week-the-rise-of-single-origin-bars/
[156] http://www.thelocalafricanews.com/rise-purists-chocolate-new-coffee/
[157] https://www.allianceforcoffeeexcellence.org/en/
[158] UTZ, Rainforest Alliance, Fairtade, organic
[159] https://www.cbi.eu/market-information/cocoa/buyer-requirements

who cannot deal with logistics, contracts, customs documentation and cases of non-compliance. As such, there is a growing trend for European importers to create better connections between chocolate makers and producers, and still act as service providers in the value chain.

EU food safety measures: The European Union has strengthened its regulation on cadmium in cacao and derived products. The new regulation will become effective in January 2019[160]. Cadmium is found naturally in the soil, but pesticides and chemical fertilizers containing cadmium are also sources of contamination. The presence of cadmium is a particular problem for cacao from some Latin American countries due to factors like volcanic activity and forest fires; it may also be a market access problem for some areas/producers in Central America.

Innovations

As cacao production is being revived in Central America, processing facilities for cacao derivatives are very new. The main one, Chocolate del Caribe, is located in North Honduras. The facilities are clean and professional, especially in comparison to processing facilities in Ecuador and Venezuela.

The creation of the cacao sector association AMACACAO with its trademark CUNAKakaw is a recent innovation that is bundling the best cacao in the region. They apply smart marketing, obtain training from experts and lobby successfully with International Cocoa Organization (ICCO) for placement of the countries as suppliers of the fine flavour cacao, winning Cocoa of Excellence awards. In addition, CUNAKakaw is also a quality standard which aims at regenerating cacao and chocolate production in Meso-America together with a guarantee for quality products, managed under a strict Internal Control System and supported by post-harvest protocols and laboratory analysis. This is an example of an innovative solution to the harmonization of quality standards across an entire region.

4.1.4. Competition

Main rivals, new entrants and substitutes

Cacao production from Central America caters for the specialty cacao segment in Europe (<10% of the market), which is associated with lower volumes of mostly *Trinitario* and *Criollo* varieties, marked by high quality, fine flavour and single origin. Europe currently accounts for around 45% of the dark chocolate market worldwide, which is expected to grow at an annual rate of over 8% by 2019 at the global level.

Ecuador, Peru and the Dominican Republic are the main suppliers to Europe within the specialty cacao segment. Madagascar, Colombia and Papua New Guinea are playing an increasingly important role. Their supply to the European market reveal the following figures:

Table 4.8. Main suppliers of fine flavour cacao beans to Europe

Supplier	European imports 2016 (volume / value)		Share of total European imports, 2016 (value)	Growth / decline since 2012 (volume / value)	
Ecuador	70,457 tonnes	€ 204 million	3%	+7%	+12%
Peru	52,267 tonnes	€ 156 million	3%	+27%	+37%
Dominican Republic	43,507 tonnes	€ 135 million	2%	+13%	+20%
Madagascar	9,184 tonnes	€ 28 million	0.5%	+18%	+25%
Papua New Guinea	6,014 tonnes	€ 21 million	0.3%	-5%	-1%
Colombia	6,965 tonnes	€ 20 million	0.3%	+54%	+63%

Source: Eurostat 2018

According to the International Cocoa Organization (ICCO), a large part of the total exports from these countries classify as fine flavour cacao:

- Ecuador: 75%
- Peru: 75%
- Dominican Republic: 40%
- Madagascar: 100%
- Colombia: 95%
- Papua New Guinea: 90%

[160] https://ec.europa.eu/food/safety/chemical_safety/contaminants/catalogue/cadmium_en

Venezuela, Peru and Ecuador show similar characteristics in flavour of their cacao (complex). The decline of Venezuelan plantations during its lingering political and economic crisis and the decline of Ecuador's reputation (downgraded from 100% to 75% fine flavour cacao) offers an opportunity to Central America. Competition amongst Central American countries causes no serious issues, since cacao production is still too limited.

For the semi-finished cacao products (cacao derivatives) supplied to the European market, we can see that multinational / European companies such as Cargill, Olam, ADM and Barry Callebaut are investing in the process instead of independent processors or exporters. This means that local independent processors need to compete with European companies that are based in Europe but also active in the producing countries. In order to compete with these companies it is crucial for Central American (and other) smaller processors to add stories and traceability to their products.

4.1.5. Benchmarking

While a large share of Central American cacao is still not fermented and sold to the confectionery industry in El Salvador, Guatemala and Mexico, its export cacao cultivated by private companies and cooperatives alike can be categorized into the specialty category, or "fine flavour cacao", comparable to Arriba Nacional of Ecuador, or the Trinitarian cacao of Venezuela. Nutty flavour dominates, with various notes of fruits and/or berries, which are appreciated by fine chocolatiers. In addition, there are many other ancillary flavours sought after by chocolate makers that are currently being developed in Central America.

Central American cacao is generally perceived as high-quality by European buyers: good fermentation and drying; good rich flavour. However, they are not fast-runners in terms of sales due to the higher prices (USD 5/kg FOB) in relation to other origins. With growing volume of cacao at the same prices, there will be a very limited market in Europe for Central American exporters.

4.2. Structure, governance and sustainability of the value chain

4.2.1. Structure

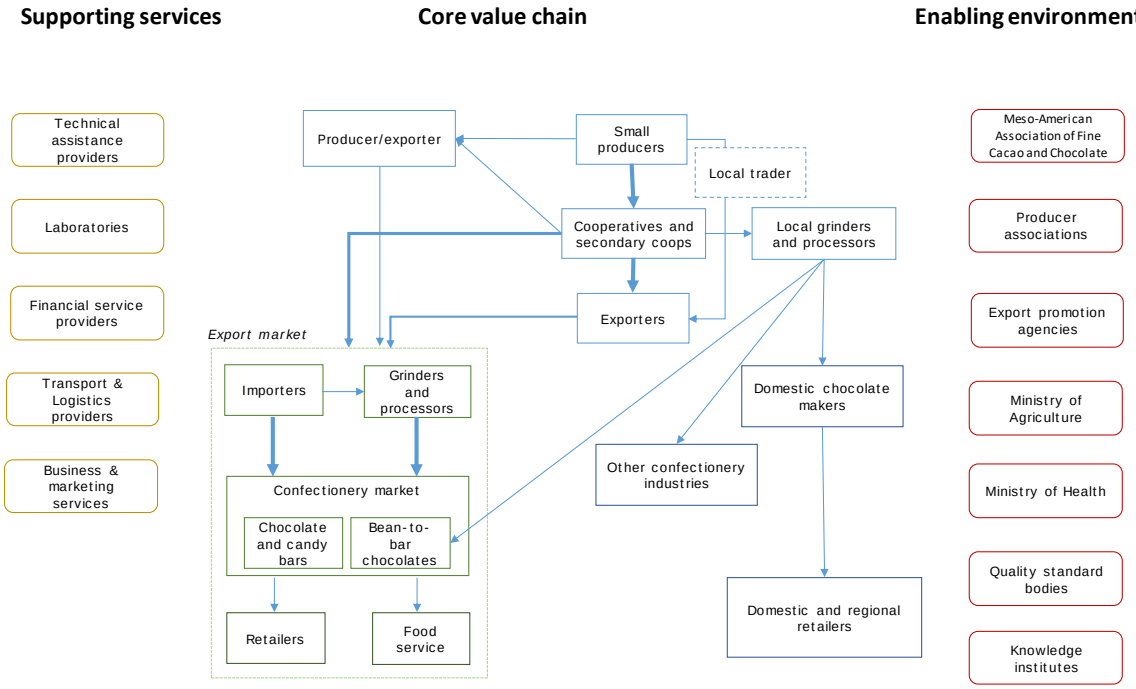
Value Chain actors

The cacao chain in Central America consists of several functions: production, post-harvest (primary) processing, cacao bean exports, further processing and exports (derivatives). These functions are fairly fragmented across different actors, though some larger players perform more than one role in the chain (primary processing-exports; further processing-exports).

The fragmentation of the cacao chain, mainly at production level, requires the support of different actors such as cooperatives and secondary cooperatives. Intermediaries/local traders are also involved in the chain, but not to a large extent such as in the coffee chain.

Central American chocolate makers play an important role in the chain as well, but their participation in European markets is very low; chocolate is not included in this analysis.

Figure 4.1. Visual representation of the cacao value chain in Central America



Producers

In Central America, cacao is mainly produced, managed and collected by small producers, usually in the context of the household. Being mostly produced as an agroforestry product, other resources are used by the producer such as timber, fruits, medicinal herbs, etc. In El Salvador, for example, it became increasingly common for producers to produce cacao next to coffee due to the devastating effects of the coffee rust.

In Guatemala, traditional cacao production happens as a backyard activity, without technical skills such as shade management. This cacao is sold only in the local markets, mainly to make a hot chocolate beverage. However, it is increasingly common for producers to start cultivating cacao using proper genetic material and production techniques due to the product's commercial value.

Small cacao producers in Central America are often organized into cooperatives (or associations), which have the capacity to aggregate larger volumes and carry out post-harvest processing. Cooperatives are also able to provide services to producers, such as technical assistance and credit. Some cooperatives in Central America are also organized into larger secondary cooperatives or federations. In general, they also provide seedlings and technical assistance to producers.

Intermediaries

Intermediaries are uncommon in the cacao chains in Nicaragua and Honduras, where there is a high level of contact between producers and cooperatives and where quality protocols are largely imposed/maintained by European companies based in Central America such as Ritter Sport, Ingemann (Nicaragua) and Chocolats Halba (Honduras).

In Guatemala, however, intermediation is more common, and small traditional producers are linked to the market by local traders without regard to quality protocols. Since most of the cacao beans are destined for the domestic market, the requirements for post-harvest processing are loosely implemented. In most cases, no (price) differentiation is made between different qualities or origins. This happens in the informal channel for Guatemalan cacao; the formal channel is well-organized into collection and processing centres.

(Primary) Processors

The process of fermentation and drying of cacao beans is mainly done in cooperatives' collection centers, which sometimes also contain small laboratories for quality control. In these collection/processing centers, the post-harvest protocols of buyers (fermentation and drying time) are followed closely and implemented homogeneously; these protocols may change for different

regions according to the cacao variety. A different model is applied by cacao exporter Ingemann (Nicaragua-Denmark), which collects the cacao beans at farmgate and integrates processing steps.

In lower-quality domestic chains, cacao beans are sometimes not fermented (if fermented) or dried properly before being processed into chocolate. Primary processing is often done by smaller producers, which compromises the quality of the cacao.

Exporters (of cacao beans)
Until recently, most cacao value chains in Central America were organized around the exports of subsidiaries of the European companies, the main ones being Ritter Sport (Germany) and Ingemann (Denmark) in Nicaragua, and Chocolats Halba (Switzerland) in Honduras. In the case of Ritter Sport, the company has its own 2,500 hectare cocoa production in Nicaragua (Finca El Cacao)[161], which aims at producing 2,500 tonnes of cocoa/year by 2023[162]. Due to its production, the company manages to lower its sourcing costs, but at the same time it still sources cacao beans from 3,500 farmers through more than 20 cooperatives.

Some cooperatives in Central America are now starting to export small volumes of cacao outside of these channels as well. There are also independent exporters such as Kakaw Export[163] and Cacao Bisiesto[164] (Nicaragua). In Costa Rica, most cacao beans exports are done by high-quality producer/exporter Nahua, as well as by cooperatives such as APPTA[165]. In Panama, Kokoa del Istmo[166] and cooperative COCABO[167] are also examples of independent exporters.

Further processors and exporters of cacao derivatives
Even though some small-scale processing is sometimes done by cooperatives/associations, most industrial further processing/production of cacao derivatives in Central America is done by independent companies. Chocolates del Caribe is one large processing company in North Honduras processing high-quality cacao beans, purchasing the product from surrounding countries, mainly Nicaragua. To safeguard high quality (and traceability), fermented and dried cacao beans are purchased from capacitated cooperatives where post-harvest processing is done homogeneously. The processed products (liquor/paste, butter and couverture; and the by-product cacao powder) are packaged and exported. The processing plant also provides custom-manufacturing services for producers/cooperatives/companies.

In El Salvador, ES-Cacao[168] processes and exports roasted cacao nibs to the European health market.

4.2.2. Governance

Cacao accounts for a small share of the agricultural production in Central America, and has been mainly promoted, and received most attention in national development plans since 2006. Central American governments and other institutions have shown increasing interest in supporting the cacao sector, but the sector remains much less regulated than other agricultural sectors such as coffee. The cacao sector has also been supported intensively in the context of private initiatives and cooperation programmes.

Regulating organizations
The cacao sector in Central America does not have specific institutes or councils at the national level, but is regulated directly by the ministries of agriculture through different strategies, programmes, committees or commissions. While some of these institutions are more active and connected to the private sector than others, their general objectives consist of synchronizing activities amongst different actors (government, private sector, research, international cooperation) in the chain; defining sector priorities and actions related to production, marketing (including exports), etc.; proposing programmes and projects, etc. In the different Central America countries, these institutions are:

- Costa Rica: Programa Nacional de Cacao[169]

[161] https://www.candyindustry.com/articles/88196-ritter-sport-reaches-new-standard-for-cocoa-sustainiability
[162] http://www.dw.com/es/chocolate-alem%C3%A1n-perspectivas-en-nicaragua/a-42980384
[163] https://www.kakawexport.com/
[164] http://www.cacaobisiesto.com/
[165] http://www.appta.org
[166] https://www.cocoapanama.com/
[167] http://site.cocabo.org
[168] http://www.escacao.com/

- Guatemala: Estrategia Nacional de la Agrocadena de Cacao[170], led by the Consejo Nacional de Desarrollo Agropecuario (CONADEA)
- Honduras: Comité Nacional de Cadena de Cacao[171]
- El Salvador: Mesa Nacional de Cacao[172] (not led by the Ministry of Agriculture, but has the ministry in the steering committee)
- Nicaragua: Comisión Sectorial de Cacao[173], promoted by the Asociación de Productores y Exportadores de Nicaragua (APEN) with participation of the Ministerio de Economía Familiar, Comunitaria, Cooperativa y Asociativa (MEFCCA)
- Panama: Mesa Técnica del Cacao[174]

In some countries, like in Honduras (Noroccidental, Litoral Atlántico y Olancho) and Guatemala (Comité del Norte, Comité del Sur), there are also regional committees, which centralize discussions and activities regarding the local cacao sector, and defend its interests in national instances/platforms.

Private sector associations and export promotion agencies
In addition to being organized into cooperatives (as described in the section above, on the structure of the value chain) cacao producers in some Central American countries are also represented at a higher level through producers' associations. Examples of associations and cooperatives representing producers are: Asociación Cámara Nacional de Cacao Fino de Costa Rica (CANACACAO)[175], Asociación de Productores de Cacao de Honduras (APROCACAHO), Sociedad Cooperativa de Productores de Cacao de El Salvador (ES-CACAO), FUNDALACHUA (Guatemala), among others.

Cacao exporters in Central America are not organized into sector/exporters' associations such as in the coffee chain. The interests and activities of exporters, included market entry, are usually supported through export promotion agencies. In Guatemala, Agexport has a Comité de Cacao y Chocolate[176]. As mentioned above, APEN has a Comisión Sectorial de Cacao in Nicaragua. FIDE, in Honduras, supports cacao exporters, but doesn't have a designated department. In Costa Rica, Procomer supports mainly chocolate exporters, with less emphasis on cacao. In Panama, cacao exporters are mainly supported by chambers of commerce such as the Cámara de Comercio Industrias y Agricultura de Chiriquí.

Regional
At the regional level, cacao is represented through the Meso-American Association of Fine Cacao and Chocolate (AMACACAO). AMACACAO has direct representation through cacao and chocolate companies (producers, processors, and chocolatiers), not via public institutions. The current members of AMACACAO are the following:

	Partners AMACACAO	Country
1	FEDECOVERA	Guatemala
2	FINCA CHIMELB	Guatemala
3	CACAOS DE MESOAMERICA	Guatemala
4	FINCA LA CRUZ	Guatemala
5	CACAO DE VERAPAZ	Guatemala
6	COAGRICSAL	Honduras
7	CHOCOLATES DEL CARIBE	Honduras
8	APROCACAHO	Honduras
9	CACAOTERRA	El Salvador
10	CHOCOLATES MELHER	El Salvador
11	ES CACAO	El Salvador
12	FINCA CUYUNCUA	El Salvador
13	CACAONICA	Nicaragua
14	LA CAMPESINA	Nicaragua

[169] http://www.mag.go.cr/acerca_del_mag/estructura/oficinas/prog-nac-cacao.html
[170] http://web.maga.gob.gt/download/enac16-25.pdf
[171] http://pronagro.sag.gob.hn/cadenas-agroalimentarias/cadena-de-cacao/
[172] http://www.alianzacacao.org/es/page/mesa-nacional-de-cacao
[173] http://apen.org.ni/nueva-comision-sectorial-de-cacao-de-apen
[174] https://d2vmpwbfz8sj1e.cloudfront.net/sites/default/files/paragraph/attachments/panama.pdf
[175] https://censalud.ues.edu.sv/cacao/actores/node/332
[176] http://export.com.gt/sectores/comite-de-cacao-y-chocolate-diferenciado

AMACACAO was established with support from CBI's Agro Food Programme in Central America, and has the main objective to create a mechanism to certify the origin, quality and traceability of the final product, in order to increase international positioning and increase exports. The regional association has created a quality protocol through the CUNAKakaw brand, which is currently being formalized for practical implementation among its members.
Governmental actors of national cacao platforms in Guatemala, El Salvador, Honduras, Nicaragua and Costa Rica, have also come together in the Comisión Centroamericana del Cacao (COCACAO)[177]. This platform gives its first steps to contribute to, and adopt practices, to strengthen the regional (and national) cacao sector in Central America.
Also regionally, OIRSA is involved in the cacao sector mainly through technical assistance in food safety. It has recently published a manual for good practices for processing and packaging of cacao[178].

Recently, the Central American Agricultural Council (CAC), affiliated to the Sistema de Integración Centroamericana (SICA), included the cacao sector in its policy[179] as well.

International cooperation
There are several international organizations involved in the cacao sector in Central America. Most of the actors and recent activities carried out in this sector have been identified by CBI in its pre-assessment phase.

One remaining initiative which is of significance and interest for the CBI programme in Central America is **Rikolto's iniative "Gestión** del Conocimiento de la Cadena de Valor del Cacao en Centroamérica**"** [180]. Together with the Swiss Cooperation, this initiative created a self-managed online directory for all actors in Central America's cacao value chain. It has the objective of promoting the management of knowledge on the cacao chain in 4 countries: Guatemala, El Salvador, Honduras and Nicaragua.

Other projects and actors identified during the field research are:

- In Southern Nicaragua, TechnoServe is executing a cacao project in partnership with the PIMCO Foundation to support a group of 100 farmers, the majority of whom are women. The project aims to generate incomes for poor families by giving them the opportunity to produce fine cacao to sell to national and international buyers.
- Programme PRO-CACAO of the Swiss Agency for Development and Cooperation[181], focusing on Nicaragua's Triangulo Minero, with the objective of strengthening technical and entrepreneurial capacities of 1,200 producers and organizations.
- Programa Consorcios Regionales de Investigación Agropecuaria (CRIA)[182] in Guatemala: IICA[183]-MAGA[184]-ICTA[185]-URL[186]-USAC[187]-IDEMAYA[188] (USDA funding, Research and Development USD 15 million for research in cacao, potato, avocado, cardamom, apricots),
- IILA (Instituto Italo Latinoamericano -Italy): USD 200,000 project in Guatemala on bean-to-bar quality, genetic analysis, sensory analysis and tasting.

CBI's initial list of international players active within the cacao sector in Central America was:

- Catholic Relief Services leads the El Salvador Cacao Alliance, a collaboration of private companies, government and research institutions, transforming El Salvador into a source of cacao for the gourmet international market[189]
- The government of Korea is implementing a programme (20 million USD annually) to equip small cacao producers with inputs and modern technology in Guatemala[190]

[177] https://centroamerica.rikolto.org/id/node/1594
[178] https://www.oirsa.org/noticia-detalle.aspx?id=3378
[179] https://d2vmpwbfz8sj1e.cloudfront.net/sites/default/files/paragraph/attachments/analisis_regional_0.pdf
[180] https://centroamerica.rikolto.org/es/noticias/nuevo-directorio-virtual-de-actores-de-cacao-en-centroamerica
[181] http://www.economiafamiliar.gob.ni/procacao/
[182] https://es-la.facebook.com/iica.guatemala/posts/1886790784683392
[183] http://www.iica.int/en
[184] http://web.maga.gob.gt/
[185] http://www.icta.gob.gt/
[186] http://principal.url.edu.gt/
[187] https://www.usac.edu.gt/
[188] Instituto de Investigación y Desarrollo Maya
[189] http://www.crs.org/our-work-overseas/where-we-work/central-america-south-america-caribbean
[190] https://revistaproagro.com/corea-invertira-20-mil-anuales-mejorar-cacao-guatemala

- VECO is investing in Olancho, Honduras, to stop deforestation and to generate more income for the farmers[191]
- VECO is also working in Nicaragua to reforest the Waslala region[192]
- Helvetas is striving to raise the share of Fairtrade chocolate and advises cacao farmers in Honduras on how to sell their crop for a fair price[193]
- Swisscontact: project in Honduras improving management of the value chains for coffee, cacao and cashews through an inclusive public-private dialogue aimed at reducing the risks and increasing the benefits to producers[194]
- SNV is working on 'Access to Sustainable Markets & Food Security for Nicaragua's Coffee & Cocoa Producers'[195]
- Between 2012-2017 RUTA/USAID executed the Programa Agroalimentario Sostenible, including the coffee and cacao sectors[196]
- From 2007 to 2013 CATIE implemented the Proyecto Cacao Centroamérica[197]
- Lutheran World Relief is active in the cacao sector in Nicaragua, Honduras, and El Salvador, implementing Mobile Cocoa, a digital tool for smallholder engagement and inclusion in the value chain[198]

4.2.3. Intra-regional trade

Compared to other value chains in this study, cacao has a fairly high amount of intra-regional trade. There are two main trade flows in Central America:

- Cacao beans from Nicaragua and, to a smaller extent from Honduras, are channeled to local markets and to large chocolate confectionery industry in countries like El Salvador and Guatemala.
    - In 2015, El Salvador was the second largest destination for Nicaragua's cacao bean exports (USD 4.3 million), followed by Guatemala (USD 905 thousand).
    - In 2016, El Salvador was the second largest destination for Honduras' cacao bean exports (USD 247 thousand), only behind Switzerland (USD 661 thousand).
- Cacao beans are exported from surrounding countries like Nicaragua to a professional and certified chocolate plant in Northern Honduras (Chocolate del Caribe) and processed into semi-finished products (derivatives) liquor, butter, couverture, and allowing for value addition to the beans.

Of these two types of trade flows, only the latter would be an example of intra-regional trade flows that are part of an extra-regional export value chain which ends on the European market.

4.2.4. Sustainability of the value chain

For each one of its programmes, CBI develops a Corporate Social Responsibility (CSR) tool that is used to assess and monitor the sustainability performance of specific sectors in specific countries or regions. These results are consolidated within a CSR risk assessment matrix, which will be completed next to this value chain analysis. The topic of gender and female workforce was identified by CBI in its pre-assessment phase as one of the most important sustainability risks within the coffee sector in Central America. Other issues were community engagement and technical assistance.

---

[191] https://www.veco-ngo.org/en/project/cocoa-olancho-honduras#tab-story
[192] https://mesoamerica.veco-ngo.org/es/project/cacao-de-waslala-nicaragua
[193] https://www.helvetas.org/projects___countries/projects/keystone_projects/projects_in_the_americas/organic_cocoa_in_honduras___good_for_small_farmers__great_for_the_environment
[194] http://www.swisscontact.org/en/projects-and-countries/search-projects/project-finder/project/-/show/competitive-inclusive-and-sustainable-development-of-supply-chains-for-coffee-fino-de-aroma-cocoa-and-cashews-producers-progresa.html
[195] http://www.snv.org/project/access-sustainable-markets-food-security-nicaraguas-coffee-cocoa-producers
[196] https://www.slideshare.net/RUTAslideshare/programa-agroalimentario-sostenible-informe-final
[197] https://www.catie.ac.cr/en-que-trabajamos/agroforesteria/agro-cacao/proyectos.html
[198] https://lwr.org/where-we-work/nicaragua

Gender and female workforce

Cacao production and collection is generally a family activity in Central America. It has been reported in the past that the participation of women within the cacao chain is limited to primary chains such as inputs, production and aggregation[199]. Their role used to be mainly aimed at functions of nursery, fermentation and drying. However, it's also seen that women have an especially strong participation in the transformation of the cacao into chocolate and other products, which gives them an entrepreneurial space in organizations and cooperatives.

Even though it is not possible to find differences in the prices that are paid for the raw material according to the gender, the level of income that reaches women is a key aspect. The time and effort of women is often not recognized/rewarded, even when they do participate in the activities of the farm.[200] In Honduras, for example, 15% of all cacao producers are female[201], which is fairly low because the property of the land is usually under the name of the male.

In fact, there are mixed reports on the participation of women in senior decision-making positions in the organizations and actors of the chain. While some reports show that the presence of women in organizations is low, and the majority does not have positions within boards of directors or steering committees[202], we also see progress and strong participation of women in other reports; examples are published for women's entrepreneurship at cooperative La Campesina (Nicaragua)[203], female producers in Honduras[204] and female chocolate makers in El Salvador[205]. In addition, it's reported that Guatemalan small producers' associations usually have at least one woman in their boards of directors.

AMACACAO also reports that there are several women in the staff and board of directors of its members.

In a pre-assessment phase, CBI identified the following initiatives in Central America addressing women in the cacao chain:

- Swisscontact executed a programme between 2009-2014 in Honduras[206]
- Solidaridad Network launched in 2016[207] the Women in Cocoa & Chocolate Network (WINCC)[208]
- REDMUCH (Red de Mujeres Cacaoteras y Chocolateras de Honduras)[209]

During the field research, we identified the following additional initiatives:

- PROCAHAO[210] is supporting the Organización de Mujeres de Cacao[211]
- Asociación de Mujeres Indígenas de Talmanaca (ACOMUITA), in Costa Rica[212]
- Catholic Relief Services (CRS) Alianza Cacao (El Salvador), includes participation and capacity-building of women
- Programa Consorcios Regionales de Investigación Agropecuaria (CRIA)[213], in Guatemala, will also include women's groups.

Note that several women's groups in the cacao sector are part of cooperatives and secondary cooperatives/federations.

---

[199] https://www.researchgate.net/publication/255764439_Cadena_Productiva_de_Cacao_de_Honduras
[200] https://www.researchgate.net/publication/255764439_Cadena_Productiva_de_Cacao_de_Honduras
[201] http://www.worldcocoafoundation.org/wp-content/uploads/files_mf/womenincocoafarming_presentations.pdf
[202] https://www.catie.ac.cr/publicaciones-catie/6917/como-disenamos-y-ejecutamos-el-proyecto-cacao-centroamerica-para-estimular-al-sector-cacaotero-de-centroamerica.html
[203] https://www.el19digital.com/articulos/ver/titulo:9498-mujeres-protagonizan-emprendimiento-en-cooperativa-la-campesina
[204] http://www.fhia.org.hn/dowloads/ayuda_memoria_primer_encuentro_de_mujeres_cacaoteras_de_honduras.pdf
[205] www.ipsnoticias.net/.../el-futuro-sabe-a-chocolate-para-mujeres-rurales-salvadorenas/
[206] http://www.worldcocoafoundation.org/wp-content/uploads/files_mf/womenincocoafarming_presentations.pdf
[207] https://www.solidaridadnetwork.org/news/women-in-cocoa-chocolate-network-launched
[208] https://www.solidaridadnetwork.org/news/women-in-cocoa-chocolate-network-launched
[209] http://www.laprensa.hn/economia/963238-410/cacaoteras-hondure%C3%B1as-logran-personer%C3%ADa-jur%C3%ADdica
[210] https://www.facebook.com/PROCACAHO-340884042783014/
[211] http://www.funder.hn/noticias/2015/procacaho-ayuda-a-productoras-a-dar-valor-agregado-/
[212] https://censalud.ues.edu.sv/cacao/actores/node/388
[213] https://es-la.facebook.com/iica.guatemala/posts/1886790784683392

Community engagement and technical assistance
Most Central American producers of cacao are organized into cooperatives, which have technical assistance as one of their most important capacities. The field research evidenced that producers are often engaged in capacity-building programmes and other initiatives for producers and cooperatives. Community engagement can be seen strongly within exporter federations such as FEDECOVERA (Guatemala), which exports various products for various cooperatives in the Cobán region, recently diversifying into cacao, training farmers and setting up processing infrastructure. COAGRICSAL in Honduras does the same, thus giving farmers more sources of income in the area of La Entrada.

The presence of large-scale European companies in Central America (Ritter Sport, Halba) also resulted in a transfer of technical skills and capacities to producers and cooperatives. Not only has this yielded better qualities for exports, but has also been incentivized with better prices[214]. In such cases, it's also interesting for companies to get closer to producers and cooperatives to provide technical assistance in production and post-harvest processing, since this safeguards better qualities. In the case of Ritter Sport, which has its own cacao production in Nicaragua[215] (next to sourcing from cooperatives), technical assistance and skills development is carried out directly on the field.

In markets where there's more intermediation, such as in Guatemala's traditional market, technical assistance is less present. This is also because production is heavily oriented towards the domestic market, which doesn't often require high-quality processed cacao beans. However, new producers are enjoying technical assistance from cooperation agencies, which are educating technicians and community promoters (producers) in the north using a Escuela de Campo (ECA) methodology[216].

The main organizations providing technical assistance within the cacao sector in Central America are Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)[217], Fundación Hondureña de Investigación Agrícola (FHIA)[218], the Instituto Nicaraguense de Tecnología Agropecuaria (INTA)[219] and the Inter-American Institute for Cooperation on Agriculture (IICA)[220]. These organizations cover subjects such as productivity, good agricultural practices, sustainable production, and adaptation and resilience to climate change.

In addition, cooperatives and secondary cooperatives/federations such as FEDECOVERA (Guatemala), COAGRICSAL (Honduras), La Campesina (Nicaragua), CACAONICA (Nicaragua), ES-CACAO (El Salvador) also provide technical assistance on certification, climate change, agro-forestry and other themes to producers.

4.3. Value chain bottlenecks, risks and opportunities

4.3.1. Bottlenecks

A. Cadmium: a non-**tariff trade barrier for Central America's cacao to Europe**

The European Union has strengthened its regulation on cadmium in cacao and derived products, which has an effect mainly on Latin American suppliers of high-quality cacao beans. In Central America, there are anecdotal reports of cacao beans with high cadmium content in countries like Costa Rica and Nicaragua, but there is no clear mapping of risky areas or varieties which are most affected. In addition, there isn't a clear institutional strategy to tackle the issue at a regional level. In most countries, the infrastructure for analysis is also non-existent, and laboratories are not able to perform cadmium content tests.

B. Low production and productivity fail to meet demand

[214] https://www.confectionerynews.com/Article/2015/01/14/US-chocolate-makers-drawn-to-Nicaraguan-cocoa
[215] https://www.candyindustry.com/articles/88196-ritter-sport-reaches-new-standard-for-cocoa-sustainiability
[216] http://www.fao.org/agriculture/ippm/programme/ffs-approach/es/
[217] https://www.catie.ac.cr/
[218] http://www.fhia.org.hn
[219] http://www.inta.gob.ni
[220] http://www.iica.int/en

Central America's high-quality cacao finds markets both regionally and internationally. However, supplies do not meet demand.
Central America still suffers from low productivity in cacao farms. It was mentioned during the field research that this is mostly due to the management and maintenance of the farms, renovation of cacao trees, use of inadequate genetic material (low quality and low yields), inadequate soil management (examples: absent use of organic fertilizers or the use of inadequate fertilizers), and the related lack of technical experts in plantation management.

The volumes produced in Central America are currently not sufficient to supply large markets, and small-volume markets are difficult to target. For example, micro lot trade is very difficult to establish as small chocolate makers tend to not want to import themselves, but through traders. It also needs the same marketing effort (or even more) as "regular" cacao trade and this makes it very expensive, especially because of its focus on small volumes.

C. Quality issues arising from post-harvest processes diminish export offer

The post-harvest treatment of cacao is essential in defining the product's quality. International buyers present in Central America such as Ritter Sport, Ingemann and Chocolats Halba have invested in standardizing post-harvest processes of their cacao beans, and provided technical assistance to producers/cooperatives for quality assurance through the chain. Central America has one of the best post-harvest systems worldwide, and AMACACAO has developed a quality manual which is being implemented by its members. However, in chains that lie outside of export markets, poor post-harvest processes remain a problem in the region, and diminish the offer of high-quality, exportable cacao beans.

On the one hand, there is no system or mechanism for post-harvest processes according to different cacao varieties outside of the scope of large buyers. On the other hand, the infrastructure of cacao organizations to process and storage cacao beans properly does not follow the increase in production. There's a general lack of space in collection centers, as well as limited fermentation boxes and artificial dryers, in addition to personnel training and quality screening systems.

Another element defining the post-harvest treatment of cacao is the target market. Guatemala's traditional cacao production, for example, is strongly focused on the domestic market, which has little attention for post-harvest treatment and standardization of quality. Cacao is relatively badly processed and sold to intermediaries. It is difficult to break out of this cycle and create a culture of quality. In addition, even badly-processed cacao is paid high prices in Central America, which doesn't provide incentives to increase the quality of post-harvest processing.

D. Low diversification and knowledge of export markets

In Honduras, a large part of cacao supplies is destined for Chocolats Halba (Switzerland). In Nicaragua, a large part of supplies is destined to Ritter Sport (Germany) and to a smaller extent to Ingemann (Denmark). The strong reliance on these companies has strengthened the local cacao sector in terms of technical capacities and quality. However, it has also led to a low diversification of export markets for Central American cacao, which makes cooperatives subject to grading/pricing practices and limits their growth in becoming skilled in marketing.

The field research identified a few cooperatives in Nicaragua and Honduras whose cacao used to be entirely supplied to Halba/Ritter, but now are engaging in direct exports; examples are La Campesina and CACAONICA. For these cooperatives, there is a general lack of contact with and knowledge of international/European markets, and how to go about targeting buyers in these markets.

E. Lack of managerial capacities at cooperative level

As mentioned previously, cacao cooperatives (and some secondary cooperatives) have limited or indirect contact with export markets, and still have difficulties in their managerial capacities to seize their potential as exporting entities. Some of the gaps in skills and knowledge identified, but which can vary significantly per cooperative and country, are:

- Lack of market research skills
- Insufficient knowledge on exports logistics and transactions
- Inadequate skills to create commercial alliances / find potential buyers

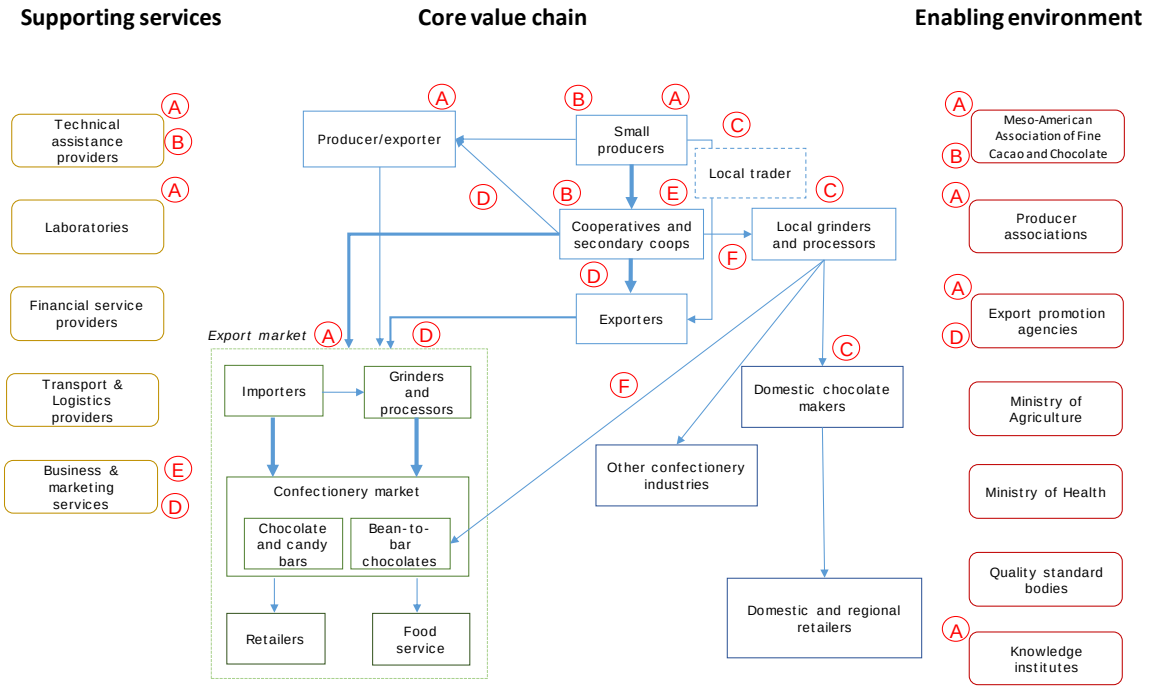
- Weak business negotiation skills
- Low marketing skills
- Absence of a customer service culture
- Lack of accounting skills
- Insufficient use of ICT tools and platforms

F. Value addition faces supply and demand issues

The market for value added cacao products (derivatives) faces bottlenecks on two sides: supply and demand. On the one hand, there is not enough cacao bean production in Central America to fulfill the production capacity of the existing processing facility. On the other hand, the European market for cacao derivatives is hard to enter. Not only are the cacao-processing industries in Europe, Africa and Asia operating at a large scale and competitiveness, but chocolate makers in the high-quality segment often prefer to keep their (creative) control over the production of their products from A to Z.

With scarcity of cacao beans from Central America, chocolatiers may have no option but purchase the cacao derivative (liquor or even industrial chocolate). However, it will probably continue to represent a small segment of the European market. Ageing processing facilities in Europe may provide an opportunity to take over the job in the country of origin, where labour and taxes are usually lower, but on the other hand we see investments in Europe such as the recently constructed processing facility "Crown of Holland" of Tradin (Sunopta)[221], specializing in certified cacao products.

Figure 4.2. Visual representation of the main bottlenecks on the cacao value chain



Bottlenecks
(A) Cadmium: a non-tariff trade barrier for Central America's cacao to Europe
(B) Low production and productivity fail to meet demand
(C) Quality issues arising from post-harvest processes diminish export offer
(D) Low diversification and knowledge of export markets
(E) Lack of managerial capacities at cooperative level
(F) Value addition faces supply and demand issues

[221] http://www.crownofholland.com/

4.3.2. Opportunities

A. Central American cacao is sought after for its quality

Central American cacao has organoleptic characteristics that are sought after in the fine flavour chocolate market, and creates the strong interest of European buyers. At the same time, the market follows the consumer trend for higher-quality chocolate, and a need for supplies of well-processed quality cacao (fine flavour *Trinitario* and *Criollo* varieties).
The high-quality of Central American cacao is evidenced by the region's several awards at Cocoa of Excellence in the last 5 years[222].

B. Cacao as a diversification strategy for coffee

Global warming is stimulating the transition of coffee to cacao in the lower regions; many cooperatives are already starting to grow and export cacao in addition to their current core business of coffee (examples: FEDECOVERA (Guatemala), COAGRICSAL (Honduras)). Coffee exporters and institutes are increasingly looking at cacao as well, looking at long-term strategies to integrate cacao into the coffee chain.

C. Central American cacao benefits from projects and private investments

There is a large number of projects and international cooperation funds present in Central America, mainly covering *in situ* research (in production areas) and capacity-building of producers and cooperatives. This has created a solid structure for technical assistance and support for the sector.

On the private sector side, there has been high investment in cacao in the last decade, especially in Nicaragua (cheaper land), together with transfer of technology and knowledge by European growers or importers. Due to intensive technical assistance, the presence of these companies has also increased and standardized the quality of the cacao beans, and has safeguarded the market for producers, cooperatives and exporters.

D. Local initiatives create social impact

The field research identified local initiatives by cooperatives/associations (example: APROCACAHO and La Campesina) to engage in the capacity-building of producers as an integrated family approach, which has optimized social impact. The *escuelas de campo*, implemented by these organizations, have also contributed to the inclusion of youth in the cacao value chain, thus preventing rural flight from cacao-producing areas.

E. Possibility for value addition, but market needs to be developed

The revitalization of a professional and certified chocolate plant in Northern Honduras (Chocolate del Caribe), which processes beans from the entire region for export, has revived the possibilities for value addition for Central American cacao. However, European buyers still show low interest in importing derivatives such as liquor, butter and couverture, since the cacao-processing industry in Europe is well-established and concentrated. As such, for this opportunity to be optimized, the European market for cacao derivatives (from cacao-producing countries) still needs to be developed.

F. Regional organization and quality standard

Central America's cacao companies are organized under the Meso-American Association of Fine Cacao and Chocolate (AMACACAO), whose quality standard CUNAKakaw has been supported by CBI in its Central America Agro Food Programme 2012-2017.

The marketing story for Central America as the "cradle of cacao" provides an ideal platform for regional cooperation and representation, which in fact already happens in different instances. At Salon du Chocolat, members of the AMACACAO exhibit as a regional group with a common marketing story and quality seal.

[222] http://www.cocoaofexcellence.org/-2017-edition/

Costa Rica and Panama are not represented in AMACACAO. However, during the association's latest General Assembly, it was decided that Mexico (Chiapas and Tabasco), Costa Rica and Panama would be included as AMACACAO members.

4.4. Possible solutions and support actions

4.4.1. Solutions and support actions

A. Inclusion of small producers into export chains

Related to constraints:
- (B) Low production and productivity fail to meet demand
- (C) Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (B) Cacao as a diversification strategy for coffee
- (D) Local initiatives create social impact

Cacao production volumes in Central America do not meet the demand of export markets. However, much of the production doesn't reach the high-quality market due to poor/nonexistent post-harvest processing and lack of connection with exporting cooperatives or companies. Small producers without connections or capacities are not optimized in the cacao chain. The inclusion of these producers (such as those producing multiple crops, including coffee) could contribute to increase export volumes.

CBI can encourage the inclusion of small producers into the export chain by identifying potential programme participants with potential to expand post-harvest processing or to support in the creation of new collection centres to serve these producers. The initial screening and review of cooperatives with good potential and viability for export/business within the sector can be done in cooperation with AMACACAO and other local partners.

B. **Organize buyers' missions in Central America**

Related to constraints:
- (D) Low diversification and knowledge of export markets
- (F) Value addition faces supply and demand issues
- To a smaller extent (C) Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (A) Central American cacao is sought after for its quality
- (E) Possibility for value addition, but market needs to be developed

The organization of buyers' visits to Central American producers and exporters of cacao could contribute to further the sector's contact to the international market. As such, CBI could organize visits from European importers and chocolate makers to Central America to strengthen the relationships between buyers and suppliers (producers/cooperatives), and provide a platform for direct trade. In the case of cacao derivatives, it could also contribute to increasing the market demand for these products.

For cooperatives and exporters still facing quality issues, a more direct contact with buyers could also contribute to quality improvement and adequacy to export markets.

Buyers' missions can be combined with a regional festival for high-quality chocolates, potentially organized in the context of AMACACAO's activities. Festivals can potentially attract different suppliers who showcase their products, and can be a means for buyers to get acquainted with the local market and to provide feedback on local chocolates.

C. Technical training and dissemination of best practices

Related to constraints:
- (F) Lack of managerial capacities at cooperative level

- To some extent (C): Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (D) Local initiatives create social impact

Support the technical capacities of cooperatives (and possibly BSOs), with a view on export markets for cacao and derivatives. Training modules can be linked to a wide range of subjects, from production to marketing, such as:

- Development of managerial capacities and business strategies – with a possible module on gender and youth.
- Compost training, with dissemination of best practices from the region. CBI has sponsored compost trainings for coffee before, and could cooperate with other agencies in delivering the modules or hiring experts in the field.
- Post-harvest techniques and management
- Sensory and processing workshops, which CBI has also done before with external experts.
- European markets, their mechanisms and access channels
- Smart marketing techniques, with best practices from Central America and/or other regions.

The options for subjects which could be relevant for cooperatives/SMEs are plenty. It's recommended that training and training materials are made available through webinars, so as to benefit other companies in the sector beyond ECP participants. More innovative solutions for presentation and delivery of the training material can be considered in formats such as TED Talks.

This is also an opportunity to enhance regional collaboration, where regional guests can be invited to share best practices and solutions to specific bottlenecks faced in other countries.

D. Mapping the risks and solutions for cadmium

Related to constraints:
- (A) Cadmium: a non-tariff trade barrier for Central America's cacao to Europe

Related to opportunities:
- (A) Central American cacao is sought after for its quality

CBI can support AMACACAO and other regional organizations (example: OIRSA) in the mapping and identification of risky areas for cadmium. This effort could also help agglutinate existing interventions in mitigation strategies and create a connection to the European market, potentially in dialogue with the European Food Safety Authority (EFSA).

E. Development of quality protocols, harmonization of quality

Related to constraints:
- (C) Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (A) Central American cacao is sought after for its quality
- (F) Regional organization and quality standard

There are currently no standardised procedures, nor is there specific terminology for assessing cacao bean quality and its direct relation to high-quality chocolate, as is the case in the Q Coffee System. A Working Group (established and coordinated by the Cocoa of Excellence Programme) was created to explore the development of international standards for assessing cacao quality, with first consultations taking place in September 2017, in Managua (Nicaragua) and at the Salon du Chocolat (Paris – October 2017).

Currently, AMACACAO is following up on developing the quality protocols for Central America, and CBI could support the process with the provision of technical assistance/experts to optimize these efforts.

F. Mapping of cacao varieties and flavours

Related to constraints:
- (C) Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (A) Central American cacao is sought after for its quality
- (F) Regional organization and quality standard

Related to the support on the "development of quality protocols, harmonization of quality", it's recommended to align these efforts with a mapping of cacao varieties and flavours in Central America. This activity has been initiated by the Lutheran World Relief tool "Cocoa Flavor Map", thus collaboration can be sought. The alignment with other CBI initiatives and experts, such as in the case of Peru, can have important added value to this intervention[223].

The better understanding of cacao flavours, and where they can be found (and how they can be obtained through the implementation of post-harvest protocols) can contribute to the market positioning of Central American cacao.

This proposed solution is ideally linked to proposed solution *(C) Technical training and dissemination of best practices*, as a final step to capacitate exporters, cooperatives and producers on this subject.

G. Digital directory of tools and best practices

Related to constraints:
- (B) Low production and productivity fail to meet demand
- (C) Quality issues arising from post-harvest processes diminish export offer

Related to opportunities:
- (C) Central American cacao benefits from projects and private investments
- (D) Local initiatives create social impact

The array of donor programmes and national initiatives in Central America's cacao sector, such as in coffee, has left a rich legacy of tools and best practices. This material can be found in a fragmented way in various (online) platforms and in the hands of specific organizations active in this sector. In light of reactivating regional cooperation through this programme, it's recommended that CBI implements an early intervention to inventorize, centralize and categorize this information through a digital directory, possibly in cooperation with AMACACAO and BSOs active in the sector. Note that Rikolto's iniative "Gestión del Conocimiento de la Cadena de Valor del Cacao en Centroamérica" is also inventorizing tools and other knowledge sources in the cacao sector, and could be an interesting partner in this proposed solution.

A digital tool, accessible in the form of an app, for example, can be considered to reach a broader audience of exporters, cooperatives and producers. An example could be a tutorial for the development and application of post-harvest quality protocols in cacao, which can also include aspects in production, soil management and other modules further up the chain.

H. Trade fair participation and regional representation

Related to constraints:
- (D) Low diversification and knowledge of export markets
- (F) Value addition faces supply and demand issues

Related to opportunities
- (A) Central American cacao is sought after for its quality
- (E) Possibility for value addition, but market needs to be developed

[223] https://www.cbi.eu/projects/specialty-coffee-fine-flavour-cacao-cacao-derivatives-peru

Trade fair participation, particularly at the Salon du Chocolat, is an important element in CBI's Export Coaching Programme in terms of promoting exports to Europe and reaching the programme's targets. AMACACAO should still be supported as a regional organization, but the companies selected for this programme should also receive individual coaching and guidance.

In case cooperatives and companies selected for the programme are not part of AMACACAO, CBI could either encourage cooperation with AMACACAO (not necessarily membership), or serve these companies as a larger CBI pavilion.

For an eventual CBI participation at Salon du Chocolat, it's recommended to work further on a promoting specific qualities per country and micro-region, as well as a common regional image. Spurring European demand especially for cacao derivatives will also contribute to increasing intra-regional trade and value addition processes in Central America, since there is an existing structure and commercial relations amongst players in different countries.

4.4.2. Possible participants for the CBI programme

The number of export-competent cooperatives and companies in Central America is limited for the cacao sector. The members' list of AMACACAO (consisting of 14 cooperatives and companies) provides a good point of departure to determine eligible cooperatives and companies.

In the previous CBI Agro Food Programme, a few member companies of AMACACAO already received individual coaching: Chocolate del Caribe (Honduras), FEDECOVERA (Guatemala) and COAGRICSAL (Honduras); they are thus not eligible candidates.

The other cooperatives and companies only participated in the programme through AMACACAO, and did not receive individual coaching – which could be provided in the new CBI programme. There are 10 member companies which could benefit, but two of these (Cacaoterra and Chocolates Melher, from El Salvador) focus on chocolate production and exports, which is not covered in the scope of the programme. As such, there's a maximum of 8 eligible companies / cooperatives which are members of AMACACAO.

It would also be relevant to investigate potential companies or cooperatives in Costa Rica and Panama, which are countries not represented at AMACACAO. In Costa Rica, most cacao beans exports are done by high-quality producer/exporter Nahua[224], as well as by cooperatives such as APPTA[225]. In Panama, cooperative COCABO[226] was mentioned during the field research as a success case. There are also independent exporters, for example Cacao Bisiesto (Nicaragua)[227], Kakaw Export (Nicaragua)[228] and Kokoa del Istmo (Panama)[229] which could be eligible participants of the programme.

The directory of Rikolto's iniative "Gestión del Conocimiento de la Cadena de Valor del Cacao en Centroamérica"[230] can also be consulted.

In terms of gender focus, CBI can consult and recruit women-led cooperatives/companies from existing initiatives listed previously, such as Women in Cocoa & Chocolate (WINCC) network[231], REDMUCH (Red de Mujeres Cacaoteras y Chocolateras de Honduras)[232], Organización de Mujeres de Cacao[233] and the Asociación de Mujeres Indígenas de Talmanaca (ACOMUITA)[234].

Considering other AMACACAO members, independent exporters and potential export-competent cooperatives, it can be roughly estimated that a maximum of 10 candidates would be eligible for participation in the CBI programme.

---

[224] http://nahuacacao.com/en/
[225] http://www.appta.org
[226] http://site.cocabo.org
[227] http://www.cacaobisiesto.com
[228] https://www.kakawexport.com
[229] https://www.cocoapanama.com
[230] https://www.directoriocacao.info/actores
[231] https://www.solidaridadnetwork.org/news/women-in-cocoa-chocolate-network-launched
[232] http://www.laprensa.hn/economia/963238-410/cacaoteras-hondure%C3%B1as-logran-personer%C3%ADa-jur%C3%ADdica
[233] http://www.funder.hn/noticias/2015/procacaho-ayuda-a-productoras-a-dar-valor-agregado-/
[234] https://censalud.ues.edu.sv/cacao/actores/node/388

4.4.3. Risk mitigation strategies in sustainability performance

In order to specifically address the most important sustainability risks identified during this value chain analysis, and contribute to a positive sustainability performance of the sector, the following mitigation strategies are recommended:

- Gender and female workforce:
  - Optimize cooperatives' and secondary cooperatives' activities for women's entrepreneurship (example: sales of chocolate in local markets) by supporting them through organizations specialized in the subject (as listed previously).
- Community engagement and Technical assistance:
  - Most of these (secondary) cooperatives with potential for the CBI programme already have some sort of technical assistance to producers. However, the programme's interventions such as "the creation of a digital directory of tools and best practices" could provide them with extra capacities. There have been several tools, manuals and other technical assistance materials developed in the region which could benefit producers.
  - CBI can also create strategic partnerships with regional organizations providing technical assistance in the region (such as CATIE, FHIA, INTA and IICA), so as to address constraints in the value chains of the selected companies and the sector in general. In the case of technical assistance such as laboratory analysis and genetic varieties, there is expertise in the region as part of AMACACAO's network, and the existing work can be assessed if relevant to the companies in the programme.
  - In the themes of sensory and processing workshops, CBI has worked in the past with external experts who provided good results, and this work can be continued if judged relevant for the programme.

5. Fresh Fruit and Vegetables Value Chain

5.1. Key European market characteristics and Central America's competitiveness on the European market

5.1.1. Supply from Central America

Fruit and vegetable production in Central America

According to FAOSTAT figures, total Central American production of fruit and vegetables in 2016 reached nearly 18 million tonnes, whereby Guatemala (41% of total Central American production) and Costa Rica (37%) were by far the largest producing countries, followed by Honduras (12%). The production figures reveal the following:

Table 5.1. Fruit and vegetable production in Central America, per product and its share in total production, 2016

Country	Production 2016 (tonnes), share of Central American production	Main products and their share
Guatemala	7,290,390 tonnes (41%)	*Fruit:* bananas (52%), melons (9%), plantains (5%), pineapples (4%) *Vegetables:* tomatoes (4%), fresh vegetables (unspecified) (2%)
Costa Rica	6,651,094 tonnes (37%)	*Fruit:* pineapples (44%), bananas (36%), fresh fruit (unspecified) (4%), oranges (4%), melons (2%) *Vegetables:* tomatoes (1%), fresh vegetables (unspecified) (1%)
Honduras	2,208,225 tonnes (12%)	*Fruit:* bananas (32%), melons (14%), oranges (12%), pineapples (6%), watermelons (4%), plantains (4%) *Vegetables:* tomatoes (7%), cabbage (4%), cucumber (3%), fresh vegetables (unspecified) (3%)
Nicaragua	684,657 tonnes (4%)	*Fruit:* plantains (28%), oranges (16%), bananas (16%), pineapples (9%) *Vegetables:* tomatoes (11%), cabbage (8%), onions (dry) (3%), carrots and turnips (3%)
Panama	636,764 tonnes (4%)	*Fruit:* bananas (41%), plantains (17%), pineapples (16%), oranges (8%), watermelons (5%) *Vegetables:* tomatoes (3%), onions (dry) (2%)
El Salvador	388,560 (2%)	*Fruit:* oranges (18%), apples (13%), plantains (10%), watermelons (8%), mangoes (7%), lemons and lime (5%) *Vegetables:* maize (9%), fresh vegetables (unspecified) (7%), tomatoes (5%)

Source: FAOSTAT, 2018

Certified fruit and vegetable production in Central America

Implementation of organic certification remains limited in Central America. Figures of FiBL (The World of Organic Agriculture 2017), reveal the following production output of organic fruit and vegetables in the country, by certified area and share of total production (2016)[235]:

Tropical and subtropical fruit

- Costa Rica: 3,447 hectares, 3.1% of total production
- El Salvador: 2 hectares, 0.001% of total production
- Guatemala: 35 hectares, 0.003% of total production
- Nicaragua: N/A
- Honduras: N/A

[235] https://shop.fibl.org/CHen/mwdownloads/download/link/id/785/?ref=1

- Panama: N/A

Vegetables
- Costa Rica: 352 hectares, 2.5% of total production
- El Salvador: N/A
- Guatemala: 565 hectares, 0.6% of total production
- Honduras: N/A
- Nicaragua: 1 hectare, 0.01% of total production
- Panama: 209 hectares, 1.6% of total production

Besides organic certification, Rainforest Alliance certification plays an important role for Central American producers, particularly for bananas and pineapples. Central America is the largest player worldwide when it comes to Rainforest Alliance-certified bananas. Guatemala has almost 45% of the Rainforest Alliance-certified banana production in the world, followed by Costa Rica (20%) and Honduras (12%). Panama accounts for over 4% of Rainforest-certified banana production worldwide[236]. At the moment, around 7,500 hectares of pineapple farms in Costa Rica are Rainforest Alliance certified[237] as well.

Fruit and vegetable exports from Central America

Central America's production figures for the fresh fruit and vegetable sector are fairly consistent with the export figures consolidated through ITC Trademap[238], which reveals the sector's strong export orientation.

As highlighted by the "Analysis of the regional competitiveness in the fruit market" by the Secretariat of Central American Economic Integration (SIECA)[239], Central America's export of fresh fruit is centered around an assortment of up to 10 fruits. The region is the ninth largest fresh fruit exporter worldwide. Although Europe, and especially the Netherlands, is an interesting destination for these countries, the USA still represents the most important channel for Central America's fresh fruit and vegetable exports. One clear exception is Panama, whose exports are mainly directed towards Europe (the Netherlands (73%), United Kingdom (6%) and Germany (6%)).
The product category *bananas and plantains* is the largest export for 5 out of 6 Central American countries in this Value Chain Analysis, whereby Costa Rica (USD 997 million) and Guatemala (USD 790 million) are the main exporters, followed by Honduras (USD 259 million) and Panama (USD 92 million).

For Costa Rica, the category *pineapples, avocados, guavas, mangoes* (dominated by pineapples, its largest fresh produce according to FAOSTAT data − a smaller share of avocados and mangoes as well; production and exports of guava are negligible) is also of great significance in terms of exports (USD 911 million), and this is also an important category for Honduras (USD 27 million) and Panama (USD 14 million).

The category *melons, watermelons, and papayas* plays an important role in exports from Guatemala (USD 207 million), Costa Rica (USD 88 million), Honduras (USD 52 million) and Panama (USD 19 million).

Regarding fresh vegetables exports, Guatemala plays a clearly protagonist role among other Central American suppliers. Central America's exports of the product category *leguminous vegetables* amounted to a value of USD 101 million in 2016, revealing the strength of this sector. The product category *roots and tubers, including sweet potato and manioc* also reveals significant export figures from the region, especially from Costa Rica (USD 111 million) and, to a smaller extent, Honduras (USD 14 million).

[236] https://www.rainforest-alliance.org/sites/default/files/2016-08/SAN_RA_Impacts_Report.pdf
[237] http://www.freshplaza.com/article/143299/Certified-bananas-and-pineapples-at-Lidl
[238] https://www.trademap.org
[239] Analysis of the regional competitiveness in the fruit market" by the Secretariat of Central American Economic Integration (SIECA) - http://www.freshplaza.com/article/159682/Central-America-is-the-worlds-ninth-largest-fruit-exporter

Table 5.2. Fruit and vegetable exports from Central America, per product group and export market, 2016

Country	Exports 2016 (volume / value)		Growth/decline since 2014, annual (volume/value)		Main export markets
Costa Rica					
Main fruit exports					
Bananas and plantains	2.4 million tonnes	USD 997 million	+4%	+5%	USA (45%) Netherlands (11%) Italy (9%) Belgium (7%) UK (7%) Spain (5%)
Pineapples, avocados, guavas, mangoes (1)	2.0 million tonnes	USD 911 million	-3%	+1	
Melons, watermelons, papayas	173,964 tonnes	USD 88 million	-1%	-2%	
Main vegetable exports					
Roots and tubers, including sweet potato and manioc (2)	133,505 tonnes	USD 111 million	+2%	+3%	USA (70%) Netherlands (7%) Spain (5%)
Other vegetables (3)	48,228 tonnes	USD 29 million	+5%	+0%	
Guatemala					
Main fruit exports					
Bananas and plantains	2.4 million tonnes	USD 790 million	+4%	+5%	USA (87%) Italy (2%) Netherlands (2%) El Salvador (2%) Turkey (1%) UK (1%)
Melons, watermelons, and papayas	564,579 tonnes	USD 207 million	+3%	+1	
Strawberries, raspberries, other (4)	24,390 tonnes	USD 23 million	+16%	+7%	
Main vegetable exports					
Leguminous vegetables	63,384 tonnes	USD 101 million	+0.1%	+5%	USA (70%) El Salvador (10%) UK (7%) Netherlands (5%)
Other vegetables	46,449 tonnes	USD 29 million	+11%	+21%	
Cabbages, cauliflowers, kohlrabi, kale, other	100,930 tonnes	USD 28 million	+12%	-4%	
Honduras					
Main fruit exports					
Bananas and plantains	659,643 tonnes	USD 259 million	+2%	8%	USA (90%) Netherlands (2%) El Salvador (2%) UK (1%) Guatemala (1%)
Melons, watermelons, and papayas	266,039 tonnes	USD 52 million	-4%	-9%	
Pineapples, avocados, guavas, mangoes (1)	59,137 tonnes	USD 27 million	+7%	+9%	
Main vegetable exports					
Other vegetables (3)	64,546 tonnes	USD 57 million	+16%	+22%	USA (73%) El Salvador (9%) UK (8%) France (3%)
Roots and tubers, including sweet potato and manioc (2)	23,672 tonnes	USD 14 million	+16%	+10%	
Tomatoes	48,278 tonnes	USD 7 million	+13%	+15%	
Panama					
Main fruit exports					
Bananas and plantains	256,409 tonnes	USD 92 million	-2%	-3%	Netherlands (73%) UK (6%) Germany (6%) USA (5%) Spain (2%)
Melons, watermelons, and papayas	44,137 tonnes	USD 19 million	-1%	-3%	
Pineapples, avocados, guavas, mangoes (1)	30,856 tonnes	USD 14 million	-32%	-33%	
Main vegetable exports					
Other vegetables (3)	5,866 tonnes	USD 5 million	-7%	+14%	USA (63%) Spain (19%)
Nicaragua					
Main fruit exports					
Bananas and plantains	123,902 tonnes	USD 55 million	+15%	+28%	USA (67%) Costa Rica (13%) Honduras (7%) Germany (4%)
Citrus fruit	56,328 tonnes	USD 9 million	+2%	+14%	
Pineapples, avocados, guavas, mangoes (1)	7,628 tonnes	USD 5 million	-16%	+11%	
Main vegetable exports					
Other vegetables (3)	5,957 tonnes	USD 17 million	+11%	+62%	USA (55%) France (17%) Canada (12%) Guatemala (5%)
Roots and tubers, including sweet potato and manioc (2)	11,518 tonnes	USD 10 million	-15%	+28%	
Leguminous vegetables	3,150 tonnes	USD 3 million	+154%	+224%	
El Salvador					
Main fruit exports					

Bananas and plantains	2,889 tonnes	USD 1.5 million	+2%	+2	USA (82%) Costa Rica (10%) Nicaragua (7%)
Citrus fruit	1,731 tonnes	USD 524,000	-5%	-25%	
Main vegetable exports					
Other vegetables (3)	1,889 tonnes	USD 3.4 million	-2%	-7%	USA (100%)

Source: ITC Trademap, 2018

(1) Includes: Dates, figs, pineapples, avocados, guavas, mangoes and mangosteens

(2) Includes: Roots and tubers of manioc, arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers with high starch or inulin content

(3) Excludes: Potatoes, tomatoes, alliaceous vegetables (onions and garlic), edible brassicas, lettuce "Lactuca sativa" and chicory "Cichorium spp.", carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, cucumbers and gherkins, and leguminous vegetables

(4) Includes: Fresh Strawberries, Raspberries, Blackberries, Back, White or red Currants, Gooseberries and Other Edible Fruits

5.1.2. European demand

European importers rely on a wide range of products and suppliers worldwide, and are always interested to import fresh fruit and vegetables from Central America. However, the interest differs per product. It can be said that there's no supply shortage in any product (category).

European imports of fresh fruit and vegetables from Central America

In analyzing European imports, the fresh fruit and vegetable sector was categorized using CBI's product tree. The following categories are used, and the main products for Central America within these categories are:

- Off-season fruit: melons; watermelons; papayas; raspberries, blackberries, mulberries and loganberries; lemons and limes
- Tropical fruit: bananas and plantains; pineapples; mangoes and mangosteens; avocados
- Exotic fruit: passion fruit, pitahaya, crambola and other small products
- Off-season vegetables: leguminous vegetables (peas, snow peas, French beans, mangetout, etc.); pumpkins, squash and gourds; sweet potatoes and other tubers
- Tropical vegetables: Asian vegetables (okra), and to a smaller extent chillies and aubergines

European imports of fresh fruit and vegetables are focused around 6 importers: the Netherlands, United Kingdom, Germany, Belgium, Spain and France[240]. The main European importers for selected products from Central America, in terms of import value, are:

Fruit:

- Melons: Netherlands, United Kingdom, Germany
- Watermelons: Netherlands, Germany, United Kingdom
- Papayas: Spain, Netherlands, Belgium
- Bananas and plantains: Germany, Belgium, Netherlands
- Pineapples: Netherlands, Spain, United Kingdom
- Avocados: Netherlands, France, United Kingdom
- Mangoes and mangosteens: Netherlands, Germany, United Kingdom
- Raspberries, blackberries, mulberries and loganberries: United Kingdom; to a lesser extent Spain, Germany
- Lemos and limes: Netherlands, United Kingdom, France
- Exotic fruit: France, Germany, Spain

Vegetables:

- Leguminous vegetables: United Kingdom, Netherlands, Germany
- Pumpkins, squash and gourds: United Kingdom, France, Netherlands
- Roots and tubers: Netherlands, France, Spain (Sweet potatoes: Netherlands, United Kingdom, France)
- Other vegetables (incl. Asian vegetables): France, United Kingdom, Spain
- Chillies: Spain, France
- Aubergines: Spain

[240] ITC Trademap, 2018

Costa Rica plays the most important role in Central America as a supplier of fresh fruit to Europe, accounting for as much as 11% of total European imports of tropical fruit. Costa Rica has an especially relevant role as a supplier of bananas and pineapples, its largest fresh produce and export products within the group of fresh fruit and vegetables. The sector is controlled by transnational companies located in the country: Del Monte[241], Chiquita[242] and Dole[243].

Panama also registered smaller (but significant) figures in European imports of tropical fruit, reaching a share of 1% of total European imports within this category. Bananas and plantains represent Panama's largest produce within the category of fresh fruit and vegetables, and accounts for 70% of its fresh fruit exports.

Panama also shows a consolidated production of bananas around transnational companies. In addition to the large player Chiriqui Land Company (brand name Chiquita), the National Assembly approved the agreement between the Panamanian state and Banapiña S.A., a subsidiary of Del Monte, which will invest $100 million in reviving banana production in Chiriquí Grande in Bocas del Toro and in Barú and Alanje in Chiriquí[244] within the next 7 years.

Guatemala has a strong role, and is Central America's main supplier to Europe (representing nearly half of the region's supplies) in off-season vegetables (mainly leguminous vegetables), reaching € 46 million in 2016. Guatemala has a good reputation among European importers in the categories of leguminous vegetables, niche products like mini-vegetables and other fresh vegetable categories. Guatemala also plays a considerably important role in the category of tropical fruit (mainly bananas), at € 60 million in 2016. The main companies active in the sector are: AgroAmerica[245] (founded in Guatemala, but converted into a translational company), BANASA (Bananera Nacional S.A.)[246] and independent producer Grupo Hame[247].

Within the category of off-season fruit (predominantly melons), Honduras plays an important role in Central American supplies to Europe, reaching a value of € 43 million and still increasing at a significant rate. Melon exports from Honduras are represented to a large extent by the Japanese group Sumitomo Corporation, which took over Fyffes in 2017[248], and independent exporters such as Group Agrolíbano[249]. Honduras is also an important supplier of Asian vegetables (mainly okra) to Europe, explaining its leading position as a supplier of tropical vegetables.

The table below gives further figures per product category. Note that for the total EU 28 imports, as well as the list of main suppliers to Europe, intra-European trade and re-exports are also considered. This means that large trade hubs such as the Netherlands and Belgium may be listed among other main suppliers, while they do not produce that product/product category.

Table 5.3. European imports of fruit and vegetables, per product group and main suppliers, 2016

	European imports 2016 (volume / value)		Growth or decline since 2012, annual (volume/value)		Main suppliers to Europe, and their market shares* (value)
Off-season fruit					
EU 28 imports	*18 million tonnes*	***€ 19 billion***	*2%*	*6%*	Spain (30%) Netherlands (12%) Italy (9%) South Africa (7%) Germany (6%) France (3%) Chile (3%) Belgium (3%) Argentina (3%) Morocco (2%)
From Central America	164,262 tonnes	€ 146 million	-1%	5%	
Costa Rica	89,993 tonnes	€ 75 million	-3%	4%	
Honduras	43,483 tonnes	€ 43 million	6%	10%	
Panama	27,517 tonnes	€ 20 million	-3%	3%	
Guatemala	2,871 tonnes	€ 8 million	-3%	12%	
Nicaragua	395 tonnes	€ 274,316	-38%	-34%	
El Salvador	4 tonnes	€ 5,136	n/a	n/a	

[241] http://freshdelmonte.com/our-products/whole-produce/pineapples/
[242] https://www.chiquita.com/
[243] http://www.dole.com/
[244] https://www.centralamericadata.com/en/article/home/Bananas_Details_of_a_100_million_Investment
[245] https://agroamerica.com/es/
[246] http://banasa.net/en
[247] http://grupohame.com/banano/
[248] https://www.irishtimes.com/business/agribusiness-and-food/fyffes-gets-five-more-weeks-from-ethics-body-to-fix-honduras-dispute-1.3178466
[249] http://www.agrolibano.com

Tropical fruit					
EU 28 imports	*12 million tonnes*	***€ 11 billion***	*5%*	*9%*	Netherlands (13%)
From Central America	2.2 million tonnes	€ 1.4 billion	7%	8%	*Costa Rica (11%)*
Costa Rica	1.9 million tonnes	€ 1.2 billion	5%	8%	Belgium (10%)
Panama	214,278 tonnes	€ 99 million	5%	-7%	Colombia (9%)
Guatemala	102,101 tonnes	€ 60 million	110%	121%	Ecuador (8%)
Nicaragua	34,655 tonnes	€ 18 million	155%	128%	Peru (5%)
Honduras	10,745 tonnes	€ 7 million	-4%	-2%	Germany (4%) Spain (4%)
Exotic fruit					
EU 28 imports	*659,543 tonnes*	***€ 1.2 billion***	*9%*	*11%*	Spain (20%)
From Central America	164 tonnes	€ 202,676	-32%	-24%	Netherlands (13%)
Costa Rica	146 tonnes	€ 107,109	-34%	-34%	Israel (8%)
Honduras	9 tonnes	€ 54,021	n/a	n/a	Tunisia (7%)
Guatemala	5 tonnes	€ 28,068	0%	-5%	Turkey (6%)
Nicaragua	3 tonnes	€ 13,478	n/a	n/a	Germany (5%) Colombia (4%)
Off-season vegetables					
EU 28 imports	*23 million tonnes*	***€ 18 billion***	*1%*	*5%*	Spain (26%)
From Central America	65,121 tonnes	€ 104 million	6%	11%	Netherlands (24%)
Guatemala	11,749 tonnes	€ 46 million	3%	7%	France (8%)
Costa Rica	32,119 tonnes	€ 30 million	3%	8%	Germany (6%)
Honduras	16,761 tonnes	€ 21 million	20%	45%	Italy (6%)
Nicaragua	1,515 tonnes	€ 5 million	-10%	-8%	Morocco (5%)
Panama	2,977 tonnes	€ 1.2 million	20%	16%	Belgium (5%)
Tropical vegetables					
EU 28 imports	*646,164 tonnes*	***€ 929 million***	*9%*	*9%*	Spain (24%)
From Central America	13,086 tonnes	€ 11 million	-19%	-16%	Netherlands (20%)
Honduras	12,771 tonnes	€ 10 million	15%	29%	Peru (17%)
Costa Rica	197 tonnes	€ 204,025	-70%	-67%	USA (13%)
Guatemala	22 tonnes	€ 108,233	78%	126%	Germany (4%)
Nicaragua	96 tonnes	€ 49,142	n/a	n/a	Italy (4%)

Source: Eurostat, 2018

European market developments, segments and value addition

Market developments

European importers foresee an ongoing growth of the market for exotic and tropical fruit, at least for the coming five years. The risk of market decline in the European market is very low.

On this market, one competitive factor is logistics; it is the one factor which defines an exporter's ability to supply at higher qualities and at more competitive prices. Logistic improvements and/or solutions are on the agenda and must be found in close cooperation between all stakeholders (logistic service providers, airlines, governments, airports). Exotics from Asia and Africa are shipped to Europe by air for much lower prices than air freight from Central America. Somehow the value chain actors from other supplying countries have a position with more frequent and cheaper cargo flights and/or they are able to negotiate better prices. That's the challenge for Central America, and it only can be done by joint efforts by all stakeholders in the chain. If not, other supplying regions may take over positions.

The fresh fruit and vegetable sector offers two interrelated solution pathways:

1. making air freight cheaper and more competitive
2. shfting from air to sea freight

These solution pathways are a matter of scale, but also a matter of having negotiation power towards the transport industry, so as to lower air freight costs. Some products from Central America, such as rambutan, papaya, will not easily reach a scale to fill a sea container or have such a perishable character that there's no other option than using air freight.

The shift from air to sea freight is one of the main challenges, and has to do with the scale of trade and innovation. In general, a ship can carry different kinds of containers and, if there is more trade with Europe over the sea, it's easier to add containers with fresh fruit and vegetables. At the same time, technical solutions have been developed in recent years to keep the quality during longer transportation times. Options are there and are still growing; modified atmosphere packaging, for

example, has made sea freight much more realistic for perishable products traditionally transported by air (example: passion fruit)[250].

For bulk products which can be shipped by sea such as bananas, pineapples and melons, further growth is possible.

Market segments
In terms of developments and opportunities per segment, the European market presents the following:

- in terms of product segmentation, organic products and ready-to-eat products have most potential, closely related to the dominating market trends of health, sustainability and convenience.
- in terms of market channel segmentation, most (ongoing) growth is expected in the supermarket channel and in the out-of-home market (restaurants, hotels, etc.). Specialized shops and informal market segments, such as open / ethnic markets and vendors, lose market shares all over Europe.
- in terms of geographical segmentation: the highest purchasing power is in North West Europe. Growth figures will be moderate in the coming years. South and East Europe (including the newest entrants in the EU) have a lower level of consumer purchasing power, but growth figures in these countries, especially in the East, will be higher. Traders in for instance Romania, Poland and the Baltic States are not always the best payers, but the market will show continuous growth in the coming decade. Given the economic development in Eastern Europe, the number of consumers for these products will continue to increase. But this will depend on the freight costs in competition with suppliers from Asia and Africa and thus the potential differs per product.

Value addition
Pre-ripening at place of origin is not likely (though tests can be done); for packing, the location usually is in Europe for practical / economic reasons. In addition: European importers are open to new / innovative technologies in storage, cooling and/or packaging. Because of the perishable character of the products, leguminous vegetables (sugar snaps, mangetouts) are commonly shipped in retail packaging.

Developments per product

Avocado faces growing market demand; Hass avocado is the only product mentioned by European importers facing shortage in supplies. Hass is by far favourable, but other varieties can also find a way in the market. Importers see Guatemala as offering especially highly potential in all avocado varieties.

There's also a continuous demand for banana, plantain and pineapple on the European market, but due to the market structure with dominance of the 4 multinationals (Del Monte, Chiquita, Dole and Fyffes), SMEs won't be able to compete on the mainstream market. Nevertheless, there is potential for niches, such as organic and RTE (ready to eat = ripe) pineapple by air; though other origins (Ghana and Dominican Republic) already have a good position.

Blueberries have a high demand. It's being planted all over the world, but the market can absorb more supplies. This represents an opportunity especially for Guatemala, whose production of blueberries have started recently[251], and first exports have been made to the US market[252]. Strawberries have a theoretical small window in Europe's off-season. Raspberries are on the market already year round. Blackberries have interesting windows of opportunity on the European market.

In the exotic fruit assortment, various importers mention interest for passion fruit, papaya, granadilla, maracuya, kiwano, cherimoya and carambola (although cultivation of these products

[250] https://theloadstar.co.uk/coolstar/sea-freight-becomes-realistic-option-fragile-fruit-new-packaging-extends-shelf-life/
[251] http://agrovision.pro/guatemala-da-la-bienvenida-la-produccion-arandanos/
[252] http://www.prensalibre.com/economia/arandano-guatemala-alistan-primera-exportacion-a-estados-unidos

isn't substantial yet in the region). Importers always add: "preferably by sea-freight." As such, the main issue for small exotics is the expensive air freight from Central America, compared with other supplying regions (Asia and Africa).

In the organic assortment especially passion fruit, physalis and citrus were mentioned by European importers as offering potential for Central American suppliers in Europe.

In the vegetables assortment two product categories are in higher demand:

- Mini-vegetables, though under the condition that the whole assortment (not a single product only) is covered in order to compete with South Africa, Kenya, Ghana and Egypt; it's a product category for specialists (catering / food service) and an ongoing growth in demand is expected. Some opportunities are already seized by Guatemala when there's a shortage of Kenyan supplies.
- Sugar snaps and mangetouts (regular and organic) by sea (container basis).

Furthermore, organic ginger and organic sweet potatoes have been mentioned as products with growing demand by different European importers.

5.1.3. Market trends

Opportunities and threats

Within the market for fresh fruit and vegetables, the below-described developments are the ones that have implications for Central American suppliers[253].

Food safety and pesticide residues[254]
Food safety remains a concern in Europe for fresh fruit and vegetables. Not complying with legislation on food safety can lead to border rejections of the products. The main issue lies in the contamination of products entering the European market. Pesticide residues are the most common form of contamination, which can result in border rejection. This is a major issue for fresh fruits and vegetables in general and one of the main food safety concerns of European consumers[255]
The European Union has set maximum residue levels (MRLs) for pesticides in and on food products. Products containing more pesticides than allowed will be withdrawn from the EU market.

Buyers in several Members States use MRLs that are stricter than the MRLs laid down in EU legislation. This is especially the case in Germany which, alongside the United Kingdom, applies the strictest MRLs at the retail level in Europe! As a general rule, German retailers apply an MRL rule which is 3 times stricter than the EU legislation – but some German retail chains can set the MRL limit even higher. In the past few years, this approach spread into all leading European retail chains.

The various border rejections and alerts for specific fruit and vegetables can be accessed under the product category *fruits and vegetables* on the RASFF Portal[256]. Cases of non-compliance from Central American suppliers are not common; a few instances are:

- Unauthorised substance carbofuran (0.016 mg/kg - ppm) in pineapples from Costa Rica (Belgium - 13/10/2017)
- Benzalkonium chloride (BAC) (18 mg/kg - ppm) in eddoes from Costa Rica (United Kingdom - 10/06/2014)
  Unauthorised substance chlorate (0.10 mg/kg - ppm) in galia melons from Honduras, via the Netherlands (Germany - 11/03/2014)

In the event of repeated non-compliance of specific products originating from particular countries, such products can only be imported under stricter conditions such as having to be accompanied with a health certificate and analytical test report. Products from countries that have shown repeated non-compliance are put on a list included in the Annex of Regulation (EC) 669/2009[257]. No Central American countries are currently in this list.

[253] https://www.cbi.eu/market-information/coffee
[254] https://www.cbi.eu/market-information/fresh-fruit-vegetables/fresh-beans-pulses/germany/
[255] Eurobarometer Food-Related Risks
[256] https://webgate.ec.europa.eu/rasff-window/portal/?event=searchForm&cleanSearch=1
[257] http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02009R0669-20140401&qid=1406714343395&from=NL

However, one of the limitations for Central America regarding MRLs, identified in CBI's Agro Food Programme for Central America, is the registration of pesticides for minor crops[258]. This is a particular threat in Guatemala, Honduras and Nicaragua, where the current regulation doesn't allow for a clear and efficient mechanism to extend the use of certain agrochemicals in a wider range of crops. These limitations slow down a company's process of obtaining GlobalG.A.P. certification, and increase their risk of exceeding MRLs on the European market due to the use of older and more toxic agrochemicals in their pest management systems.

GLOBALG.A.P. and beyond[259]
The most commonly requested food safety certification scheme, essential for exporting fresh fruits and vegetables to the European Union is GLOBALG.A.P. Even though GLOBALG.A.P. is not a legislative requirement per se, it is requested by practically all retailers in the European Union. An alternative requirement often used by German retailers is the GLOBALG.A.P.-equivalent[260] standard QS[261]. Whereas QS is equivalent to GLOBALG.A.P. at the farm level (QS-GAP), it also covers further food safety steps along the value chain, from the farm gate to wholesalers and retailers.

GRASP[262] stands for GLOBALG.A.P. Risk Assessment on Social Practice, and is a voluntary ready-to-use module developed to assess social practices on the farm, addressing specific aspects of workers' health, safety and welfare. Operators certified against GLOBALG.A.P. and/or QS(GAP) can get certified according to this additional module so as to substantiate their social practices at the farm level. This module is increasingly important to retailers in Europe (particularly North-western Europe), since it addresses social risks intrinsic to the value chain of fresh products and can strengthen their Corporate Social Responsibility (CSR) policies.

For some retailers, GRASP is not sufficient. Ahold (the Netherlands) requires Business Social Compliance Initiative (BSCI), EDEKA (Germany) requires Ethical Trade Initiative (ETI) and retailers in the UK market increasingly require Sedex Members Ethical Trade Audit (SEDEX/SMETA).

Growth in organic-certified fruits and vegetables
Consumer food safety concerns, especially over pesticide residues, are also driving the interest in organic fresh foods, to ensure food safety. In general, the interest in and supply of organic fresh vegetables is growing[263], which opens up opportunities for organic-certified fruit and vegetables. The organic food market in Europe grew over 10% in 2015[264]. The market share for organic food in Europe varies from around 1% in most eastern and southern European countries up to 7% or 8% in Denmark, Switzerland, Sweden and Austria. In terms of volume, Germany offers the largest market for organic food.[265]

Consumer demand for organic produce includes the entire assortment of fresh and processed food. The strongest growth of organic foods is in the fresh produce segment[266]. It can be said that this trend is very relevant for fresh fruit and vegetables from Central America, though organic production remains very limited.

Sustainability[267]
The European market is increasingly focusing on more sustainable and responsible fruit and vegetables. This trend relates to many aspects like working conditions, water use and waste management, among other factors. Industry sources mention the conservation of water resources as one of the principle concerns in the production of fresh fruit and vegetables.

[258] https://www.cbi.eu/market-information/policy-studies/minor-crops-guatemala-honduras-nicaragua/
[259] https://www.cbi.eu/market-information/fresh-fruit-vegetables/fresh-beans-pulses/germany/
[260] http://www.globalgap.org/uk_en/what-we-do/the-gg-system/benchmarking/BM-Equivalence/index.html
[261] https://www.q-s.de/
[262] http://www.globalgap.org/uk_en/what-we-do/globalg.a.p.-certification/globalg.a.p.-00001/GRASP/
[263] https://www.fruitlogistica.de/en/Press/PressReleases/News_7940.html?referrer=/www.cms-berlin.com/fl/en/Press/PressReleases/Archive.html
[264] https://shop.fibl.org/CHen/mwdownloads/download/link/id/785/?ref=1
[265] https://www.cbi.eu/market-information/fresh-fruit-vegetables/trends
[266] http://www.boelw.de/biofrage_15.html
[267] https://www.cbi.eu/market-information/fresh-fruit-vegetables/trends

An existing initiative is the Sustainability Initiative Fruit and Vegetables SIFAV[268], aiming to make imports of fruits and vegetables from Africa, Asia and South America 100% sustainable in 2020. In SIFAV 8 social certifications and 5 environmental certification schemes are clustered.

Retailers become more dominant
An ongoing trend at the trade / distribution level on the European market is that retailers are becoming more dominant. As much as 75-90% of fresh fruit and vegetables are currently distributed through supermarkets in Europe, while small retail shops, open/ethnic markets and vendors only account for 10-25% of the market. As such, supermarkets become the main decision-makers in the chain; as an implication, service providers such as wholesalers/importers become lean and mean. In this market reality, importers prefer to turn to large and reliable producers to reduce risk and costs.

The recommended strategy that leads to sustainable market relations is based on targeting the supermarket channels. However, exporters will not directly work with supermarket chains; it's all done through importers who are service provider for certain chains. In practice, importers service more than one market channel type.

The bottom line is that European importers prefer to have programme contracts with their suppliers, not day-to-day trade. Even in the situation they mainly provide (supermarket) chains, they also sell to other segments and, to a certain extent, work as traditional wholesalers in the spot market. A realistic approach, and an opportunity for Central America, is to target one or more importers in Europe, based on supplying the supermarket segment through programme contracts. Importers offer escapes in the lower-end market segments in case of market disruptions and quality issues.

Innovations
The main factor in innovation is logistics: other countries and/or regions may find better and cheaper ways to ship products (example: shift from air to sea). As mentioned previously, technical solutions such as modified atmosphere packaging have changed the trade for perishable products traditionally transported by air. For example, the global trade of passion fruit has been changed completely after sea freight became technically possible.

By conducting trials and finding innovative solutions, Central America can prevent itself from losing a position and possibly take a leading role. For certain products of less perishable character, such as sweet potatoes, it's easy. For many products (for instance, leguminous vegetables, avocado, melons, limes) sophisticated cool containers and modified atmosphere packaging materials can be used to ensure and extend shelf life.

5.1.4. Competition

Main rivals, new entrants and substitutes

Market rivals can only be identified per specific product. By comparing the offer of Central American suppliers with other suppliers worldwide, the most important competitors on the European market are:

- Small exotics : Asia, Colombia
- Avocado : Chile, Colombia
- Papaya : Africa, Brazil
- Mango : Mainly Brazil, plus in some windows Africa
- Bananas, pineapples, melons : South America / Africa but regulated by the multinationals
- Berries : entire world (windows)
- Limes : Brazil, Mexico
- Sweet potatoes : USA and local European
- Cassava : Ecuador, Colombia
- Physalis : mainly Colombia, plus a little Peru and Ecuador
- Sugar snaps, mangetouts : Kenya, Egypt (China is starting as well)

[268] https://www.idhsustainabletrade.com/initiative/sifav/

- Mini-vegetables : South Africa, Kenya
- Okra : Africa (different variety); Middle East (Jordan)

In this overview only those rivals are mentioned who supply in the same periods (windows) when Central America is in the market.

No specific new entrants are expected, though we have to face the fact that the whole world is Europe's (supplying) market and more upcoming producing countries aim at accessing this market. However, competition amongst different Central American suppliers on the European market is minimal. In the windows when certain Central American products are available, the European market can abosrb sufficient supplies from more than one Central American country, under the condition that they have competitive prices compared with other parts of the world. The competition is always with other continents, not with other Central American countries. Competition does however exist for some products on the North American market such as rambutan from Honduras, Costa Rica and Guatemala.

Central America can remain competitive on the European market, but under strict conditions related to quality, low MRLs and certifications - minimally GlobalG.A.P. Social certifications like GRASP and SMETA are becoming market entry requirements. Fairtrade is not so much a competitive advantage. Efficiency, which results in a competitive pricing, will also be essential for Central America's competitiveness.

There is no general competitive competitive advantage for Central America as a supplier to the European market. There's no specific product with a uniqueness or special quality that exceeds products from elsewhere. However, there are products with a high reputation, which was built along the years. Sugar snaps / mangetouts from Guatemala have a strong name because the suppliers did appear to be reliable, deliver constant, high quality, without residue issues. Same for okra from Honduras; a good name because of consistently high quality for a good price.

In terms of substitutes: no other (new) developments then the current situation in which too expensive fruits and vegetables are being replaced by cheaper ones (example: if the mango or the pineapple in the shelf is too expensive, it's replaced with a bananas) and the strong competition of other (processed) products such as smoothies, juices, vegetable chips and even vitamin pills.

5.1.5. Benchmarking

Price was mentioned in interviews with European importers as a factor which affects Central American performance within the fresh fruit and vegetable sector compared to other global suppliers. One example mentioned during interviews was rambutan from Guatemala (USD 2.00 per kg), compared to the one from Vietnam (USD 1.25 per kg). As mentioned previously, value chain actors from other supplying countries have a position with more frequent and cheaper cargo flights and/or they are able to negotiate better prices. For example, exotics from Asia and Africa are shipped to Europe by air for much lower prices than air freight from Central America. Without lower prices, it will be hard for Central America to remain competitive.

European importers have also expressed concern about the drug business in Central America and its impact on illegal (trade) activities in fresh produce. However, this still seems to be a general concern related to Latin American suppliers in general – when compared to Southeast Asian suppliers, for example. Another point of concern relates to cases of identify fraud/ misuse of the European importer's identify to carry out business transactions, with the falsification of export and import documents – which seems to happen more commonly in Central America.

5.2. Structure, governance and sustainability of the value chain

5.2.1. Structure

The sections related to governance and structure for fresh fruit and vegetables cover, to a large extent, the earlier stages of the value chain for processed fruit and vegetables as well.

Actors in the value chain

The fresh fruit and vegetable chain in Central America consists of different types of actors and dynamics depending on the product and the level of vertical integration in the specific sub-sector.

Multinational companies
Multinational companies operating within the Central American chains for bananas and pineapples (and to some extent, melons) (Chiquita, Del Monte, Dole and Fyffes) are highly vertically integrated and operate at a very high scale and efficiency: they own or (increasingly) contract plantations, own sea transport and ripening facilities, and have their own distribution networks in consuming countries[269]. National groups such as Caribana and Acon Group in Costa Rica also have full controls of their value chains and a high level of vertical integration.

Small and medium-sized producers
The fragmentation in the production of fruit and vegetables in Central America, as well as the size of producers engaged, varies per product and country.

For example, bananas and pineapples are known for their multinational activity, but there are also independent medium-sized producers (mainly in Costa Rica, and to some extent in Honduras and Guatemala for bananas) who supply these products to export chains, either through smaller windows in the market or becoming suppliers to the transnationals themselves. In Guatemala, production of vegetables is done mainly by small producers, often organized into cooperatives and linked to SME exporters.

SME exporters
SME exporters operate in different ways according to their size, own production capacities and product assortment. Although some larger SMEs in Central America have ownership of their own farms and operate in a closed system, many of them also source part of their supplies from independent (small and medium-sized) producers.

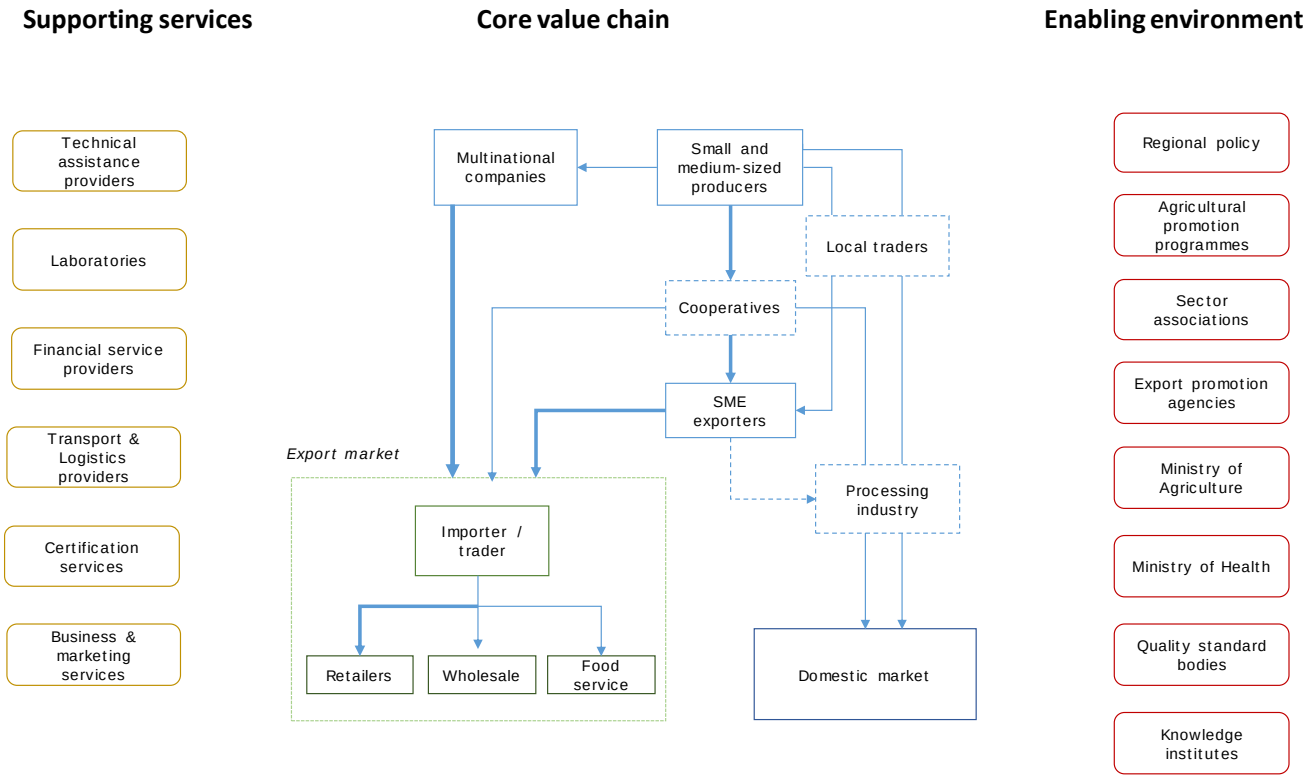
SMEs in the fresh produce market normally have aggregation centres where fruit and vegetables are received and categorized into different classes (according to quality) and packaged for exports. Whereas some companies have more efficient categorization systems, and connection with food industries that absorb lower qualities for processing, other companies still register a fairly high share of waste material (10-15%).

In some cases, seedlings, technical assistance and other support (such as credit, to be repaid during the harvest) is provided from the SME exporter to smaller suppliers in their chain, but this depends on the type of relationship established between them.

Exporting cooperatives and associations
In some countries, such as Guatemala, Costa Rica and Panama, cooperatives (or associations) are also engaged in production and exports of fresh fruit and vegetables. These are usually units with solid business structures, large production volumes, access to logistics and technical support. Sometimes these cooperatives and associations are former suppliers to larger SME exporters (such as the case of San Juan AgroExport and women-led cooperative Cuatro Pinos[270]), and managed to build sufficient capacities to export directly. In some other cases, they have managed to establish sustainable relationships with international buyers, who in turn also provide technical support in subjects as logistics and marketing. In general, the entry of smaller cooperatives into international markets without proper support and strategy can be risky and unsustainable, since it can severely affect their cashflow and reputation.

[269] http://www.bananalink.org.uk/content/companies
270 http://www.cuatropinos.com.gt

Figure 5.1. Visual representation of the fresh fruit and vegetable value chain in Central America



5.2.2. Governance

From an institutional perspective, the governance structure and stakholders in the fresh fruit and vegetable sector are geared towards incentives and regulations for agricultural production, food safety and phytosanitary control (including for exports), (applied) research on genetic varieties, seedling and agricultural practices, and technical assistance. On the private sector side, governance is structured around themes of sector organization and representation and export promotion. At the regional level, the sector is governed mainly through institutions dealing with research, food safety and phytosanitary control.

Agricultural production

The fresh fruit and vegetable sector in Central America is highly influenced by government policies related to agricultural production. These policies are mainly related to exports due to various Free Trade Agreements signed by the region in the last 20 years, and partly dictate what should be produced. The ministries of agriculture in the different Central American countries play a key role in defininig priority value chains and actions in national agricultural policies, in consultation with the private sector and other public institutions. For example, in Guatemala this consultation happens through the Consejo Nacional de Desarrollo Agropecuario (CONADEA).

Ministries of agriculture also interact with other institutional actors in the implementation of agricultural promotion programmes. In Panama, for example, Plan Maestro del Agro de la Región Occidental (PMARO), which promotes increase in production and competitiveness in 7 chains, is implemented by the Ministerio de Desarrollo Agropecuario (MIDA) together with the Centro de Competitividad de la Región Occidental (CECOMRO)[271], a private initiative. Within the national development programme Honduras 2020, the Secretaría de Agricultura y Ganadería coordinates efforts for the agribusiness sector with various governmental organizations such as the Secretaría de Desarrollo Económico de Honduras[272], Servicio Nacional de Sanidad e Inocuidad Agroalimentaria[273], Agencia de Regulación Sanitaria[274] and Pro Honduras[275].

271 http://www.cecomro.com
272 https://sde.gob.hn
273 http://www.senasa.gob.hn

At the regional level, the Consejo Agropecuario Centroamericano (CAC), integrated by the ministries of agriculture of all Central American countries has formulated the Central American Agricultural Policy 2008-2017 (Política Agrícola Centroamericana[276]); the most recent one is being currently formulated. The policy aimed at facilitating regional integration and providing a framework for individual coutries to design their own agricultural policies.

Also regionally, the Banco Centroamericano de Integración Económica (BCIE) is an example of a development bank that plays a key role in providing financial services to micro, small and medium-sized companies in the agricultural sector[277].

Phytosanitary control
Phytosanitary control of fresh produce is carried out by the specific food safety agencies, which are linked to the ministries of agriculture and health. These agencies (examples: the Servicio Nacional de Sanidad e Inocuidad Agroalimentaria (SENASA) in Honduras; the Autoridad Panameña de Seguridad de Alimentos (AUPSA); Viceministerio de Sanidad Agropecuaria y Regulaciones (VISAR) in Guatemala) control and inspect imports and exports, issue permits, are responsable for the control of plagues, etc.

At the regional level, the Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA) is a key actor in the technical and financial cooperation in subjects of food safety. This organization is integrated by the ministries of agriculture of the different Central American countries, and has the overarching goal of facilitating intra-regional trade and cooperation through the harmonization of standards and phytosanitary control.

Research and technical assistance
Central America has a high degree of regional cooperation when it comes to research and technical assistance for agriculture, which provide crucial support to institutions involved in the governance of the sector. These institutions work in themes of agricultural research and development, social impact, entrepreneurship, development of genetic varieties, etc. Examples of such institutions are the Instituto Interamericano de Cooperación Agrícola (IICA) and the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE).

Producers' organizations and other sector organizations
As a general rule, producers' and sector organizations/associations in Central America are most active in consolidated product categories. Costa Rica, for example, has strong sector associations focusing on bananas (Corporación Bananera Nacional[278]), pineapples (*Cámara Nacional de Productores y Exportadores de Piña*[279]*), and melón and watermelon (*Cámara Nacional de Productores de Melón y Sandía (CANAPEMS). Smaller non-traditional products, receive less support from (recently-established) associations.

In some cases, producers and exporters have spontaneously formed coalitions to create leverage and defend the interests of their product categories. An example is the Comité de Exportadores de Vegetales Orientales, established in Honduras.

Export promotion
The export promotion agencies in different Central American countries have a high level of involvement with the fresh fruit and vegetables sector. These agencies act in favour of companies involved in the sector to facilitate their exports and to represent them internationally; the compilation of market studies, technical assistance in exports and trade fair participation are important activities supported by them.

In Guatemala, for example, Agexport supports the fresh produce sector through different commissions/committees (Comisión de Arveja y Vegetales, Comisión de Frutas and Comité de

274 https://arsa.gob.hn
275 http://prohonduras.hn
276 http://www.fao.org/forestry/13772-0e3d01f7a6aa2707e127bf0bc4d796edb.pdf
277 https://www.bcie.org/finanzas-para-las-mayorias/programas-de-mipyme
278 http://www.corbana.co.cr
279 https://canapep.com

Mango). In Honduras, FIDE is the agency which supports the sector, even though it doesn't have a specific department for fresh produce; it has supported Honduran companies to exhibit at Fruit Logistica. Costa Rica's Procomer has a sectorial department for Fresh Agricultural Products, which has a committee that directs its support actions – the committee is integrated by private sector companies. The Cámara de Comercio Exterior (CADEXCO) also supports companies in this sector.

An outlier in the region is Panama, whose fresh fruit and vegetables exports are supported directly by ministries. The country has recently started to promote exports of fresh produce more intensively, including participation in trade fairs with the country brand Panama Exporta. These activities are carried out directly by the Ministerio de Desarrollo Agropecuario (MIDA) and the Ministerio de Comercio e Industrias (MICI).

International cooperation
In a pre-assessment phase, CBI compiled an initial list of international players active within the fresh fruit and vegetable sector in Central America:

- USAID and Walmart signed an agreement to support small rural farmers in Central America and to connect them to the retailer's regional and international supply chains[280]
- FAO established a partnership between The Central America, Caribbean and Mexico Soil during the launch of the Global Soil Partnership workshop ''towards prevention and preservation of degraded soils in Central America, Caribbean and Mexico'', October 2013, La Havana, Cuba. The soil degradation is a serious process that is threatening the soil resources in the region thus affecting economic development, agricultural production and associated food and nutrition security, adaptation to climate change and sustainable development[281]
- IICA implements all sorts of programmes to contribute to agricultural development[282]
- Through the Dutch Human Rights for Central America fund[283], ICCO works in all 6 countries on women empowerment, and CSR in general[284]
- Swisscontact is active in Nicaragua with the Senior Expert Corps (SEC), which provides rapid, hands-on support to small and medium enterprises and institutions in developing countries and Eastern Europe. Highly experienced volunteers impart their expert skills and knowledge to small and medium enterprises (SME) and institutions, which otherwise do not have access to this level of professional, affordable support.[285]
- USAID Guatemala helps mitigate commodity shocks by supporting rural income diversification and assist small-scale agriculture producers to diversify crops (i.e. snow peas, fruits, legumes, mini vegetables and fresh greens) and not depend on coffee or any other single commodity[286]
- MVO NL is running a project in the pineapple sector in Costa Rica on the valorization of pineapple plants and improvement soil fertility (working together with local and Dutch partners from different disciplines).

5.2.3. Intra-regional trade

There is some activity in regional trade of fresh fruit and vegetables amongst Central American countries. Within the category of fresh fruit, the most significant trade flows in 2016 (in terms of value) were:

- 13% of Nicaragua's exports were destined to Costa Rica, mainly in citrus fruits.
- 7% of Nicaragua's exports were destined to Honduras, mainly in bananas and plantains.
- 2% of Guatemala's exports were destined to El Salvador, mainly in bananas and plantains; melons, watermelons and papayas; and berries.
- 2% of Hondura's exports were destined to El Salvador, mainly in melons, watermelons and papayas; citrus fruits; and berries.

[280] https://www.usaid.gov/news-information/press-releases/usaid-and-walmart-join-forces-help-small-farmers-and-enhance-food
[281] www.fao.org/global-soil-partnership/regional-partnerships/central-america/en/
[282] http://www.iica.int/en/countries/central-region
[283] http://iccoca.org/media/publicaciones/32.pdf
[284] https://www.icco-cooperation.org/en/Countries
[285] http://www.swisscontact.org/en/projects-and-countries/search-projects/project-finder/project/-/show/senior-expert-corps-sec-1.html
[286] https://www.usaid.gov/sites/default/files/documents/1862/GuatemalaCDCS.pdf

Within the category of fresh vegetables, the most significant trade flows in 2016 (in terms of value) were:

- 10% of Guatemala's exports were destined to El Salvador, mainly in potatoes; edible brassicas like cabbages, cauliflowers, kohlrabi, kale; and tomatoes.
- 10% of Hondura's exports were destined to El Salvador, mainly in tomatoes.

These trade flows mainly indicate that countries import raw materials from regional markets for domestic consumption; in some cases, demand comes from processing industries too. They do not point toward regional initiatives for consolidation of supplies or other regional cooperation initiatives, which are still uncommon in this sector. These intra-regional trade flows are also not part of an extra-regional export value chain ending in the European market. In some cases, as in Costa Rica's onions, large imports from Nicaragua are seen as a threat to local production.

Food safety standards, and phytosanitary controls amongst different Central American countries are not fully harmonized, which reportedly halts intra-regional trade in fresh produce[287]. This was also validated in a World Bank study on Agro-Logistics in Central America, which highlighted delays up to 2 days on the Honduran-Salvadorian border[288]. An exception is the Guatemala-Honduras cooperation which allowed for the implementation of a Customs Union[289]. This means that both countries had to harmonize their phytosanitary controls.

In fact, the EU-financed initiatives, the Programa de Apoyo a la Creación de un Sistema Regional de Calidad y a la Aplicación de Medidas Sanitarias y Fitosanitarias en Centroamérica (PRACAMS)[290] and the Proyecto Regional de Apoyo a la Integración Económica Centroamericana y a la implementación del Acuerdo de Asociación entre la Unión Europea y Centroamérica (PRAIAA)[291], provide an institutional framework for the further harmonization of food safety and sanitary controls, and consequently trade, amongst Central American countries and the European Union. While such initiatives may enhance intra-regional integration for the fresh fruit and vegetable sector, existing limitations such as internal/regional transportation costs may continue to slow down this process.

5.2.4. Sustainability of the Value Chain

For each one of its programmes, CBI develops a Corporate Social Responsibility (CSR) tool that is used to assess and monitor the sustainability performance of specific sectors in specific countries or regions. These results are consolidated within a CSR risk assessment matrix, which will be completed next to this value chain analysis. In a pre-assessment phase, CBI identified the following issues as being the most significant risks for sustainability within the fresh fruit and vegetables value chain: use of agrochemicals; impact on forest and biodiversity child labour; decent work (particularly health and safety, working hours, contracts and salaries in large production areas/plantations); fair pricing; and land ownership in large production areas/plantations.

Use of agrochemicals

The use of agrochemicals in the production of fruit and vegetables in Central America is still considered a relatively high sustainability risk for the sector. This is especially common in large areas of monoculture, such as in bananas and pineapple plantations (though there are good practices also in these sub-sectors). As mentioned previously, a few cases of products from Central America exceeding maximum allowed pesticide limits were registered on the European RASFF Portal[292].

The incidence in agrochemicals has improved in the last few years due to stricter controls by governments in the use of certain substances (example: In 2007, the Costa Rican government prohibited the insecticide monocrotophos and in 2012 the registration of insecticide azinphos

[287] https://www.oirsa.org/contenido/2017/Plan%20estrategico_segunda%20edicion_Revision%204%201.pdf

[288] http://documents.worldbank.org/curated/en/951661468017360643/pdf/750970WP0Agro000Box374299B00PUBLIC0.pdf

[289] http://www.mineco.gob.gt/uni%C3%B3n-aduanera-guatemala-honduras

[290] http://eeas.europa.eu/archives/delegations/nicaragua/projects/list_of_projects/21513_es.htm

[291] http://www.praiaa.sieca.int/praiaa/

[292] https://webgate.ec.europa.eu/rasff-window/portal/?event=searchForm&cleanSearch=1

methyl was cancelled[293]), and also due to the expansion of implementation of good agricultural practices in Central America (particularly complying with GlobalG.A.P.).

Similarly, the more widespread implementation of Rainforest Alliance certification in Central America, notably for bananas and pineapples, has addressed issues of overuse/misuse of agrochemicals and contamination of water bodies. Central America is the largest player worldwide when it comes to Rainforest Alliance-certified bananas, mainly relevant for Guatemala, Costa Rica, Honduras and Panama. For Costa Rica, Rainforest Alliance-certified production of pineapples is also relevant.

Compliance with good agricultural practices and the application of certifications have also brought about delivery of technical assistance to smaller producers, which essentially becomes a necessity for adequate compliance. This is aligned with a trend to revive the agricultural extension systems in Central America, which were halted in the 1990s. This has proven to be a difficult task, due to political and economic factors, but it is key to get knowledge and opportunities to the producers.

In most countries, govenments have also taken actions to tackle the use of agrochemicals in agriculture; examples: Programa Nacional de Residuos en Frutas y Hortalizas en Comayagua (Honduras)[294], Programa de Monitoreo de Residuos de Plaguicidas en Frutas y Vegetales en la República de Panamá[295].

Organic production is another (more comprehensive) pathway to address the challenges related to the use of agrochemicals. However, the implementation of organic certification remains limited in Central America. Technical problems lead to high costs, to insufficient market supply, and to reluctance by farmers to accept high risks and greater labour requirements. Even in more developed market such as Costa Rica, extension services for organic certification and management are reportedly limited[296].

Biodiversity

On the one hand, the issue of biodiversity impact is related to the use of agrochemicals, and the situation in Central America is described above. On the other hand, it's also related to the expansion of production areas, and the threat this poses to forest areas, since this is done through deforestation and slash and burn techniques. But not all countries show increase in production areas; for example, Costa Rica hasn't increased its production areas in the last 4 years[297].

Studies show that cattle grazing contributes to more than 90% of forest losses in Central America[298], but large monoculture plantations (bananas, pineapples) are also associated to forest loss and threat to biodiversity.

An interesting example of biodiversity recuperation is taking place in the Guatemala's Central Highlands, as a result of the change from maize crop to vegetable production. Before the 1990s, most communities had maize and beans as main subsistence crops. Due to the introduction of new and more environment-friendly crops, like snow peas and mini vegetables, families were able to have better incomes in the same land area. In turn, this caused less pressure on lands and led to less forest loss. These efforts are supported by public and private programmes through organizations like FUNSOLAR[299] and other NGOs grouped under the Asociación Nacional de Organizaciones No Gubernamentales de los Recursos Naturales y el Medio Ambiente (ASOREMA).

Child labour

[293] http://www.bananalink.org.uk/the-problem-with-pineapples
[294] http://www.sag.gob.hn/sala-de-prensa/noticias/ano-2017/enero-2017/lanzan-programa-nacional-de-analisis-de-residuos-en-frutas-y-hortalizas/
[295] https://mida.gob.pa/direcciones/direcciones_nacionales/direccion-de-sanidad-vegetal_id_3844.html
[296] http://www.comex.go.cr/media/5222/ocde-evaluacion-y-recomendaciones-agricultura-costa-rica-2017.pdf

[297] https://www.elfinancierocr.com/economia-y-politica/area-agricola-del-pais-suma-cuatro-anos-en-descenso-pero-productividad-crece/LTQ6QWZUFRBR7CSQEEKCZPAGNM/story/
[298] https://www.sciencedaily.com/releases/2017/07/170726091543.htm
[299] http://www.pciaonline.org/node/679

Evidence and figures related to child labour incidence in Central America's agricultural production are not readily available or easily explored in the context of a field research with non-auditing purposes. Conclusions are therefore drawn mainly from secondary sources.

The Food and Agriculture Organization of the United Nations (FAO)[300] estimates that around 71% of the incidence of child labour worldwide happens in agriculture; higher than figures reported by Honduras (around 53%)[301], for example. Government figures indicate that Guatemala has around 700,000 minors involved in child labour, Honduras has 371,000, El Salvador has at least 144,168, Costa Rica has around 28,000 and Panama has 26,710[302]. World Trade Organization (WTO) statistics reveal that Central America has the lowest school attendance rates among working children in Latin America and the Caribbean, which has a significant impact on their education[303].

While individual countries have own national initiatives to combat child labour (example: Comisión Nacional Para la Erradicación del Trabajo Infantil (Conapeti) in Guatemala), country representatives of the private-sector led Federación de Entidades Privadas de Centro América, Panamá y República Dominicana (FEDEPRICAP) have formalized their commitment to combat child labour in an agreement signed during the IV Congreso Laboral in 2017[304].

Decent work

The implementation of certifications like Rainforest Alliance, GlobalG.A.P. (GRASP) and SMETA, which are increasingly demanded on international markets, are correcting some of the concerns related to decent work in fresh fruit and vegetables – as these are part of the certification protocols. During the field research, it was revealed that the health and safety of producers are often at risk due to insufficient use of protective equipment. Even when the regulation is implemented, and the equipment is provided by companies, workers are insufficiently sensitized to their use. The deficient use of marks, gloves and other protective equipment is also related to their inadequacy to tropical climates.

Different countries are implementing different initiatives on decent work. For example, Guatemala's private sector has taken a step forward and now has a policy to tackle these issues. This is a policy adopted by the 13 specific chambers that form CAMAGRO, including AGEXPORT and their member companies[305]. Similarly, Costa Rica's Programa de Trabajo Decente Nuevo Enfoque (PTD-NE), part of the Inspección de Trabajo del Ministerio de Trabajo y Seguridad Social (MTSS), is yielding positive results[306].

Fair pricing

A fair pricing on products depends highly on the nature of the product (and its market), and the relationship between suppliers and buyers. And this can vary significantly in Central America, and within different countries/companies.

In general, prices in the fresh sector are fixed according to offer and demand; therefore, there are no specific mechanisms which safeguard or not a fair price (unless specific certifications such as Fairtrade are implemented). In Costa Rica, there is a law[307] to fix the export prices of bananas based on a cost structure analysis. Every time the price changes, a new decree is needed.

Land ownership

Large plantations are not the target group of CBI (thus it was not fully covered in the field research), and that's mainly where land ownership issues have been identified at CBI's pre-assessment stage.

In the desk research consulted, there are mixed reports in this instance. As reported by Banana Link, large-scale companies have been transitioning from direct ownership of plantations to supply contracts with medium and large-scale producers. This also implies that the responsibilities on

[300] http://www.prensalibre.com/economia/fao-advierte-que-el-71-del-trabajo-infantil-ocurre-en-la-agricultura
[301] http://elpulso.hn/causas-y-realidades-del-trabajo-infantil-en-honduras/
[302] https://laopinion.com/2015/06/12/mas-de-1-2-millones-de-ninos-realizan-trabajo-infantil
[303] http://www.fao.org/americas/noticias/ver/es/c/294065
[304] http://www.prensalibre.com/economia/empresarios-se-comprometen-a-erradicar-trabajo-infantil
[305] https://www.camaradelagro.org//wp-content/uploads/sites/24/2018/01/Pol%C3%ADticaLaboralCAMAGRO.pdf
[306] http://www.mtss.go.cr/prensa/comunicados/2017/octubre/Nuevo%20Programa_de_Trabajo_Decente_en_Costa_Rica_beneficia_a_mas_personas_trabajadoras.html
[307] http://www.mag.go.cr/legislacion/2008/de-34692.pdf

labour and environmental compliance is transferred to these producers[308]. At the same time, the reactivation of transnational banana plantations in Panama is seeing a different model: the Panamean government will pay the 1,700 former workers of a cooperative in Barú, Chiriquí a total sum of USD 13 million (as a 20 year land-leasing system) to implement the banana plantation project of Banapiña de Panamá, S.A. (Del Monte Group)[309].

5.3. Value chain bottlenecks, risks and opportunities

5.3.1. Bottlenecks

A. *Inconsistency in quality*

In general, inconsistency in the quality of fresh produce is a limitation in Central American exports to Europe. The European market for fresh fruit and vegetables is regulated according to the United Nations Economic Commission for Europe (UNECE) standards[310], which define shape, size, maturity, acidity (if relevant), sugar content (if relevant) and other factors affecting the state and shelf life of the product. According to these factors, the products are graded according to specific classes.

Sizes, forms and factors defining taste and texture can vary widely according to agro-climatic and (pre-)production conditions. As such, small and medium-sized producers in Central America struggle in matching export markets, particularly the European market, with consistent qualities in sufficient volumes. This is mostly due to:

- Lack of knowledge on genetics and seedling management, and difficult access to improved seedlings to safeguard more consistency in production. For example, importers see Guatemala as offering especially highly potential in all avocado varieties. However, the constant challenge lies in raising the level of production by selecting the right rootstocks, implementing adequate cultivation and post-harvest practices, resulting in a longer shelf life.
- Lack of sorting and grading mechanisms which comply with export markets.

In addition, quality systems in Central America are generally underdeveloped, with limited capacity for issuing and monitoring standards, as well as support for calibration, metrology and quality certification. As a result, a limited number of companies have quality and standard certifications which are critical in accessing export markets.[311]

B. *Limited implementation of certifications: GAP, social and organic*

While the implementation of good agricultural practices has been increasing in Central America, actual certification according to European market requirements (GlobalG.A.P.) is still limited among less developed producers (or cooperatives) in the region. These producers are potential suppliers to Europe, but the lack of certification is an access barrier. GLOBALG.A.P. is a mandatory requirement on the European market.

The European market is also increasingly focusing on certifications which address social issues in production of fruit and vegetables, mainly GRASP and SMETA. They are not mandatory, but are becoming important market entry requirements especially in North European supermarkets. As such, awareness of these certifications and their implementation among less developed producers is even lower in Central America.

There are a few main causes for the low implementation level of certification:

- Many exporting producers operate on regional or North American markets, where GlobalG.A.P. certification is not mandatory.
- GlobalG.A.P. certification is associated with high implementation costs and intensive paperwork. GRAP and/or SMETA implementation add more (perceived) costs.
- There is a lack of technical assistance to producers/SMEs on how to implement certification protocols and, in a few countries, there is no local/national capacity to certify and audit (for

[308] http://www.bananalink.org.uk/content/companies
[309] https://www.prensa.com/economia/Baru-banano-Banapina-platano_0_4903009666.html
[310] https://www.unece.org/trade/agr/standard/fresh/ffv-standardse.html
[311] https://www.cgdev.org/files/1426258_file_Competitiveness_Central_America_FINAL.pdf

example, in El Salvador and Nicaragua for Global G.A.P.); bringing technical expertise from neighbouring countries is often perceived as costly.
- Before investing in implementing certification protocols and certifying production areas, producers/SMEs prefer to guarantee an export contract; some suppliers already comply with the standards but do not *de facto* certify due to the associated costs.

The implementation of organic certification in Central America is also limited, as mentioned previously. As quantitative and qualitative data on the European market show, there is sufficient and growing demand for organic-certified fruit and vegetables. But Central American exporters do not optimize these opportunities due to inter-related issues such as risk aversion, lack of extension services and technical problems in organic production.

C. *Lack of managerial capacities at cooperative and SME level*

Particularly for niche/smaller product categories (example: exotics), and in countries that have a lesser tradition in the sector (example: Panama), there is lack of managerial capacities of cooperatives and small/medium-sized producers. For example, this relates to production and harvest planning, certification management, cost calculation, buyer identification, negotiation with buyers, and other subjects which are key in export-oriented activities.

D. *Producers have limited access to finance*

Some problems along the value chain for fresh fruit and vegetables relates to the limited access to finance of small producers and cooperatives. These producers cannot access formal financial services through banks because they lack the required guarantees, and alternative credit options have high interest rates. In order to invest in quality improvement, productivity and certification, producers require capital, which lacks due to the high production costs.

E. *Insufficient attention to logistics and cold chain management*

There are important challenges for Central American producers in establishing a system of logistics and cold chain management required for the European market. The use of a cold chain is a key factor to guarantee the freshness and quality of the product, considering that exporting the product to Europe has a maritime transit time of 12-20 days. Air freight decreases the transit time significantly, and is needed for lower volumes and more perishable products, but also incurs high costs and affects the competitiveness of Central American products in relation to those of other supplying countries.

In less developed Central American markets, and among less developed producers/companies, insufficient attention to the logistics is combined with the lack of infrastructure. Problems range from maintaining the proper temperature along the cold chain, having the proper refrigerated facilities to store products, lack of knowledge of route options/shipping contracts and sometimes lack of proper/frequent connection to export markets affects the quality and cost of products.

Infrastructure and cold chain management
In most Central American countries (except Costa Rica and Panamá), the necessary infrastructure for cold storage at the farm level is affected by the necessary infrastructure in terms of electricity. For high-density products such as bananas in Guatemala, and melons in Honduras, triphasic 220 V systems are available in some regions, but very rarely for smaller products in more isolated rural areas.
The alternative for not having a cold storage warehouse at the farm is to use refrigerated containers, with a gen-set (electricity generator which runs on diesel), that keeps the refrigerated unit running. This alternative is feasible, but increases the costs of the cold storage. These containers with a gen set unit are also the alternative to transport the product from farm to the port, which are often long and complicated due to the road infrastructure.

Logistics
In the case of Costa Rica and Panama, the availability of shipping lines providing a service is quite secure, on a weekly basis. Costa Rica has a production of bananas and pineapples in an area of more than 100,000 hectares, which has created a demand for routes going to Europe and the United States on a weekly basis, with approximately 7-10 shipping lines offering a service to main European ports, mainly Antwerp, Rotterdam, Hamburg, Tilbury, Algeciras, and Livorno. In the case

of Panama, the Panama Canal also guarantees a permanent offer of shipping lines going to Europe.

The ports in Honduras and Guatemala have a less intensive offer of shipping lines and routes to Europe, given that most of the production of high volume, weekly products (specifically bananas) in these two countries is destined to the United States, with very low volumes destined to Europe. An example from the field research shows that the logistics between Honduras (Pacific Coast) and the Mediterranean are not well developed. Shipping companies sometimes fail to comply with the delivery times of the products. The delivery times can range between 19-20 days for Spain, compared to 16-18 days for Northern Europe.

The situation is more problematic in El Salvador and Nicaragua. El Salvador is not bordered by the Caribbean Sea; thus, all of their exports imply the use of a port in another country, specifically Guatemala (Puerto Barrios) and/or Honduras (Puerto Cortez). In the case of Nicaragua, all exports must go to Costa Rica's Caribbean port of Puerto Moín.

F. *Limited knowledge of the European market*

During the field research, several companies in the fresh fruit and vegetable sector mentioned unfamiliarity with the European market. This was an issue especially for small and medium-sized exporters that have traditionally focused on the North American market.
Companies lack information about market flows, off-season opportunities and supply calendars and logistics. Exporters are therefore limited in their strategies to access the European market, and act opportunistically when doing so. Lack of market knowledge poses a great risk to companies in this competitive sector.

The situation could be improved if trade flows are being supported in the European market by an institutional support office. Costa Rica (through the European office of Procomer in Rotterdam) and Panama (a representation office of MIDA will be opened in Rotterdam as well[312]) have offices to support exporters venturing into the European market.

However, the activities of Business Support Organizations (BSOs) are mainly related to country promotion. These organizations have limitations in direct matchmaking and orientation of companies due to the lack of sector-specific knowledge and contacts on the European market.

G. *Low volumes and little consolidation*

In Central America, the development in the production and marketing of new products is done as isolated efforts, with little associativity and capacity to consolidate volumes. Consolidation / clustering is needed under any circumstances for reaching exportable volumes (sufficient volumes to transport and deliver to export markets over a certain period). As a consequence, producers don't have direct connections to the market, don't build a knowledge base and completely depend on the integrity and honesty of a local trader.

One example identified during the field research was the production of dragon fruit in Costa Rica. Dragon fruit is produced in low volumes by independent producers, and exports are only possible for a few pallets using air freight. There is little connection with other producers of niche/exotic products and non-existent cooperation to consolidate higher volumes for the export markets.

H. *Lack of connection to food industries*

During the field research, it was identified that there is a general lack of connection between the fresh fruit and vegetable industry and other food industries (sauces, frozen, powders) in most Central American countries. This prevents the optimization of fruit and vegetables which do not qualify for the fresh market, resulting in waste.

Within the vegetable sector, there have been successful experiences in Costa Rica for tubers; problems with the handling of fresh tubers and market instability led the industry to focus on processing (soups, cakes, etc.).

[312] https://elcapitalfinanciero.com/panama-establece-oficina-incrementar-exportaciones-la-ue/

I. *Phytosanitary controls halt exports*

Some countries within the fresh fruit and vegetable sector in Central America suffer with bureaucratic procedures and delays in export permits, which are issued by phytosanitary control bodies. This was mentioned several times in Honduras, for example. In the fresh market, this is a factor which significantly affects the competitiveness of a company/product, since delays to export have a direct effect on the shelf life of a product.

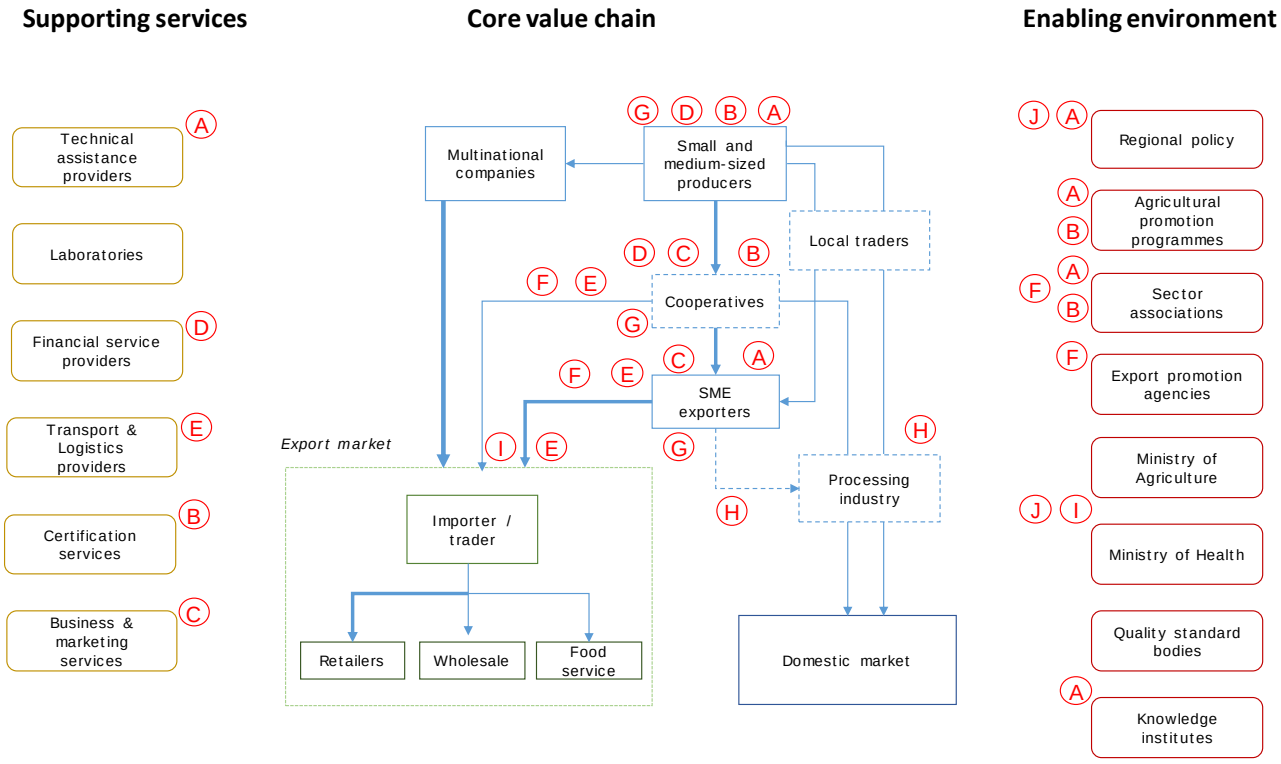
In other countries, procedures have been digitalized and do not particularly halt exports. For example, Guatemala has advanced with the Ventanilla Única para las Exportaciones (VUPE)[313] which groups all of the governmental offices that have to issue licenses and permits, and is located in Agexport. In Costa Rica, the phytosanitary certificate can also be obtained digitally[314] and, depending on the risk of the product, it may get inspected at the port of departure.

J. *Lack of harmonized food safety measures and controls in Central America*

In Central America there is no standardized or harmonized food safety protocols, which reportedly halts intra-regional trade in fresh produce[315]. As mentioned previously, this was also validated in a World Bank study on Agro-Logistics in Central America, which highlighted delays up to 2 days on the Honduran-Salvadorian border[316].

Each country has its own system, generally based on the directives of the Reglamento Técnico Centroamericano (RTCA). In practice, however, each exporter implements their own quality and safety systems. In fact, many of the regional processes related to pest control have already been harmonized, but broader efforts are needed to harmonize other processes.

Figure 5.2. Visual representation of the main bottlenecks on the fresh fruit and vegetable value chain



313 http://vupe.export.com.gt/cubos/quienes-somos
314 https://app.sfe.go.cr/ws_ImpresionCertificados/Frm_SolicitudCertificacion.aspx
315 https://www.oirsa.org/contenido/2017/Plan%20estrategico_segunda%20edicion_Revision%204%201.pdf
316 http://documents.worldbank.org/curated/en/951661468017360643/pdf/750970WP0Agro000Box374299B00PUBLIC0.pdf

Bottlenecks
(A) Inconsistency in quality
(B) Limited implementation of certifications: GAP, social and organic
(C) Lack of managerial capacities at cooperative and SME level
(D) Producers have limited access to finance
(E) Insufficient attention to logistics and cold chain management
(F) Limited knowledge of the European market
(G) Low volumes and little consolidation
(H) Lack of connection to food industries
(I) Phytosanitary controls halt exports
(J) Lack of harmonized food safety measures and controls in Central America

5.3.2. Opportunities

A. Technical cooperation and capacities are strong at the regional level

Central America has several centres of excellence for agricultural research and technical assistance, providing a pool of local expertise. The field research identified that several of Panama's agricultural technicians, for example, have obtained their degrees at the Universidad Zamorano[317], in Honduras. In addition, Central America has other centers such as the Instituto Interamericano de Cooperación Agrícola (IICA), the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) and EARTH University in Costa Rica. As mentioned previously, these insitutions work in themes of agricultural research and development, social impact, entrepreneurship, development of genetic varieties, etc.

B. National initiatives for the sector can be optimized

The fresh fruit and vegetable sector is supported by several national programmes which could be optimized in the context of CBI's project in the region. In Honduras, for example, the Honduras 2020[318] programme supports the increase in avocado production in the country, up to 500 hectares in the next years. In Panama, the Plan Maestro del Agro de la Región Occidental (PMARO) will support 7 value chains, including fresh produce. In both cases, there's an interesting potential to link up with these programmes, so as to aggregate efforts and create an export strategy for the concerned value chains. In Costa Rica, the Cámara de Exportadores de Costa Rica (CADEXCO) launched the Programa de Excelencia Exportadora, which will support individual and group certification for 20 companies. This programme offers interesting potential to synchronize efforts and possibly work with the companies supported by the programme, since certification was seen as one of the most significant bottlenecks for companies in the sector to access the European market.

C. Identification of niche markets and new segments

As part of the European market strategy for Central America, there is an interesting potential to identify niche markets and new segments that match the region's product offer. In terms of niche markets, this can be related to, for example, off-season opportunities or windows in the supply calendar of European buyers (example: blueberries, or exotic fruits such as granadilla, passion fruit, kiwano, cherimoya and carambola) or markets for certified products (example: organic pineapples, sweet potatoes or ginger). New segments can also be explored, both in geographical terms (example: Eastern Europe) or in markets (example: institutional markets for off-size/shape fruit and vegetables).

5.4. Possible solutions and support actions

5.4.1. Solutions and support actions

A. Support technical and scientific exchange in Central America

Related to constraints:

- (A) Inconsistency in quality
- (B) Limited implementation of certifications: GAP and social

[317] https://www.zamorano.edu/en
[318] http://honduras2020.com

- (C) Lack of managerial capacities at cooperative and SME level

Related to opportunities:
- (A) Technical cooperation and capacities are strong at the regional level

Facilitate a platform for technical and scientific exchange in Central America with direct applicability and connection to the private sector. The platform could involve the main research institutions in the region, addressing a diverse range of themes, such as seedlings and genetic variety development, sustainable production, certification, post-harvest practices, logistical solutions (example: shift from air to sea freight), innovative packaging, access to Information and Communications Technology.

The technical capacities of local centres of excellence for agricultural research mentioned previously such as the Universidad Zamorano, the Instituto Interamericano de Cooperación Agrícola (IICA), the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) and EARTH University in Costa Rica can also be utilized within these initiatives to create more sustainable regional connections.

Direct dialogue with the mentioned national initiatives like the Honduras 2020 program or the Plan Maestro del Agro de la Región Occidental (PMARO) can also contribute to the sustainability of this proposed solution.

B. Technical assistance for certification

Related to constraints:
- (B) Limited implementation of certifications: GAP and social

Related to opportunities:
- (A) Technical cooperation and capacities are strong at the regional level
- Somewhat related to (B) National initiatives for the sector can be optimized

Support companies through the processes of certification needed for the European market.

GlobalG.A.P. certification offers 2 options: 1) Individual certification of a producer and 2) Group certification for a collective / cooperative. The latter option eases market access for small producers. Both options shall require (initial) support in the form of capacity building activities and training, which can be supported by CBI. This support can be delivered partly in group trainings, but also in 1:1 coaching and advisory services to cater for individual needs. The same applies for social certifications such as GRASP and SMETA.

Regarding organic certification, support for exporters to get certified can be provided when deemed relevant for a specific market segment, and evidenced by existing market demand. As in the case of other certifications, support can be delivered to individual companies/cooperatives or to a group of companies/cooperatives.

Such initiatives could be facilitated by CBI in tandem with organizations already active in the sector like MVO NL, ICCO, Dutch embassies and/or USAID. As mentioned in the proposed solution *(A) Support technical and scientific exchange in Central America*, these activities can be carried out by utilizing local technical and scientific expertise and in the framework of national initiatives.

C. Participation in trade fairs and guided visits

Related to constraints:
- (E) Insufficient attention to logistics and cold chain management
- (F) Limited knowledge of the European market

Related to opportunities:
- (C) Identification of niche markets and new segments

In the case of the fresh fruit and vegetable sector, the field research revealed a strong interest of BSOs and companies to combine trade fair participation with guided visits to buyers, ports/airports/other logistical facilities, food safety agencies, etc.

The main European trade fair for the fresh fruit and vegetable sector is the Fruit Logistica, in Berlin[319]. Depending on the product categories included in the programme, Fruit Attraction (Madrid)[320] should also be considered. Fruit Attraction may have a better scale for market entrants, and it's interesting for companies which have a commercial relation with Spain/Mediterranean countries; in addition to closeness in terms of language and culture.

In addition to the matchmaking purpose, trade fairs and guided tours will also contribute to the sector's knowledge and understanding of the European market, as well as to the exploration of solutions related to cold chain management and logistics. As such, the guided tours can include information and contacts with providers of packaging, logistical systems and solutions, transportation companies (air freight, sea freight), cold chain storage systems and other practical

D. Sector strategy for logistical improvement

Related to constraint:

- (E) Insufficient attention to logistics and cold chain management

In view of the high logistical costs associated with the fruit and vegetable sector in Central America, and the difficulties to implement infrastructural changes in the framework of this programme, CBI can facilitate a sector-wide strategy with representatives of the private sector, Business Support Organizations (BSOs), air freight companies and possibly sea freight companies (which operate regionally). This strategy must have a clear objective: implementing solutions for companies in the fruit and vegetable sector, including cost reduction, increased efficiency, better connections to the European/international markets, sharing of best practices and private sector cooperation.

E. Tailored market studies

Related to constraints:

- (E) Insufficient attention to logistics and cold chain management
- (F) Limited knowledge of the European market

Related to opportunities:

- (C) Identification of niche markets and new segments

Support the sector's institutions and companies with tailored market studies, containing practical information on how the market works for a specific product/product group and how to access it. The tailored studies should contain information such as detailed structure of the market, market flows and windows for Central America, packaging and other industry requirements, legislative requirements, logistics, competition (prices, competitive advantages, etc.) and other factors that can directly contribute to an Export Marketing Plan (EMP). These studies can also target more unknown markets such as those in Eastern Europe – with the example of a CBI study done for Colombia's exotic fruits on the Czech market (2013).

F. Management training and dissemination of best practices

Related to constraints:

- (C) Lack of managerial capacities at cooperative and SME level

Related to opportunities:

- (B) National initiatives for the sector can be optimized

Support the managerial capacities of companies and BSOs, with a view on export markets for fresh fruit and vegetables. Training modules can be linked to cost calculation, export logistics, contract negotiation and other relevant subjects. Market research skills are also highly relevant, and may help close other gaps in knowledge.

Trainings would be most effective with the use of best practices from other CBI programmes and other successful interventions/local initiatives. It's recommended that training and training

[319] https://www.fruitlogistica.de/en/
[320] http://fruitattraction.com/en/home/

materials are made available through webinars, so as to benefit other companies in the sector beyond the project participants. More innovative solutions for presentation and delivery of the training material can be considered in formats such as TED Talks.

G. Support the regional harmonization of phytosanitary control

Related to constraints:

- (I) Phytosanitary controls halt exports
- (J) Lack of harmonized food safety measures and controls in Central America

CBI can facilitate the implementation of an action plan oriented towards the private sector in Central America to further harmonize phytosanitary standards and control. The programme can also support the alignment of Central American standards with European standards through the European Food Safety Authority (EFSA). This initiative can build on existing EU-funded projects PRACAMS[321] and PRAIAA[322], also involving the technical capacities and institutional influence of the Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA) and the private sector-oriented network of the Business Support Organizations (BSOs) in different countries.

H. Support a pilot on volume consolidation at the regional level

Related to constraints:

- (G) Low volumes and little consolidation
- (J) Lack of harmonized food safety measures and controls in Central America

Related to opportunities:

- (B) National initiatives for the sector can be optimized

Cross-border consolidation of volumes can be a very challenging subject, and it may be a long-term activity for Central America. In a shorter time frame, CBI can implement lessons learned from initiatives and its own programmes elsewhere.

Possibly in the form of a regional or national initiative, the CBI project in Central America can inspire a pilot project mimicking a consortium model implemented in Colombia for the cut flower sector. In this CBI-supported Consortium, four companies came together as Tropiflowers Group[323] to offer buyers a broad range of flowers under one business entity (a one-stop-shop). The orders are not physically consolidated, but still provide the buyer with less hassle and less transaction costs – while expanding market opportunities for the companies involved. It also indirectly circumvents the lack of harmonized food safety measures and controls in Central America by providing a pragmatic cross-border solution.

5.4.2. Possible participants for the CBI programme

Export-competent companies within the fresh fruit and vegetable sector in Central America are mainly concentrated in Costa Rica, Guatemala, Honduras and to a certain extent in Panama. The export promotion agencies in these countries have a proper overview and access to the companies matching CBI's criteria. In the case of Panama, the most suitable channels to select companies for the fresh fruit and vegetable sector are the Ministerio de Desarrollo Agropecuario (MIDA)[324] and the chambers of commerce (examples: Cámara de Comercio Industrias y Agricultura de Chiriquí[325] and Cámara de Comercio, Industrias y Agricultura de Panamá[326]).

An initial analysis of the pool of exporters in each Central American country indicates that there are at least 20-25 eligible companies in the region:

- Costa Rica: min. 20-25 eligible companies. See reference the exporters' directory (linked through Procomer)[327]: total of 92 companies, including products such as bananas;

[321] http://eeas.europa.eu/archives/delegations/nicaragua/projects/list_of_projects/21513_es.htm
[322] http://www.praiaa.sieca.int/praiaa/
[323] https://tropiflowersgroup.com/home
[324] https://www.mida.gob.pa
[325] http://www.camchi.org.pa
[326] https://www.panacamara.com
[327] https://www.directorioscostarica.com/listado/banano,vegetales,frutas-exoticas,frutas,pinas,yuca

pineapples; other fruit like melon, watermelon, mango; exotics; vegetables; yuca and other tubers). Some overlap with frozen/IQF companies in both fruit and vegetables.

- Nicaragua: main company is the okra exporter AgroEspaña[328]; max. 1-2 other companies
- Honduras: minimum of 20 companies, listed on FIDE's directory (2014)[329]: bananas, pineapples, limes and lemons, melons, watermelons, papaya, mango, passion fruit, ginger, eggplants, Capsicum, okra, sweet potatoes, yuca,
- Guatemala: fruits, minimum of 15 companies on the Agexport directory[330]: blackberries; mangoes; mangosteens; avocados; rambutans; bananas; limes, etc.); vegetables: minimum of 10 companies on the Agexport directory[331]: leguminous vegetables; baby vegetables; zucchini; broccoli. Some overlap with frozen/IQF companies in both fruit and vegetables.
- Panama, listed on the directory of Panama's embassy[332]: fruit, minimum of 10 companies: melons; watermelons; pineapples; bananas; papayas; avocados. Vegetables, maximum of 3 companies: yuca; sweet potatos; pumpkins; broccoli.
- El Salvador: máximum of 1-2 companies on PROESA's directory, including Persian limes and bananas.

Participation of exporters with own production is favorable; staying away from the chains of multinationals is crucial. Experience shows that participation of traders who source from (small or large) producers, is less stable. Another option is to work with producer groups or cooperatives. This is a suitable method to enhance market participation of small producers by reaching a scale that cannot be reached individually. However, participation of cooperatives in CBI programmes on fresh fruit and vegetables has not always appeared to be successful, due to unprofessional and unstable management. Therefore the condition for cooperatives to participate is a strong and proven leadership as well as sufficient financial resources.

An example identified during the field research is the Cooperativa de Productos Agrícolas y de Servicios Múltiples de la Zona de los Santos R.L. (APACOOP)[333], which already has a strong position in Costa Rica's domestic retail market for products like avocados and blackberries.

Women-led cooperatives are isolated cases in the Central American fresh fruit and vegetable sector; the most remarkable example identified during the field research was cooperative Cuatro Pinos, in Guatemala[334], which focuses on high-value crops like baby carrots, sweet peas and string beans. Cuatro Pinos is already exporting and has a recognized social impact on producing communities[335]. At the same time, APACOOP (Costa Rica) itself is an example of a cooperative where women occupy important position in management (but not necessarily women-led), and this is a level which can be assessed more in detail during the selection of the programme's participants.

5.4.3. Risk mitigation strategies in sustainability performance

Improvements in the social performance of exporters of fresh fruit and vegetable are demanded by consumers, and translated by retail chains into certifications. As mentioned previously, these certifications (GLOBALG.A.P., GRASP, SMETA, organic, other) are demanded by buyers and, at the same time, regulate the issues pertaining sustainability risks.

- Use of agrochemicals and biodiversity:
    - In fruit and vegetables production GLOBALG.A.P. pays sufficient attention to this theme. There should be efforts in the CBI programme to make producers in Central America more familiar with GLOBALG.A.P. and/or implement social compliance (GRASP or others). Rainforest Alliance, particularly for independent producers/exporters of pineapples and bananas, could be an interesting add-on certification as well. Support for organic certification will depend on the target segment and product group of a specific company. Organic farming stimulates crop

[328] http://www.agroesnica.com
[329] https://www.dropbox.com/s/z7ekhhl13q2zq9r/DirectorioExportadores2014.pdf?dl=0
[330] http://export.com.gt/agexport/directorio/#/directorio/1/2/////
[331] http://export.com.gt/agexport/directorio/#/directorio/1/5/////
[332] http://embajadadepanama.com.co/wp-content/uploads/2016/12/0549_161004145702_001.pdf
[333] https://www.facebook.com/APACOOP-RL-800574433328845/
[334] http://www.cuatropinos.com.gt
[335] https://www.ifad.org/web/latest/story/asset/40307292

rotation and crop diversification and could facilitate steering away from mono-cropping and associated problems (soil degradation, over-use of pesticides and water, etc.).

- Decent work, child labour and fair pricing:
    - CBI can further stimulate social certifications such as GRASP and SMETA, since it's increasingly becoming a market entry requirement, and can serve to deepen Central America's competitive advantage on the European market. Rainforest Alliance can also be looked into for specific companies in the programme, since it addresses both environmental and social issues. More comprehensive social certifications like BSCI, SA8000 or Fair trade can also be applied.

A strong (but also high threshold) alternative could be to support combined organic and Fairtrade certification for specific companies in the programme. This combination could address the social issues mentioned but also the fair pricing issue (via premiums and via improved trade relations), while the organic component could address issues around pesticide use and loss of biodiversity. However, Fairtrade certification offers small and very specific market opportunities, thus European demand would have to be analyzed carefully. In addition, the certification process can incur significant costs to companies.

The above-mentioned certifications are all included in the standard basket of Sifav[1], an initiative driven by IDH. It is important to stay aware on the limitations and strengths of the mentioned certifications and to use them accordingly, and to implement them according to market demand.

When selecting companies and products for the programme, it is also important to be aware of tendency to increasingly ship fruits and vegetables by air instead of by sea. The CO^2 implications of this trend are immense, since emissions when shipped by air are about 10 times larger than when shipped by sea.

6. Processed Fruit and Vegetables Value Chain

6.1. Key European market characteristics and Central America's competitiveness on the European market

6.1.1. Supply from Central America

Central America supplies a wide variety of processed fruits and vegetables (PFV). CBI identified main product groups according to the Revealed Comparative Advantage (RCA) and expert opinions during the Value Chain Selection (VCS) stage of their research. To make this follow-up VCA most efficient, results of the VCS provided direction to the analysis of supplies from CA. Refer to Annex III for results of the VCS.

Processed fruits and vegetables exports from Central America

Export data by the International Trade Centre (ITC) show that Costa Rica is by far the largest exporter in Central America, especially in the fruit juices, canned fruits and frozen fruits subsectors. Of the other Central American countries, Guatemala is the main exporter of PFV. Both Costa Rica's and Guatemala's exports mainly have destinations outside of Central America including the USA and Europe. Exports by the other Central American countries are far smaller (except for groundnuts from Nicaragua) and their destinations are mostly within the Central American region. The dominant role of Costa Rica and to a lesser extent Guatemala in exports to Europe are confirmed by European import data in the next chapter. Fruit juices are the main export product of Central America.

Table 6.1. Processed fruits and vegetables exports from Central America, per product group and export market, 2017

Country	Exports 2017 (volume in tonnes / value in thousand USD)		Growth/decline since 2014 annual average (volume / value)		Main export markets
Costa Rica's main export products					
Fruit juices	240,002	225,903	+7%	+9%	Netherlands (48%) USA (19%) Belgium (11%)
Canned fruits and nuts	193,108	141,116	+15%	+10%	Netherlands (35%) USA (27%) Belgium (9%)
Frozen fruits and nuts	62,888	80,100	+7%	+7%	USA (55%) Belgium (8%) Netherlands (6%)
Jams, jellies, marmalades	24,706	33,025	+44%	-11%	USA (26%) Dominican Republic (19%) El Salvador (9%) Netherlands (7%)
Groundnuts, whether or not shelled or broken	4,185	2,190	+24%	+26%	No data available
Guatemala's main export products					
Frozen vegetables	47,866	42,928	1%	-3%	USA (90%) Mexico (5%) France (1%) Germany (1%)
Fruit juices	86,573	41,010	4%	-44%	El Salvador (46%) Dominican Republic (10%) Panama (10%) USA (10%)
Other nuts, fresh or dried	6,554	40,938	+33%	+29%	China (45%) Vietnam (25%)
Canned other vegetables	18,808	30,288	6%	4%	USA (55%) Costa Rica (25%)
Frozen fruits and nuts	14,607	29,832	10%	7%	USA (63%) UK (15%) Germany (2%)
Jams, jellies, marmalades	48,816	21,998	0%	3%	USA (36%)

					Netherlands (27%) Germany (9%) Spain (4%) Poland (3%)
Nicaragua's main export products					
Groundnuts, whether or not shelled or broken	96,327	119,887	-2%	+1%	Mexico (33%) UK (26%) Colombia (9%)
Dried leguminous vegetables	53,356	57,516	-27%	-27%	El Salvador (28%) USA (27%) Costa Rica (21%)
Frozen fruits and nuts	550	2,297	13%	13%	USA (99%)
Canned fruits and nuts	556	1,841	7%	7%	Guatemala (44%)
Fruit juices	1,137	591	-23%	-23%	Panama (53%) Guatemala (47%)
El Salvador's main export products					
Canned fruits and nuts	13,102	26,349	6%	7%	Guatemala (73%) Honduras (15%)
Fruit juices	31,105	18,349	-21%	-23%	Honduras (59%) Guatemala (25%)
Canned other vegetables	12,775	11,465	21%	13%	Guatemala (82%) USA (10%)
Honduras' main export products (2016)					
Canned other vegetables	5,886	21,330	17%	24%	USA (46%) Nicaragua (21%)
Canned fruits and nuts	9,053	20,489	7%	14%	USA (72%)
Fruit juices	19,153	13,008	-30%	-29%	Nicaragua (37%) El Salvador (33%) USA (22%)
Frozen vegetables	1,617	2,948	9%	10%	USA (99%) UK (1%)
Panama's main export products (2016)					
Fruit juices	4,462	3,660	-64%	-72%	Curaçao (29%) USA (20%) Netherlands (19%)
Canned other vegetables	219	1,206	-12%	-3%	Cuba (63%)
Dried leguminous vegetables	191	258	85%	99%	Venezuela (82%)

Source: ITC Trademap, 2018

The following sections focus on Costa Rica's export potential in the processed fruits and vegetable sector. Where relevant, additional information on export potential of other Central American countries is provided.

Costa Rican and Guatemalan exports

Costa Rica's trade with the world confirms the importance of fruit juices and concentrates in total exports of processed fruits and vegetables.

Table 6.2. Exports of processed fruits and vegetables by Costa Rica, in million USD, 2012-2016

	2012	2013	2014	2015	2016
Juices and fruit concentrates	193.5	181.8	162.7	193.7	273.6
Sauces and condiments	83.0	88.6	96.0	10.9	108.4
preserved tropical fruits (except for those preserved in syrup)	20.7	21.9	43.1	60.2	81.1
Other frozen fruits	32.1	40.1	60.4	70.3	64.7
Fruit purees	67.4	71.6	55.1	41.9	33.8

Source: Procomer, 2017

In 2017, the value of Guatemalan exports of processed fruits and vegetables (mainly canned) amounted to € 207 million (see table 1). PFV is one of the growth sectors in the Guatemalan food industry. Major types of fruits and vegetables used by the PFV sector in Guatemala include: gherkins/pickles, onions, maize, tomatoes, mushrooms, palm hearts, pineapples, peaches, peanuts[336].

According to another study by the consultancy Dalberg, total exports of processed foods based on fruits and vegetables by Guatemala amounted to USD 150 million in 2009. Canned, dried, frozen products and juices and concentrates were among the major sub-sectors.

Fruit juices and concentrates
Costa Rica is one of the world's leading exporters of processed pineapples, including pineapple juice. Large multinational companies control most of this market.

The Costa Rican pineapple industry has grown strongly over the last decade. From originally specialising in exports of Not From Concentrate (NFC) juice (made from its MD2 variety), it has diversified into pineapple juice concentrate. Fresh exports of MD2 pineapples have increased as well in response to increasing demand from European supermarkets for MD2 fruit for fresh sale[337] . The diversification of the industry is also illustrated by the introduction of super-premium organic pineapple juices during SIAL 2016 by the company Alca Trading.

Other fruit juices and purees exported by Costa Rica: banana, orange, and mango[338].

Although of much smaller size than in Costa Rica, Guatemala also has a significant fruit juices and concentrates sub-sector. Table 1 shows that Guatemala's exports of fruit juices amounted to € 41 million in 2017. According to Doehler, a leading European importer of fruit juices and concentrates, Guatemala exports banana puree amongst other products. Due to the high amount of competition and low margins in the banana puree market only cost-efficient manufacturers are able to compete. These are mostly large-scale companies which can benefit from economies of scale.

Frozen fruits
In 2017, exports of frozen fruits from Central America increased by 50% to USD 115 million. Costa Rica accounted for USD 80 million, Guatemala for USD 30 million, El Salvador for USD 3 million and Nicaragua for USD 2 million. Exports from Panama and Honduras were negligible. Especially frozen fruits exports from Costa Rica are increasing fast. Between 2012 and 2016, exports increased by 19% annually on average. Between January and June 2017, exports continued to increase rapidly according to data from CentralAmericaData. Most exports of frozen products by Central America are destined for the USA (57% of total exports), Canada (8%), Belgium (6%), United Kingdom (5%) and the Netherlands (4%)[339] .

Multinationals play a major role in the frozen fruits exports. Compañia Frutera La Paz SA is Costa Rica's largest frozen pineapple producer with a turnover of around USD 28 million[340]. In 2017, European frozen food market leader Ardo has acquired a controlling stake in the Costa Rican company through its stake in US processed food supplier VLM Foods. In Guatemala, DFT-Agrotropic recently announced the establishment of an IQF processing facility which will mainly process mango. At a later stage, the company plans to expand to papaya, melon, avocado and rambutan[341].

Besides frozen fruits, Costa Rica also has potential in the market for frozen exotic vegetables. Heart of palm is currently one of the main products in the product group frozen fruits and vegetables[342].

---

[336] http://www.alimentosdeguatemala.com/shortcode/#1466361732020-8d0988d6-c74b
[337] https://iegvu.agribusinessintelligence.informa.com/CO214462/Costa-Rica-diverts-pineapple-from-PJC-to-NFC
[338] https://www.procomer.com/en/
[339] https://en.centralamericadata.com/en/article/home/Frozen_Fruit_Record_Sales_in_2017
[340] https://www.just-food.com/news/ardo-buys-majority-stakes-in-vlm-foods-compania-frutera-la-paz_id137654.aspx
[341] https://www.centralamericadata.com/es/article/home/AC_Guatemala_Nueva_planta_de_procesamiento_de_frutas
[342] https://www.procomer.com/en/buyer/food

Although of much smaller size than in Costa Rica, trade data show that Guatemala also has a significant frozen fruits and vegetables sub-sector. Between January and June 2017, exports of frozen fruits continued to increase rapidly according to data from CentralAmericaData[343]. Dutch frozen foods importer Sonderjansen mentioned frozen broccoli as one of the export products of Guatemala, besides frozen pineapple products.

The Corporación de Exportadores (COEXPORT) confirmed that El Salvador only exports small volumes of frozen fruits to the market for ethnic foods in the USA. To illustrate, the company Exportadora Rio Grande supplies the US market where emigrants from El Salvador are the primary market[344]. As the diaspora from El Salvador in Europe is only a fraction of the diaspora in the US[345], the estimated demand from El Salvadorian emigrants in Europe for products from their country is also much smaller.

Canned fruits and vegetables

Costa Rica is Central America's largest supplier of canned fruits and vegetables to the EU. Costa Rica is a particularly big supplier of canned palm hearts to France. Supplies consist of preserved heart of palm in different packages: glass jars, aluminium cans, whole or in slices. Canning of palm hearts is a relatively simple process. After manual cutting, the palm hearts are cut into pieces of equal size, put in a solution of salt and preservatives and canned. This process can also be applied to other raw materials. Manual cutting is relatively expensive in Europe where many fruits and vegetables are machine harvested. Therefore, manual cutting provides an opportunity for Costa Rica to add value to the products.

France accounted for 76% of total European palm hearts imports in 2015 and Costa Rica accounted for 13% of the French imports. However, general imports of canned palm hearts by France are decreasing[346]. This has a negative impact on Costa Rican exports. Based on European import developments, other European countries are not expected to compensate for this loss of market.

Future opportunities for Costa Rican suppliers of canned fruits and vegetables are much better in the EU market for canned exotic beans and canned exotic fruits[347]. For example, Costa Rica already exports pineapple and canned papaya[348] .

Salsas and preparations

The export data above show that Costa Rica is a major exporter of salsas and preparations and that these exports are growing fast. The salsas and preparations are primarily exported to neighbouring countries (91% of total exports in 2016)[349].

Exotic fruits for processing

Procomer in Costa Rica identified several processed exotic fruits and vegetables as products with export potential. These products are presented in the below table. However, production of these fruits and vegetables in Costa Rica is underdeveloped. The scale of production is still too small to justify establishment of a processing facility. Cost efficient processing at an existing processing facility is feasible under the following conditions:

- Production areas of these different fruits and vegetables are close to each other
- Production areas of these different fruits and vegetables are close to an existing processing facility
- Production exceeds demand from the fresh market (assuming that the fresh market pays higher prices) or lower grades are available for processing. In both cases, supplies must still have a certain scale (around 10-20 tonnes) to enable cost efficient processing.

[343] https://en.centralamericadata.com/en/article/home/Central_America_Frozen_Fruit_Exports_Up_60
[344] http://www.proesa.gob.sv/latest-news/news/item/3685-r%C3%ADo-grande-salvadoran-company-that-was-born-30-years-ago-to-export
[345] https://read.oecd-ilibrary.org/social-issues-migration-health/connecting-with-emigrants/el-salvador_9789264239845-38-en#page1
[346] https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/canned-palm-hearts/france/
[347] https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/canned-fruit-vegetables/
[348] https://www.procomer.com/en/buyer/food
[349] https://procomer.com/downloads/estudios/estudio_estadistico_2016/Capitulo3.pdf

Table 6.3. Examples of exotic fruit production in Central America

Product	Area/productivity in Costa Rica	Competitors	Processed (primary products)
Mangostan (Mangosteen)	18 hectares in Limon (Pococi, Guacimo, Rio Frio, Corredores and Perez Zeledon) and south CR; average productivity of 500 fruits per mature tree	Mexico, Peru	Juices and drinks, dried (incl. freeze-dried), biscuits, candy.
Pitahaya (Dragon Fruit)	6 hectares in Chorotega; 4.5 tonnes /ha in first years, up to 10 tonnes /ha from 5-6 years; primarily red variety and little yellow variety	Southeast Asian countries supply big volumes of pitahaya juice, Ecuador supplies dried pitahaya and Hungary and Poland manufacture drinks based on pitahaya. Other major suppliers include Colombia and Mexico. Potential as food colouring.	
Guanabana (soursop)	110 hectares in Caribe región; most suitable for processing, as plagues complicate compliance with requirements of fresh markets	Jamaica, Colombia, Ecuador and Peru	Versatile product for processing in pulp, concentrate, dried (incl. freeze-dried). Leaves can be used for tea.
Maracuya (Passion fruit)	320 hectares in Huetar Norte and Caribe; productivity 20-30 tonnes /ha; yellow variety more suitable for CR as it is more productive and tolerant to diseases	Nicaragua and Honduras produce passion fruit, but lack a processing industry	Juices, concentrates, dried
Uchuva (physalis)	6 hectares in Cartago and los Santos; 14-18 tonnes /ha	Colombia and South Africa	Dried
Carambola (Starfruit)	20 hectares in tropical zones	Taiwan, China, Thailand	Dried, concentrate, pulp, jams and jellies
Pejibaye (Peach palm)	500 hectares in Brunca, Central Oriental, Huetar Caribe and Huetar Norte		Pulp, canned with syrup, dried
Ipecacuana (Ipecacuanha)	28 hectares in Huetar Norte; 2.8 tonnes /ha	Costa Rica, Nicaragua	Medicinal plant, source of alkaloids; study by University of Costa Rica on pejibaye as supplement

Source: Procomer, 2017

During the Regional Conference organized by CBI on 13/14 March 2018 in Guatemala, participants of the PFV session mentioned the following additional products which may have potential for processing: okra, (blue/black)berries, rambutan, sweet potato, corn, avocado, banana and eggplant. Production of these raw materials is already established and of significant size. For example, Honduras has some 500 hectares of okra[350].

Edible nuts

Nicaragua plays a leading role in the Central American edible nuts sector. According to the Exportable Offer Study conducted by the Ministry of Development, Industry and Trade (MIFIC, for its acronym in Spanish), edible nuts including peanuts and cashew nuts have export potential[351]. In 2016, peanuts and beans were among the main export products of Nicaragua with shares in exports of 1.6% and 1.3% respectively.

Nicaragua has mastered food safety for peanuts and has recently earned a positive reputation and good position in the export market. Nicaragua's key to success has been a strict government programme controlling aflatoxins combined with investments in modern mills[352]. Comasa is the dominant player in the Nicaraguan peanut industry with some 4 or 5 integrated production facilities. They are well represented internationally and as such perhaps of little interest for a CBI programme, although their product is very competitive in terms of price and quality. There are however several small to medium size independents which are producing raw peanuts and adding some value i.e. blanching. They are not as well represented and as such may not have access to the international markets. Guatemala has exported raw peanuts to both USA & Canada, but exact volume information is hard to obtain or validate. Refer to the section on competition for more information on the potential for peanut exports.

[350] https://www.pressreader.com/honduras/diario-la-prensa/20170101/281603830136723
[351] http://pronicaragua.gob.ni/en/investment-opportunities/130-food-processing/
[352] https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/groundnuts-peanuts-europe/

All across Central America most production of cashew nuts and macadamia is geared towards local consumption. During the Regional Conference in Guatemala, several participants of the session on processed fruits and vegetables mentioned the export potential of Central America for these nuts, based on examples of exports by a few companies and cooperatives. However, export data show that nuts are a minor product group within the PFV exports from Central America except for peanuts from Nicaragua and 'other nuts' from Guatemala. Detailed analysis of trade data show that the nuts exports by Guatemala mainly comprise macadamia. A significant amount (700 tonnes) of these macadamia nuts from Guatemala are organic[353].

Costa Rica also produces good quality macadamia, with 3 to 5 medium-size producers who mainly export to the USA and Japan. Accessing the EU as an additional market is an interesting opportunity for these companies. The fact that they are able to export to Japan validates the fact that the quality of the product will be high.

Dried fruits and vegetables
Production of dried fruits and vegetables in Central America is relatively small compared to production of juices, nuts and frozen and canned fruits and vegetables. For this reason, this VCA provides limited information on dried fruits and vegetables. Nonetheless, experts invited to CBI's Peer Group Sessions for CBI's Market Intelligence indicated potential for Central America in the market for dried fruits and vegetables.

6.1.2. European demand

Current European imports

Compared with other suppliers worldwide, Central America accounts for a small share of total processed fruits and vegetables imported into Europe. Out of the 23 million tonnes (€ 33 billion) of processed fruits and vegetables traded into Europe in 2016, Central American suppliers accounted for 274 thousand tonnes (€ 216 million). This represents less than 1% of total processed fruits and vegetables supplies to Europe in 2016.

This small share of Central American suppliers is partly due to the data selection. For example, CBI's definition of processed fruits and vegetables (Annex IV) does not include:

- "Other fruit and nuts, uncooked or cooked by steaming or boiling in water, frozen, whether or not containing added sugar or other sweetening matter" (excl. strawberries, raspberries, blackberries, mulberries, loganberries, black-, white- or redcurrants and gooseberries). These are registered under HS 081190. Inclusion of these data would result in much higher trade figures for frozen fruits and vegetables. Based on Central American export data and European market trends, European imports of frozen pineapples, melon, mango, banana and possibly other products such as papaya are estimated to be considerable.
- "Groundnuts, not roasted or otherwise cooked, whether or not shelled or broken" other than seeds (HS 120241/42) such as peanuts. See next sections on nuts for more details on these product groups.

[353] http://visar.maga.gob.gt/visar/img/aoguate.pdf

Table 6.4. European imports of processed fruits and vegetables, per product group and main suppliers, 2016

	European imports 2016 (volume / value)		Growth or decline since 2012, annual (volume/value)		Main suppliers to Europe, and their market shares* (value)
Fruit juices and concentrates					
EU 28 imports	*6.9 million tonnes*	***€ 5.9 billion***	*3%*	*0%*	Brazil (19%)
From Central America	150,034 tonnes	€ 139 million	7%	14%	Netherlands (19%)
Costa Rica	*149,592 tonnes*	*€ 138 million*	*7%*	*14%*	Belgium (13%)
Panama	*235 tonnes*	*€ 0.2 million*	*n/a*	*n/a*	Germany (10%)
Guatemala	*111 tonnes*	*€ 0.1 million*	*n/a*	*n/a*	Spain (5%)
Honduras	*95 tonnes*	*€ 0.1 million*	*n/a*	*n/a*	Poland (5%) Italy (4%)
Canned fruits and vegetables					
EU 28 imports	*7 million tonnes*	***€ 8 billion***	*2%*	*3%*	Italy (16%)
From Central America	117,648 tonnes	€ 70 million	9%	12%	Spain (11%)
Costa Rica	*87,591 tonnes*	*€ 55 million*	*9%*	*12%*	Germany (9%)
Guatemala	*29,721 tonnes*	*€ 14 million*	*10%*	*14%*	Netherlands (8%)
Honduras	*304 tonnes*	*€ 0.4 million*	*-40%*	*-23%*	France (6%) China (5%) Greece (5%)
Jams, jellies and marmalades					
EU 28 imports	*617,249 tonnes*	***€ 1.2 billion***	*6%*	*8%*	Germany (14%)
From Central America	4,236 tonnes	€ 3.3 million	12%	24%	France (13%)
Costa Rica	*3,095 tonnes*	*€ 2.7 million*	*4%*	*46%*	Belgium (10%)
Guatemala	*1,140 tonnes*	*€ 0.6 million*	*-6%*	*-2%*	Italy (9%) Turkey (8%) Spain (7%) Netherlands (7%)
Frozen fruits and vegetables					
EU 28 imports	*4 million tonnes*	***€ 4 billion***	*2%*	*4%*	Belgium (24%)
From Central America	1,700 tonnes	€ 2.6 million	-1%	-2%	Poland (11%)
Guatemala	*1,558 tonnes*	*€ 2.5 million*	*-3%*	*-3%*	Spain (11%)
Costa Rica	*61 tonnes*	*€ 0.1 million*	*25%*	*24%*	Netherlands (10%) France (7%) Serbia (6%) Germany (5%) China (4%)
Dried fruits and vegetables					
EU 28 imports	*3 million tonnes*	***€ 5 billion***	*0%*	*5%*	Turkey (15%)
From Central America	307 tonnes	€ 0.5 million	3%	19%	China (10%)
Guatemala	*54 tonnes*	*€ 0.2 million*	*29%*	*51%*	Germany (7%)
Nicaragua	*126 tonnes*	*€ 0.2 million*	*39%*	*51%*	United States (7%)
Costa Rica	*125 tonnes*	*€ 0.1 million*	*14%*	*2%*	Netherlands (6%) Canada (5%) France (5%)
Edible nuts					
EU 28 imports	*1.5 million tonnes*	***€ 9 billion***	*6%*	*13%*	USA (22%)
From Central America	45 tonnes	€ 0.2 million	-26%	-25%	Turkey (15%)
Honduras	*20 tonnes*	*€ 0.2 million*	*-23%*	*-18%*	Germany (10%) Netherlands (8%) Vietnam (7%) Spain (6%) Italy (5%)

*Includes intra-European trade
Source: Eurostat, 2018

The data on exports to Europe (based on CBI's definition of processed fruits and vegetables) show that fruit juices and concentrates are by far the main sub-sector for Central American exporters. The canned fruits and vegetables sector is the only other sub-sector of significant size in terms of exports.

Large and stable markets for traditional products

The European Union is the largest market for fruit juices and frozen and canned fruit and vegetables in the world. Europe accounts for 55% of total world imports of fruit juices, nearly 50%

of total world imports of frozen fruit and vegetables and for more than 42% of total world imports of canned fruit and vegetables[354] [355] [356].

Demand for traditional products such as pineapple juice, banana puree and canned pineapple for the European food industry is stable except for fruit juices with a high sugar content, canned fruits in sugar syrup and other products with a high sugar content. The impact of excessive sugar consumption on health is currently an active area of debate. Companies across the entire food sector are introducing sugar replacements to their products or lowering the amount of sugar used. Due to sugar intake campaigns, the consumption of fruit juices decreased continuously over the past few years. This trend specifically affects the demand for one-litre packs of fruit juices made from concentrates and demand for canned fruits in sugar syrup.

Despite the decrease in European fruit juice consumption, Central American exports of fruit juices increased by 14% in the period 2012-2017, as shown in table 4. The decline in fruit juice consumption has not affected exports from Central America.

Growing demand for exotic and tropical products

Despite stable import volumes for European types of processed fruit and vegetables, diversification into more exotic and tropical niche products including 'superfruits' offers more room for new market entrants. For example, imports of tropical and exotic canned products are increasing. Those products include canned guavas, mangoes, mangosteens, papayas, tamarinds, cashew apples, lychees, jackfruit, sapodilla plums, passion fruit, carambola, pitahaya, tropical fruit cocktails, ginger, asparagus, artichokes, beans, cappers, sweet peppers and sauerkraut.

Increased demand for "smoothie" types of fruit and vegetable drinks on the European market causes an increase in demand for fruit purees and fruit preparations such as frozen banana puree. Suppliers of fruit juices, purees and fruit preparations from more exotic (super)fruits such as pomegranate, açaí, acerola, camu camu and lucuma can also benefit from this trend. Central America can provide other exotic fruits such as passion fruit, mangosteen, pitahaya, soursop, physalis and rambutan.

6.1.3. Market trends

Opportunities and threats

Within the market for processed fruit and vegetables, the following developments which have implications for Central American suppliers stand out:

Western Europe sets trends
Within Europe, Germany, France and the UK are the largest end-markets for processed fruits and vegetables. Belgium is an important trade hub for frozen vegetables and the Netherlands is an important trade hub for (processed) tropical fruits including frozen fruits and fruit purees. Central American exporters of respective products can find many opportunities in these countries in addition to the large end-markets.

Niche products including exotic and tropical processed fruits and vegetables are usually first adopted in Western Europe. Nonetheless, Eastern Europe is still a growth market for commodities. Commodities are standardised products without distinctive qualities which are offered at very competitive prices. This market is already saturated in most of Western Europe. Depending on the type of products, Central American suppliers can find market opportunities in either Western or Eastern Europe. For example, Central American producers of frozen maracuya, hand-cut Individually Quickly Frozen (IQF) broccoli or mangosteen juice will find most opportunities in

[354] https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/fruit-juices/europe/
[355] https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/frozen-fruit-vegetables/europe/
[356] https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/canned-fruit-vegetables/europe/

Western Europe. In contrast, Central American producers of pineapple juice, dried banana or canned maize may only find opportunities in Eastern Europe.

Preservation of quality is preservation of value
The continuous drive for higher quality makes Europe the most demanding market in the world with major implications for suppliers from Central America. As quality of all fruits and vegetables deteriorates after harvesting, European buyers particularly appreciate management systems for the preservation of nutrients, appearance and for keeping microbiological activity to a minimum. The preservation of quality implies preservation of value.

Similar to the fresh fruits and vegetables market, the European PFV market has very strict quality requirements. However, peeling of fruits and vegetables reduces contaminants which are mostly on the peels. This can allow the export of processed fruits and vegetables which could not be exported as fresh products.

Tthe European Union is frequently increasing its food safety requirements. Especially the control of Maximum Residue Limits (MRLs) for pesticides and other contaminants is crucial. In January 2016, the European Union announced amendments of the Maximum Residue Levels to lower pesticide residues in fruit and vegetables. The maximum levels for several contaminants and preservatives are also under revision; for example, sorbates, which are used in the preservation of dried fruit and jams. The fungicide Thiabendazol will be banned, which is a threat to Central American producers of mango products.

European buyers are increasingly demanding implementation of GlobalGAP and other international standards for production, harvesting and processing of fruits and vegetables. These standards include the social extension of GlobalGAP (GRASP) and Sedex Members Ethical Trade Audit (SMETA). This is a threat to most Central American suppliers which currently lack such certificates.

Processing must take place according to HACCP principles. In fact, European buyers often demand more advanced food safety management systems. They require certificates such as Food Safety System Certification 22000 or even British Retail Consortium (BRC). The certification of Good Manufacturing Practices (GMP) is not sufficient for European buyers to guarantee food safety. All of these food safety management systems put great emphasis on traceability of products and their raw materials, and on prevention of food safety issues during the entire production process from cultivation to processing. As many Central American producers lack required certificates for food safety management, the increase in certification requirements by European buyers is currently a threat to many of these producers. Refer to the section on constraints for more details.

Opportunities for Central American producers for more value addition through more advanced types of processing (e.g. to export processed food as final food products) are limited. European buyers are mainly interested in bulk processed fruits and vegetables. For example, half of the demand for frozen fruits and vegetables comes from industrial users. They use processed fruits and vegetables to manufacture pizzas, juices, ready meals, smoothies, bakery products, etc. For many of these products, they require frozen purees or block frozen fruits and vegetables with relatively little added value.

Innovations in food processing technology offers some value addition opportunities for financially strong companies in Central America. New or improved technology for preservation of quality can enable entry into some of the most demanding market segments, such as the baby food segment. The most valuable technology aims to preserve nutrients, taste and appearance through application of less heat while ensuring food safety by lowering microbiological activity and eliminating the need to add preservatives.

In the market for Individually Quickly Frozen (IQF), freeze-dried and canned fruits and vegetables, European brands dominate the market for final products. Especially private labels of retail chains are gaining market share. Opportunities for Central American suppliers are mostly limited to the supply of non-branded products in bulk packaging.

Consumers want clean labels and organic products

The biggest trend in the European food market is the increasing demand for healthy foods. European consumers are reading product labels more frequently and are searching for natural and healthy products with clean labels. Clean labels do not contain ingredients which consumers perceive to be unhealthy. The 'cleanest' labels are free of sugar and free of additives such as acid for preservation.

Organic products are particularly popular. Organic certification strengthens the health and natural image of a product. In the baby food segment, with some of the highest quality requirements, organic certification is commonly required. This could offer opportunities to Central American suppliers with the necessary certificates. European importers of fresh fruits and vegetables mentioned potential for organic passion fruit, physalis, citrus fruits, ginger and sweet potatoes. This implies potential for such processed fruits and vegetables as well.

A good example of the effects of the clean labelling trend is the European legislation on fruit juice labels. The European legislation reserves the term fruit juice to 100% fruit juice. Other fruit-based drinks must be labelled nectar or fruit drink. This offers opportunities to Central American producers of pure fruit juices without additives. They can claim that their products are suitable as ingredients for the manufacture of healthy, natural, 100% fruit juices.

Particularly frozen products are marketed as having more nutrients than fresh vegetables, due to the fact that they were frozen directly after being picked at the peak of their growing seasons. This has a positive effect on demand for frozen products and offers most opportunities for producers which are able to promote the quick freezing of their products after harvesting.

Central America has a favourable climate for growing exotic and tropical fruits. Many of these fruits contain high amounts of nutrients and may even be considered as 'superfruits'. The natural and health trends in Europe create niches for these (processed) fruits. For example, the fruit rambutan contains fibres, vitamin C and B, the mineral potassium and magnesium, and anti-oxidants[357].

Suppliers increasingly need to take Corporate Social Responsibility seriously

Corporate Social Responsibility (CSR) is gaining importance in the European processed fruits and vegetables sector. Buyers expect their suppliers to take Corporate Social Responsibility seriously in their respective value chain. This implies a need for traceability of raw materials and transparency in supply chains. In practice, it also means that European buyers are not only visiting the facilities of the exporter, but also the farms supplying the raw materials. Central American suppliers which are already implementing CSR can turn this into an opportunity by organising audits by their buyers which make their supply chain and production processes transparent. Buyers appreciate CSR measures by suppliers although other aspects such as quality and price generally remain more important to buyers. CSR becomes a valuable comparative advantage when quality and price are competitive to offers from other companies on the global market.

In the next several years, sustainability initiatives are expected to have a particularly strong impact in the juices and purees subsector. In the fruit juice sector, the SGF[358] IRMA (Sure Global Fair International Raw Material Assurance) standard is gaining importance. This is a standard for self-control in the fruit juice industry in which CSR is an integral element. The CSR benchmarking schemes Sedex Members Ethical Trade Audit (SMETA) and Business Social Compliance Initiative (BSCI) audits are also becoming more common in the processed fruits and vegetables sector. Experts predict that CSR practices will be extended to include more aspects (e.g. carbon footprint) in the future.

Leading European beverage and food companies have formed a coalition aiming for 100% sustainable juice and puree by 2030. With the support of the European Fruit Juice Association, they will work on the certification/verification of their supply chains and address specific sustainability issues such as smallholder inclusion, working conditions, soil erosion and degradation, and climate resilience. The sustainability criteria will include SAI FSA and SMETA based principle. Besides the coalition, 35 companies in the fruit juices subsector collaborate on CSR issues though the Fruit Juice CSR Platform which is co-initiated by the European Fruit Juice Association (AIJN) and

[357] https://www.ucr.ac.cr/noticias/2017/09/07/coma-rambutan-de-forma-diferente.html
[358] https://www.sgf.org/en/home

Sociability and endorsed and co-funded by the European Union. Examples of members of the CSR Juice platform include many big European players such as Hero, Eckes-Granini, Friesland Campina, AMC juices and Innocent Drinks.

Certification for compliance with sustainability standards such as Rainforest Alliance and Fairtrade provides a positive distinction from competitors. However, these certificates are not a common requirement from European buyers and thus provide limited opportunities for Central American suppliers.

Consumers appreciate nuts as healthy snacks
In recent years, almost every type of edible nuts has shown growth in imports. Nuts, including groundnuts and cashew nuts, are promoted as 'healthy snacks', as well as 'snacks as meals'. This is especially noticeable in the context of 'breakfast bars' with a higher content of nuts that are slowly assimilated into the body, thereby keeping people feeling full for longer periods. In major groundnuts consuming countries, groundnuts and cashew nuts are considered a healthier alternative to other savoury snacks such as crisps and extruded snacks. Oven peanuts (roasted without oil) are particularly popular among female European consumers, who are searching for methods to decrease fat intake.

The growing market for edible nuts provides many opportunities for Central American suppliers. They can promote the healthy properties of their products to position them as healthy snacks or ingredients. Despite this European trend which stimulates demand for nuts, Central American countries have not yet been able to significantly increase their exports of nuts to Europe, as shown in table 4, except for macadamia nuts. Refer to the section on competition for an explanation of the barriers in peanuts and cashew nuts markets.

Growing demand for ethnic foods
Demand for ethnic foods continues to grow. According to Euromonitor, France accounts for the bulk of spicy sauces (final products) growth in Western Europe. This particularly offers opportunities for Central American suppliers of salsas and other final products which are considered ethnic products in Europe. It should be noted that European market access requirements for final products are high and that only few manufacturers in Central America will be able to benefit from this trend.

6.1.4. Competition

Main rivals, new entrants and substitutes

High degree of concentration in global market
The global processed fruits and vegetables market is highly concentrated. Many markets for specific products are dominated by a few countries. For example, Thailand and Indonesia control much of the market for processed pineapples (including canned pineapples and pineapple juice) and offer major competition for Central American exporters of processed pineapple products. Brazil is a major competitor for orange and lime juice.

The competitiveness of exporters of processed fruits and vegetables in commodity markets strongly depends on the size of production of respective raw materials. Cost-efficient processing of many fruits and vegetables requires a large scale. A product such as banana puree is basically a waste product from the fresh banana market. Banana puree costs USD 0.65 CIF Rotterdam incl. drum. A country like Guatemala is only able to compete in this market with countries such as Colombia and Ecuador, because it has a large fresh banana industry which produces sufficient low grade cheap bananas for processing into puree.

This relation between the fresh and processed fruits and vegetables markets suggests that the competitiveness of Central America in PFV markets is potentially strong for processed pineapple, banana, mango, melon, oranges, avocados, guavas, sweet potatoes, okra and yuca (manioc). Central American countries already have significant exports of these products to the fresh markets.

According to the trade data presented in previous sections as confirmed by industry sources interviewed for this VCA, Central America is not a major origin of processed fruits and vegetables except for pineapple products. The lack of strong agricultural and processing clusters centred around a certain fruit or vegetable, combining exports of (high-grade) fresh and (low-grade)

processed products, prevents the buyers from sourcing in Central America. They mostly prefer to focus on countries with large existing industries.

Nonetheless, some European importers are investing in new origins in order to secure a stable supply. In the long term, the production of many processed fruits and vegetables is expected to become less concentrated than it is now. This opens up opportunities for Central America.

Competitiveness in niches
Besides the competitive strength in selected PFV markets(processed pineapple, banana, mango, melon, oranges, avocados, guavas, sweet potatoes, okra and yuca (manioc)), Central America is able to compete in certain niche markets. In niche markets, competition revolves less around volumes and scale. Unique product characteristics are more important in niche markets.

For example, in the market for frozen vegetables, companies from European countries such as Poland, France and Spain offer strong competition for suppliers of mechanically harvested and cut vegetables. While Central American countries are generally unable to compete in these commodity markets which require large volumes and low prices, they do have a competitive edge in niches for value-added IQF exotic or hand-cut fruits and vegetables such as pitahaya or broccoli.

Only two Nicaraguan companies can compete in peanuts market
To force an improvement in competitiveness of Nicaraguan companies on the global market, the Nicaraguan government increased export requirements. The strict government programme for food safety management (i.e. aflatoxin control) in the peanuts industry has contributed to successful exports by the two leading peanut companies in Nicaragua. These companies are able to compete with companies from China and India which accounted for around 60% of global production in 2011, and Argentina, which is the 3rd producer globally[359] .

The strict government programme in Nicaragua has also restricted access to the export market for other players. Based on a meeting with one of the two leading companies dominating the market (CUKRA), ProFound and CATIE concluded that SMEs face serious difficulties in complying with the strict export requirements and in competing with the market leaders. These market leaders use expensive equipment for irrigation, improved and certified seed varieties (florunner, georgiarunner, georgia green) and high amounts of inputs (fertilizers, herbicides, insecticides and fungicides).

Competition in the global cashew and macadamia market
The European market for cashew nut kernels relies heavily on supplies from Vietnam and India. The cashew processing industries in these countries are developed and have gone through years of consolidation. Vietnamese and Indian suppliers accounted for over 85% of direct European imports of cashew nut kernels in 2013[360].They are extremely cost-efficient and apply strict sorting and grading standards to achieve maximum value for their products. Central American processors are generally unable to compete with India and Vietnam due to higher labour costs, lower economies of scale and higher costs of promotion, because they do not have the same reputation as Indian and Vietnamese companies.

In the market segment for broken cashew kernels, Brazil is the main competitor. Many Brazilian suppliers use mechanised processing which leads to high rates of breakage.

Australia and South Africa dominate the macadamia market. Compared to India and Vietnam, these countries have relatively high labour costs. This partly explains the success of Central American exporters, notably from Guatemala and Costa Rica. As other cheaper suppliers such as Malawi, Kenya and China are emerging, they can threaten Central American suppliers.

6.1.5. Benchmarking

According to European importers interviewed for this VCA, Central American exporters generally have a good reputation in terms of quality and CSR. Importers have a positive image of the region.

According to the feedback from importers received during a peer group meeting for CBI's Market Intelligence on processed fruits and vegetables, Central America's strong points are:

[359] https://pinoleronic.blogspot.com/2013/09/nicaragua-tercer-exportador-de-aceite.html
[360] https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/cashew-nuts-west-africa/competition/

- Export experience
- Good communication
- Food Safety measures are up to standards, especially in case of dried fruit and nuts

Weak points:

- Often too much 'pesticide residue'
- Distance to Europe

Buyers do not mention prices as a competitive strength of Central America. Feedback collected during the field research by ProFound and CATIE confirmed that the price competitiveness of Central America is rather low. Costa Rica, for example, has high costs in labour force and energy.

The inability to compete on price for many processed fruits and vegetables is also related to the lack of scale and volumes. Compared to the main production regions in the world, most Central American fruits and vegetables processing industries are relatively small.

In terms of processing technology, Central America is lagging somewhat behind European competitors. However, compared to many competitors from developing countries, there is a higher uptake of modern processing technology, particularly in Costa Rica. Procomer has made a distinction between 'traditional' processing technology and 'modern' processing technology in Costa Rica[361]:

- Traditional processing technology in Costa Rica:
  - Cutting into pieces
  - Preparation of pulp and juices
  - Dehydrating
  - Frying
- Modern processing technology in Costa Rica
  - IQF
  - Aseptic packaging of frozen pulp and juices
  - Dehydratying by freeze-drying/microwave
  - Vacuum-frying

6.2. Structure, governance and sustainability of the value chain

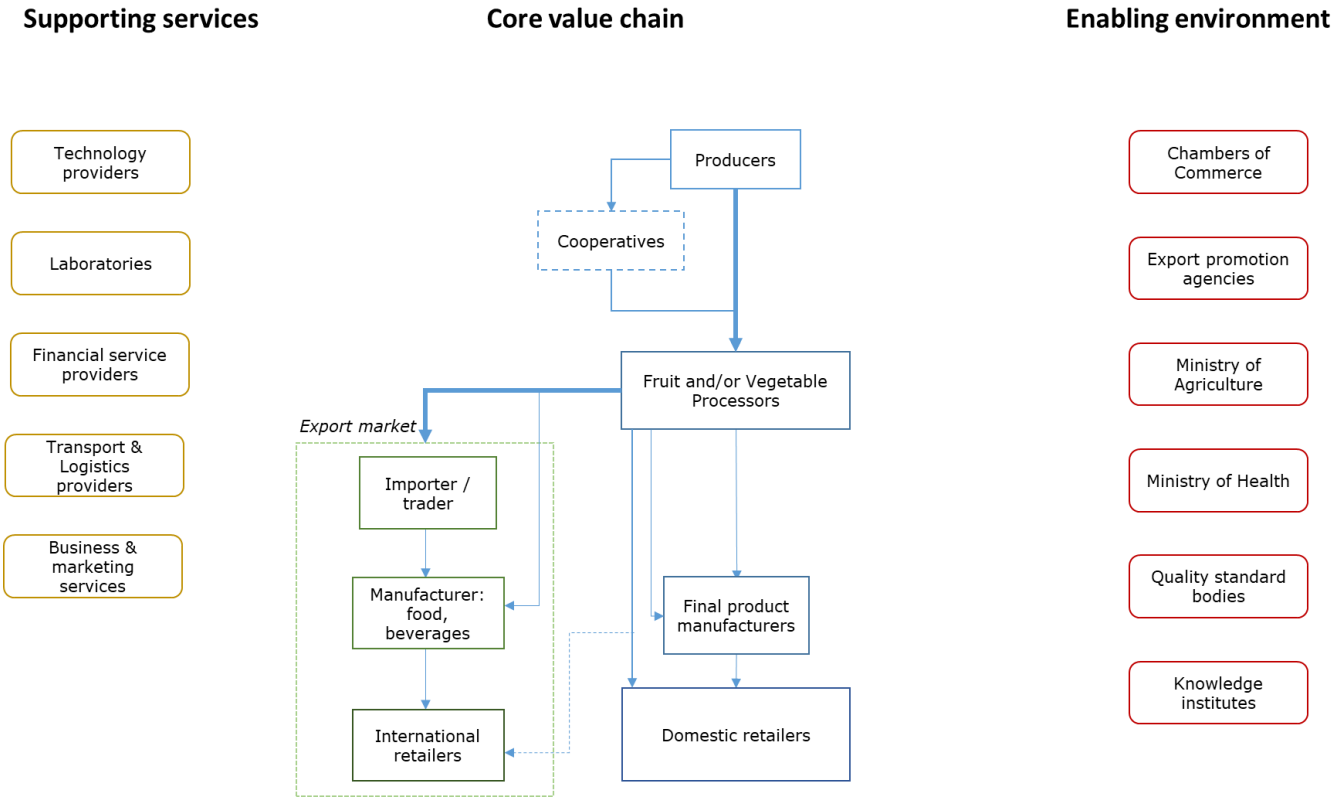
The PFV value chain uses fresh fruit and vegetables (FFV) as raw materials and therefore builds on the FFV value chain. Refer to the FFV value chain analysis for more details on respective stakeholders.

The structure, governance and sustainability of the PFV value chain described below apply to all Central American countries unless specified otherwise.

[361] https://www.procomer.com/uploads/downloads/f62761458ba1270c78d0d69f8c0d341229912033.pdf

6.2.1. Structure

Figure 6.1. Visual representation of the processed fruit and vegetable value chain in Central America



Value chain actors

Most of the processors in Central America are located close to major fruit and vegetable production regions in Costa Rica and to a lesser extent Guatemala. These are the countries with the largest fruit and vegetable production and with the most developed processing industry.

The following table about Costa Rican exporters gives an indication of the number of exporting processors active in different sub-sectors of the processed fruits and vegetables sector.

Table 6.5: Number of exporters of processed fruits and vegetables in Costa Rica*

	2012	2013	2014	2015	2016
Fruit juices and concentrates	17	17	22	22	23
Sauces and condiments*	26	26	32	25	25
Preserved tropical fruits (except preserved in syrup)	3	3	3	5	6
Frozen fruits	23	19	21	22	20
Fruit purees	18	19	23	28	22

*Exporters with a turnover of more than 12 thousand USD
Source: Procomer, 2017

In Guatemala, data of the food and beverages commission of trade promotion organisation AGEXPORT provide an indication of the size of the industry. The commission comprises 80 companies of which 70% are SMEs[362]. Unfortunately, numbers for the sub-sector of processed fruits and vegetables are not available.

[362] http://export.com.gt/sectores/comision-de-alimentos-y-bebidas/

Sourcing by processors

The processors commonly purchase their raw materials directly from large-scale farmers and farmer cooperatives. Some processors indicate a preference to purchase their raw materials from individual farmers, because they experience difficulties in building up trustworthy relationships with cooperatives. Mr. Reindert Dekker, CBI expert for the previous CBI programme in Central America indicated that the most successful companies in that programme had most control over their raw material supplies. Either through integration of production in their business or partnering with producers who received support from donor programmes.

Intermediaries in sourcing of raw materials (i.e. agents or traders) are usually avoided by export-oriented processors as much as possible, as they are perceived as unreliable partners which add considerable costs and usually lack a traceability system. In Guatemala, they are even called "coyotes" for this reason. Despite the preference for direct sourcing by processors, intermediaries sometimes play a valuable role in the value chain by providing inputs, market information and cash or even advance payments to producers. They can also play a role in compliance with buyer requirements by providing technical assistance for improvement of quality, access to innovations and product development. In many cases, intermediaries build up strong relations with their clients.

In a few cases large-scale processors, such as the multinational fruit juice manufacturers, are vertically integrated. Several of these large-scale processors are foreign owned. Foreign investment has concentrated on the commodities: pineapple, banana, (water)melons. Florida Bebidas and Coca Cola are the biggest players in the Costa Rican juice industry.

Employment in the PFV value chain

Table 6.6: Employment in Costa Rican manufacture of Food Products and Beverages (in thousands of jobs)

2006	2007	2008
54.8	63.3	60.4

Source: ILO, 2009

Above table shows the latest available employment data from ILO for the food manufacturing industry. The data show that the food industry in Costa Rica provides a large amount of jobs. In 2008, the food industry accounted for 60.4 thousand of the 182.4 thousand jobs in the manufacturing sector of Costa Rica. In addition, the food industry accounted for the largest increase in jobs within the manufacturing sector in the period 2006-2008.

In Guatemala, the number of jobs in the food industry was estimated at 75 thousand in 2011[363]. This includes jobs in sub-sectors other than processed fruits and vegetables, such as bakery.

Processing industries in rural areas have a considerable impact on rural incomes and livelihoods by providing non-farm income sources in manufacturing and related activities such as trade and transport of raw materials. For Latin American countries, some 35.9% of the rural workforce is involved in non-farm activities. Manufacturing (including PFV) accounts for 19.5% of rural non-farm employment. Moreover, women have a relatively large share in post-harvest activities such as cutting and packing[364].

6.2.2. Governance

According to field research by ProFound and CATIE, coordination in the processed fruits and vegetables sector on national levels is poor. Processors receive little support from supporting institutions for access to finance and trade promotion amongst others. Chambers of Commerce rarely have expertise in processed fruit and vegetables.

Supporting institutions for trade promotion

[363] http://www.mejoremosguate.org/cms/content/files/diagnosticos/economicos/02.ISDE_Alimentos_Procesados.pdf

[364] http://www.fao.org/3/a-i0157e.pdf

In general, export promotion agencies in Central America facilitate exports and represent their members from different sectors internationally; the compilation of market studies, technical assistance in exports and trade fair participation are important activities supported by them.
In Costa Rica, interviewed companies recognise the work of Procomer and CADEXCO. However, those are most active and have achieved most results in traditional export sectors such as coffee, pineapple and banana. The PFV sector receives less priority. The same applies to AGEXPORT in Guatemala where PFV is represented by the Comisión de Alimentos y Bebidas. This commission has a strategic plan to promote exports of foods and beverages including PFV. The strategic plan includes promotion in other countries, promotion of certification and a search for competitiveness in transport.

None of the Chambers of Commerce in Central America have a strong focus on processed fruits and vegetables. In Costa Rica and Guatemala, the sector is represented by the Camara de Industrias de Costa Rica (CICR) and the Camara de Industria de Guatemala (CIG) which represent different sectors including PFV amongst others.

Supporting institutions for food safety management and product development
In all Central American countries, food safety management at processing, packing and export facilities is the responsibility of the Ministries of Health.

In Guatemala, fruit and vegetable processors are appointed their own phytosanitary certifiers by the Ministerio de Salud Pública y Asistencia Social (MSPAS). However, the capacity and quality of the certifiers is limited due to budgetary constraints[365].

OIRSA provides support to the Ministries responsible for food safety management. OIRSA is an intergovernmental institution supported by the Agricultural Committee of SIECA. OIRSA is specialised in sanitary issues, quarantine services and food safety. OIRSA stimulates technical and financial cooperation between the Ministries of Agriculture of its members countries. Its objective is to guarantee a safe and secure food production. In addition, OIRSA aims to reduce costs of export procedures.

OIRSA has representatives to inspect processing plants in Mexico and Costa Rica and is expanding this service to El Salvador and Guatemala. In addition, OIRSA has an expert on traceability manuals.

Certification bodies are only represented in few Central American countries such as Costa Rica. In other countries with small food (exporting) industries such as El Salvador, certification services are provided from an office in a nearby country.

SIECA together with USAID and BID has already developed a strategy for facilitating trade and competitiveness in the Central American region[366]. Besides adoption of international standards, the plan of action in this strategy contains several other measures:

- Harmonising information exchange between government institutions involved in trade
- Integrated risk policies
- Trustworthy operators involved in trade logistics
- Improve efficiency of quarantine control (phytosanitary / food safety)
- Integration of procedures and control
- Improve infrastructure and equipment at borders
- Ensuring security at border zones/communities

Supporting institutions for access to finance
Field research in Central America did not lead to the identification of any finance institutions with a particular focus on PFV or programmes which specifically target SMEs in the PFV value chain.

The most relevant supporting institution for access to finance is the IADB which finances FONDEPRO. This is an initiative of the Government of El Salvador, implemented through the Productive Development Fund of the Vice Ministry of Trade and Industry of the Ministry of Economy

[365] interview with OIRSA
[366] https://s3-us-west-2.amazonaws.com/web-sieca/cooperacion+y+proyectos/Estrategia+Centroamericana+de+Facilitación+del+Comercio+y+Competitividad+con+Énfasis+en+Gestión+Coordinada+de+Fronteras..pdf

(MINEC), with which CBI has collaborated in the past. It is a financial fund intended to grant non-reimbursable co-financing to SMEs, in order to strengthen it in its competitiveness and generate economic impact.

International donor programmes
The following international organisations with activities in Central America collaborate with companies in the PFV value chain to improve livelihoods of small-holders:

- IDH created the Sustainability Initiative Fruits and Vegetables – Processed (SIFAV). The purpose of this covenant is to have production and trade of processed fruits and vegetables from Central and South America, Africa and Asia by the private partners in this covenant 100% sustainable by 2025. SIFAV Processed will focus on issues in the processed fruits and vegetables industry that revolve around agrochemical use, unsuitable working conditions, food safety, climate change and smallholders livelihoods. SIFAV (fresh) partners collaborate with their suppliers to improve sustainability. SIFAV is currently supporting the implementation of a project on sustainable banana production in Costa Rica including a living wage benchmark study[367]. The partners in this project aim to calculate and set a standard living wage for the industry.
- In Honduras, Swisscontact is running a project (PROGRESA 2017 – 2019) that concentrates on improving management of the value chains for coffee, cocoa and cashews through an inclusive public-private dialogue aimed at reducing the risks and increasing the benefits to producers. Swisscontact and its partners aim to establish new business models with domestic and international buyers that will encourage compliance with economic, social and environmental standards, thus reducing commercial and financial risk for producers and grass-roots organisations; as well as stimulate investment from the private and public sectors and financial institutions.

6.2.3. Intra-regional trade

Costa Rica and to a lesser extent Guatemala have the most developed fruits and vegetables sectors. The processing of fruits and vegetable concentrates around the main production areas in these countries. Despite a lack of a reliable, competitively priced, stable, and good quality supply of raw material for certain SMEs (described in the chapter on bottlenecks), sourcing by one Central American country of raw materials in another CA country is rare for several reasons:

- The other Central American countries do not have strong comparative advantages in raw material production which would make it attractive for Costa Rican and Guatemalan processor to source there
- Processors need to be close to their raw material supply for logistical reasons
- Intra-regional trade often experiences long delays at the border (see chapter on bottlenecks) which is particularly problematic for the transport of fresh fruits and vegetables

Analysis of intra-regional trade statistics shows that the Central American countries trade considerable quantities of processed fruit and vegetables. Guatemala (USD 255 million) and El Salvador (USD 252 million) were the largest suppliers of Central America in the period 2012-2016. Guatemala mainly supplies fruit juices to the other Central American countries. El Salvador is increasingly supplying processed fruits other than frozen, cooked (e.g. jams) and in brine/acid.

Costa Rica (USD 161 million) has more focus on exports to markets outside the region. Within Central America, Costa Rica is a particularly important supplier of jams and marmalades. Panama (USD 6 million) and Nicaragua (USD 3 million) are small suppliers to other Central American countries.

This intra-regional trade provides opportunities for SMEs in Central America, which can gain experience with exports on the other Central American markets before targeting the more demanding European market (Source: CATIE).

[367] https://www.idhsustainabletrade.com/news/living-wage-discussions-with-banana-producers-in-costa-rica/

6.2.4. Sustainability of the value chain

For each one of its programmes, CBI develops a Corporate Social Responsibility (CSR) tool that is used to assess and monitor the sustainability performance of specific sectors in specific countries or regions. These results are consolidated within a CSR risk assessment matrix, which will be completed next to this value chain analysis.

CSR risks in the PFV sector can occur during both the production of raw materials necessary to make the processed products and the actual processing. For more details on CSR risks during raw material production, see the VCA for FFV.

Human rights issues
According to CBI's CSR matrix, labour exploitation is the highest CSR risk in the PFV sector. Child labour, working conditions and freedom of association also register high scores. The Union of International Associations (UIA) found that child labor in factories is still present worldwide[368]. These cases are most numerous in Asia and, to a somewhat lesser extent, in Latin America and the Middle East. They seem to be particularly concentrated in certain industries; textiles, clothing manufactures, food processing and canning.

Field research by ProFound and CATIE could not confirm the risk of labour exploitation in the PFV sector in Central America. However, the MVO risk checker identifies several risks related to labour exploitation in Central America:

- Honduras and Panama score a 4 on the ITUC Global Rights Index (scale 1-5) for freedom of association and workers' rights, which stands for systematic violations of labour rights. The government and/or companies are engaged in serious efforts to crush the collective voice of workers putting fundamental rights under continuous threat.
- There are strong indications that anti-union violence, including death threats and murders of union leaders, occurs in Honduras.
- In Panama companies continue to encourage the forming of yellow unions (unions that are influenced or supported by the company) alongside existing unions with which they have already signed collective agreements, as a way of neutralising bona fide trade unions and negotiating inferior working conditions, gradually undermining and eliminating workers' rights. Another strategy to avoid complying with collective agreements is to dismiss unionised workers and hire foreign workers under inferior terms and conditions.
- El Salvador scores a 3 on the ITUC Global Rights Index (scale 1-5) for freedom of association and workers' rights, which stands for regular violations of rights. Governments and/or companies are regularly interfering in collective labour rights or are failing to fully guarantee important aspects of these rights. There are deficiencies in laws and/or certain practices which make frequent violations possible.
- Guatemala scores a 5 on the ITUC Global Rights Index (scale 1-5) for freedom of association and workers' rights, which stands for no guarantee of rights. Countries with the rating of 5 are the worst countries in the world to work in. While the legislation may spell out certain rights, workers have effectively no access to these rights and are therefore exposed to autocratic regimes and unfair labour practices.
- Nicaragua is not mentioned in these reports but the MVO risk checker does report that Government of Nicaragua interfered in union activities, and some employers engaged in antiunion discrimination with impunity. Employers often did not reinstate workers fired for union activity or pay the required severance. Labour leaders complained that employers routinely violated collective bargaining agreements and labour laws. Legal penalties were avoided by organizing employer-led unions that lacked independence and the frequent use of contract workers to replace striking employees. There were reports of firings for political reasons, for example when the worker refused to join the FSLN or participate in FSLN demonstrations. Also there were reports that party dues were automatically withdrawn from pay checks
- In Costa Rica trade unions have reported that peaceful protests have been interrupted violently by the police.

According to CATIE, Costa Rica has effective legislation in place to prevent labour exploitation. The industry also self-regulates. To illustrate, the Action Plan for Strengthening Responsible Production

[368] http://encyclopedia.uia.org/en/problem/141058

and Trade of Pineapple in Costa Rica 2013-2017 included "Promote national dialogue on labour rights" amongst 11 other action points[369].

In Guatemala, Freedom of Association and Protection of the Right to Organise Convention are particular relevant concerns. The ILO considers appointment of a Commission of Inquiry (decision was recently deferred to June 2018). The Commission of Inquiry is the ILO's highest level of scrutiny when all other means failed to address issues of concern.

Different countries are implementing different initiatives on decent work. For example, Guatemala's private sector has given a step forward and now has a policy to tackle these issues. This is a policy adopted by the 13 specific chambers that form CAMAGRO, including AGEXPORT and their member companies[370]. Similarly, Costa Rica's Programa de Trabajo Decente Nuevo Enfoque (PTD-NE), part of the Inspección de Trabajo del Ministerio de Trabajo y Seguridad Social (MTSS), is yielding positive results[371].

Syndicates of workers such as the ones organized in FENTRAA (Costa Rica) and Colsiba (Latin America) aim to improve the living conditions of their members including occupational health and safety, environmental sustainability and women participation. These syndicates allow workers to negotiate collectively with the employers.

In Costa Rica, Comités Permanentes de Trabajadores have been established to resolve disputes between employers and labourers. These committees are legally recognised by companies and have a better reputation than the syndicates. This example of a letter by the legal department of the Ministry of labour and social security shows how the dispute settlement works.

Health and safety
Processors in Central America realise that health and safety at their facilities are important to European buyers. They usually provide the means such as protective clothing and safe equipment to safeguard health and safety. However, the workers sometimes lack the culture of using these means and company policies on health and safety may not always be enforced.

Companies in Central America rarely have Occupational Health and Safety Assessment Series (OHSAS) certificates or BSCI audit reports on health and safety.

Processors use waste instead of producing it
Processors often use the waste materials from producers of fresh fruits and vegetables. High grades are suitable for the fresh market, whereas lower grades such as fruits with strange shapes are not acceptable in the fresh market. These lower grades go to the processing industry instead of being thrown away. Such waste stream valorisation is a relevant topic in the global debate on sustainable food production, as it incentivises the reduction of waste in the food chain. To illustrate, with the goal of 'zero waste' production, the university of Costa Rica recently developed technologies to use all different parts of rambutan fruits[372].

Less pressure to minimise use of chemicals in PFV raw material production than in fresh market
In the fresh market, appearance of the fruits is crucial for successful sales. In the processed fruits and vegetables market, appearance is irrelevant except for a few niches such as IQF. This implies less need for pesticides which prevent damage to the appearance of fruits and vegetables.

Despite a lower need to use chemicals for PFV raw material production, excessive use of chemicals is a risk in the PFV value chain. To understand this risk, it is necessary to make a comparison with fruits and vegetables production for the fresh market. First of all, strict buyer specifications for maximum residue levels in the fresh market encourages producers to minimise pesticides use. They risk rejections of their consignments if residues of chemicals such as pesticides exceed these maximum residue limits. This is a strong incentive to minimise chemicals use, which is not as strong in the market for PFV. In the PFV market, peels are often thrown away. The processed

[369] https://www.rvo.nl/sites/default/files/2018/06/sustainable-pineapple-costa-rica-market-study.pdf
[370] https://www.camaradelagro.org//wp-content/uploads/sites/24/2018/01/Pol%C3%ADticaLaboralCAMAGRO.pdf
[371] http://www.mtss.go.cr/prensa/comunicados/2017/octubre/Nuevo%20Programa_de_Trabajo_Decente_en_Costa_Rica_beneficia_a_mas_personas_trabajadoras.html
[372] https://www.ucr.ac.cr/noticias/2017/09/07/coma-rambutan-de-forma-diferente.html

product generally contains very little chemicals residues, whether the raw materials were produced with a lot of chemicals or not.

Secondly, in the fresh market, European buyers are increasingly providing technical assistance to producers to improve sustainability of their production systems. For example, buyers organise trainings on Integrated Pest Management to minimise chemicals use. In the PFV sector, European buyers are less involved in sustainable production of raw materials. This implies a risk for excessive use of chemicals which contaminate soils and water and may be extra harmful to workers when they do not have proper protective clothing, which is a common issue in the fresh fruits and vegetables production.

Low risk of chemical pollution at processing facilities
Field research by ProFound and CATIE shows that fruits and vegetables processors do not normally use chemicals in their facilities which can pollute soils or water. However, the water for cleaning the fruits and vegetables may contain some chemical residues.

Threat to biodiversity
According to CBI's CSR matrix, biodiversity is one of the CSR issues in the PFV sector. Fruits and vegetables processors working with commodities such as pineapples source particularly high shares of their raw materials from large-scale plantations. These plantations focus on productivity and cost reduction and provide little or no biodiversity.

The processors are generally not enforcing sustainable sourcing of their raw materials. They leave that responsibility to other value chain stakeholders at the production level. This leaves room for suppliers of raw materials to apply unsustainable practices, such as destruction of ecosystems leading to biodiversity loss.

High energy use and water footprint
Energy consumption in the PFV sector is relatively high. Particularly freezing requires a lot of energy, because of the high ambient temperatures in Central America throughout the year. Many processors are concerned about the high energy use, because of the high costs of energy. They are not mentioning the sustainability perspective.

Water footprint of juices is relatively high. For example, orange juice costs 1020 litres of water per litre of orange juice[373]. Several sustainability standards including the IFOAM standard for organic production, Naturland Production and the Unilever Sustainable Agriculture Code have specified requirements for water management[374]. This indicates the relevance of water management in the European market for sustainable products.

Water management is particularly relevant for producers in the dry corridor of Central America. Especially droughts in Guatemala, Honduras and El Salvador affect the livelihoods of many poor rural communities[375]. In these areas, proper water management to reduce the water footprint of raw material production is a valuable tool to improve environmental and economic sustainability.

Gender equality
At the level of processors, field research has not identified any gender issues. There were plenty of examples of companies with women in management such as the Sociedad Cooperativa Productos de Marañón de R. L. de C. V in El Salvador.

Additionally, in Costa Rica, processors have a relatively large share of women in their workforce. In general, processors need cheap reliable workers with basic skills who will work long days intensively to minimise the costs of processing. They frequently exploit these female workers who have few other options to earn an income as they do not have the necessary qualifications to take up other jobs.

In El Salvador, fruit and vegetable production has traditionally been carried out mainly by men. Women were often occupied with domestic activities such as collection of firewood, water and

[373] http://waterfootprint.org/en/resources/interactive-tools/product-gallery/
[374] http://www.standardsmap.org/compare?standard=0&shortlist=235,165,96,16&standards=235,165,96&product=&origin=Any&market=Any&cbi=88:88:896
[375] http://www.fao.org/3/a-br092e.pdf

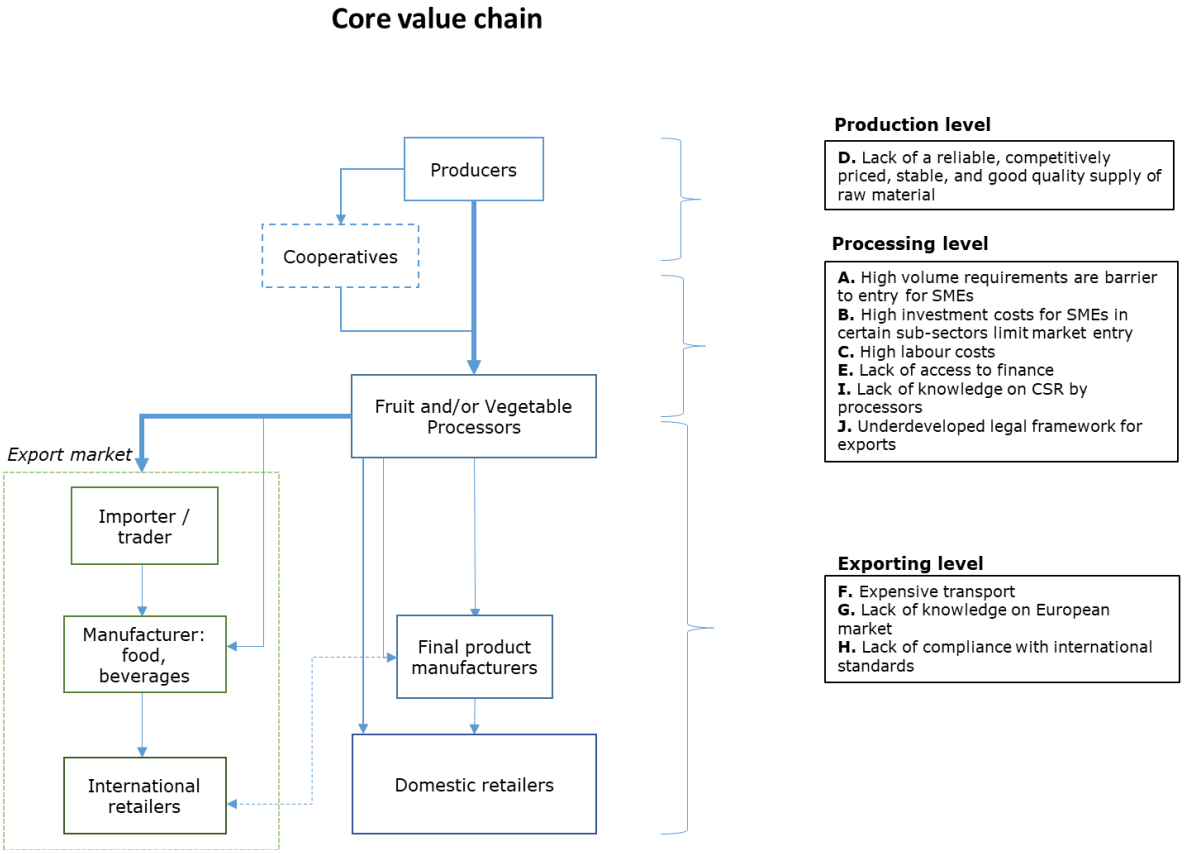
cooking. However, in the collection and processing stages, women outnumber men[376]. Such division of labour is likely to be similar in surrounding countries.

6.3. Value chain bottlenecks, risks and opportunities

The value chain bottlenecks, risks and opportunities described below apply to all Central American countries unless specified otherwise.

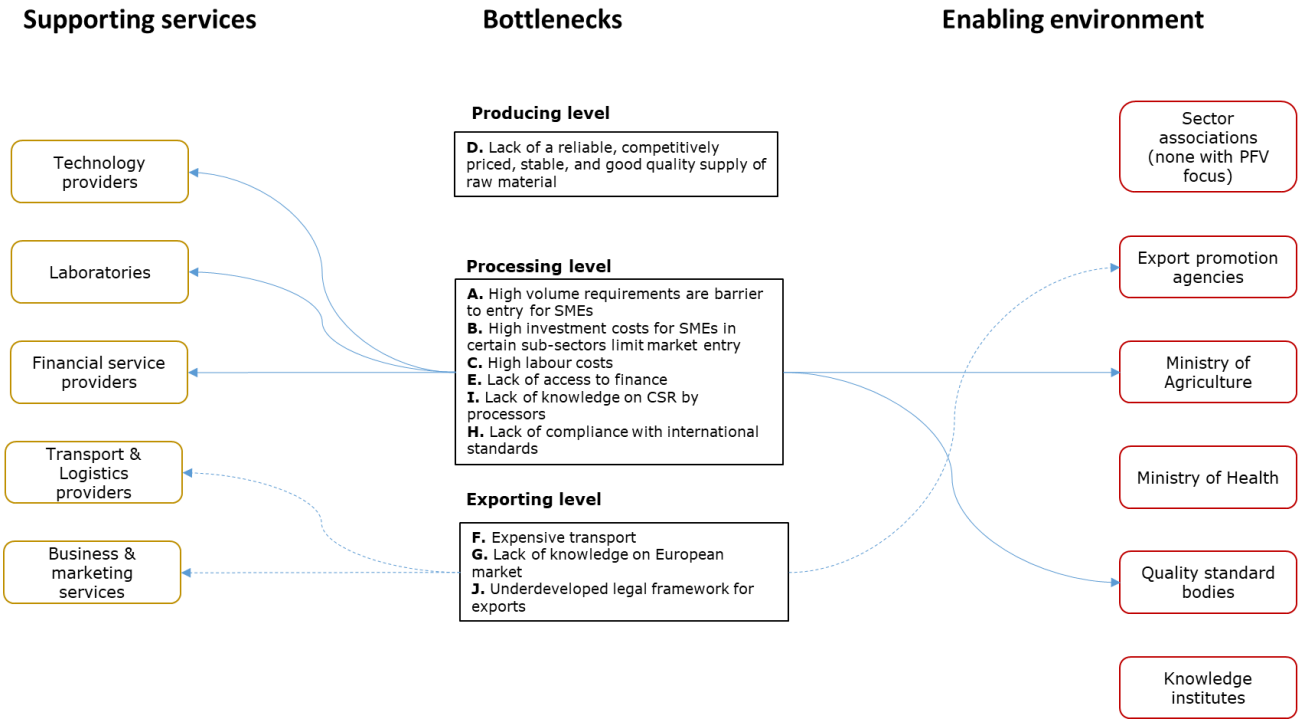
6.3.1. Bottlenecks

Figure 6.2. Visual representation of the main bottlenecks in the processed fruit and vegetable core value chain



[376] Interview CATIE and https://www.diariocolatino.com/la-pepita-de-oro-del-bajo-lempa-semilla-de-maranon-de-exportacion/

Figure 6.3. Visual representation of the main bottlenecks in the supporting services and enabling environment of the processed fruit and vegetable value chain



A. *High volume requirements are barrier to entry for SMEs*

In markets for low-margin products such as processed pineapple, orange juice and mango puree, volume requirements are too high for most SMEs. Individual European buyers need at least 15 containers annually to make import of such low-margin products attractive. A study by the World Bank shows that Costa Rica is the only Central American country with a sufficient supply of raw materials (pineapple) to make the processing sector competitive on the global market[377]. The lack of large domestic markets for PFV as in competitor countries such as Brazil and Thailand puts Central American countries at a disadvantage. Large domestic markets support building of scale by processors.

B. *High investment costs for SMEs in certain sub-sectors limit market entry*

Establishment of certain facilities to process fruits or vegetables requires large investments:

- Processing of commodities such as (MD-2) pineapple, banana and mango
- High-tech processing such as IQF and freeze-drying

High investment costs are a major market entry barrier for SMEs. Initial investments costs in above sub-sectors can easily reach hundreds of thousands of Euros. Many SMEs lack the necessary financial resources or access to foreign capital to make such investments. Moreover, utilisation of processing capacity must be high to make the processing cost-efficient and earn back the large investments in processing facilities.

C. *High labour costs*

Processors in Central America and especially Costa Rica indicate that they have difficulty to compete on price in the global market due to high labour costs. In Costa Rica, especially the social insurance fees add considerable costs to PFV production. A study by the World Bank confirms that labour costs are relatively high in Costa Rica compared to other Central American countries[378] .

377 http://documents.worldbank.org/curated/en/722091468012645548/pdf/839270WP0Vol020Box0382116B00PUBLIC0.pdf

378 http://documents.worldbank.org/curated/en/722091468012645548/pdf/839270WP0Vol020Box0382116B00PUBLIC0.pdf

D. *Lack of a reliable, competitively priced, stable, and good quality supply of raw material*

First of all, field research by ProFound and CATIE showed that many processors compete directly with the fresh market for their raw material purchases. As prices in the fresh market are commonly significantly higher than in the PFV market, margins of processors are under pressure.

The underlying problem is the lack of well-organised cooperation between the fresh market and PFV market using sorting and grading systems. In an ideal market situation, sorting and grading results in two different output streams. Only the highest grades are sold in the fresh market where requirements are highest. Lower grades are not accepted in the fresh market and regarded as 'waste'. Rather than throwing these low grades away, producers can still make some money by selling them to the processing industry.

In Central America, the market situation as described above does not exist. In certain cases, local fresh markets accept almost all qualities or pay high prices for both high and low grades. In other cases, logistics/collection centres with sorting and grading systems are absent or low grades are thrown away. The result is that processors either lack a sufficient supply of raw materials in terms of volume or must pay high prices for high-grade raw materials.

Secondly, processors have difficulty to access stable supplies of raw materials due to the lack of production planning. Planned harvests are needed to arrange for efficient logistics and timely transport of the fresh materials to the processing facility.

Thirdly, many fruits and vegetables processors source their raw materials (sometimes through intermediaries) from individual producers. Some of the processors indicate that they prefer to source from these individual producers instead of sourcing from larger cooperatives due to the political layer that these organizations entail.

The fragmentation of supplies from individual producers causes a lack of control over the quality of raw materials. Processors do not have the resources to manage the quality of each individual producer. They are unable to enforce their standards concerning contaminants such as pesticides. Sourcing from individual producers, especially through intermediaries also complicates organic certification. Cost efficient certification requires organized producer groups and a long-term commitment from the processor to purchase the organic produce in case producers have limited alternative markets for organic certified products with a price premium.

E. *Lack of access to finance*

Processors lack access to finance for working capital. Processors of fruits and vegetables need large amounts of working capital to pay their raw material suppliers and continue financing their operations while waiting for payment by European buyers. In the Central American PFV industry, the standard payment term for payment of producers is only 8 days after delivery of the product. At the same time, European buyers usually negotiate payment terms of 90-120 days.

During the focus Group with Procomer and CADEXCO in Costa Rica, participants mentioned that Costa Rican SMEs lack access to a development bank or other suitable finance mechanisms that tailor to their needs. Limitations in freezing capacity of SMEs in markets for frozen fruits and vegetables are illustrative of the need for investment finance. The freezing and storage of large amounts of frozen products before shipment is expensive and many processors have insufficient capacity to meet volume requirements in the European market. Due to the use of inefficient freezing technology, high ambient temperatures and high electricity costs, costs of freezing are high. Particularly in El Salvador, limitations in freezing capacity hamper exports to international markets.

F. *Expensive transport*

In addition to a workshop by the consultancy Dalberg in Guatemala[379], the focus group session with Procomer and CADEXCO in Costa Rica revealed that Central American companies face high transport costs.

379 http://www.mejoremosguate.org/cms/content/files/diagnosticos/economicos/02.ISDE_Alimentos_Procesados.pdf

5 reasons for the high costs of transport in Central America[380]:

- Constraints on access to and cost of finance for small companies in the region perpetuate a vicious cycle: older trucks have higher maintenance costs which results on higher operating costs even though initial capital cost is low
- Fuel costs represent 40-60% of total operating costs. Except for El Salvador, a small percentage of firms report using best operating practices and technologies to improve fuel efficiency
- As a result of increasing crime and violence in Central America, security costs have increased for trucking companies and represent between 3-4% of total costs
- A large share of cargo trips in the region, return with empty backhauls, resulting in prices for one leg of the trip that cover the costs of empty return trips
- Increased waiting times and significantly high idle times for trucks while in route impact transport costs.

Some Central American companies even export pallets of their processed fruits and vegetables by air. Such transport is very expensive and reduces price competitiveness of the companies.

Transport by sea of frozen products is only possible in 40-feet containers as 20-feet containers are not available. This requires large volumes and consolidation is not always available, or possible due to different temperature requirements of different products.

Despite high costs of road transport, CUKRA, the leading peanut exporter in Nicaragua mentioned that costs of road transport of their products add considerably to the total costs of their product. For example, if total costs of transport are USD 600 then road transport already constitutes around a third of those costs.

G. *Lack of knowledge on European market*

Central American exports have focused on the regional market and North America. Knowledge on the European market is far more limited. Companies lack information on market demand including interesting niches, market channels and market requirements such as relevant certification schemes, MRLs, permitted ingredients, organic regulation, etc. They need to know which product-market combinations have most potential.

Manufacturers of final products lack knowledge on European labelling requirements.

H. *Lack of compliance with international standards*

Although Central American processors exporting to Europe have sound food safety management systems in place, some other processors are currently exporting without having food safety management systems such as HACCP. These processors target regional markets and the USA which are more flexible than Europe in this respect and in terms of quality. Exporting to Europe without certificates is not feasible, and certification requirements in Europe are becoming higher every year. In addition, these exports pose a threat to the good reputation of Central America in Europe. When food safety issues arise, the entire PFV sector in Central America may be affected, as buyers will lose faith in the functioning of national systems to prevent the export of such products.

To illustrate, fruit is one of the four ingredients most often involved in food fraud, for example when juices are diluted through the use of sugar, water and/or other additives, substituting expensive fruit types with cheaper ones and processing bad fruits. In one extreme example *E. coli* infected fruit was knowingly processed[381] . Please note that this case did not necessarily occur in Central America.

---

380 http://documents.worldbank.org/curated/en/558341468242387382/pdf/751000WP0Road000Box374299B00PUBLIC0.pdf

381 MVO Risk Checker in CBI Value Chain Selection document

In Guatemala, traceability to the producers of raw materials is lost due to involvement of "coyotes" (i.e. intermediaries) in sourcing of raw materials by processors. In contrast, most processors in Costa Rica have functioning traceability systems in place.

The lack of implementation of standards also results in inconsistent quality of products. Quality consistency is a major buyer requirement in Europe and is one of the reasons that they put emphasis on implementation and certification of advanced food safety/quality management systems.

Many companies not (yet) exporting to Europe have difficulty to comply with a diversity of international standards, which requires documentation, training of employees and audits. According to local expert Isabel Escalante, Central American countries lack accredited certification services. For example, El Salvador lacks a laboratory for analysis of products and companies need to send samples to laboratories in other Central American countries. The need for foreign certification services (incl. GlobalG.A.P. and food safety management) also makes certification expensive. Particularly flying in inspectors adds considerable costs.

I. *Lack of knowledge on CSR by processors*

Despite a clear demand for CSR by European buyers, field research by ProFound and CATIE showed that processors lack knowledge on managing CSR (e.g. smallholder inclusion, working conditions, soil erosion and degradation, climate resilience and water and energy use) and how to benefit from CSR measures through promotion.

This lack of knowledge partly stems from the focus on North American markets which show less interest in CSR than Europe.

J. *Underdeveloped legal framework for exports*

The legal requirements for food safety in Central America are not clear to many processors and even the authorities responsible for implementation of the regulations. For example, many processors do not understand if phytosanitary inspections are only required for exports of fresh fruits and vegetables or also for processed fruits and vegetables.

Some rules are inconsistent in relation to international regulations or outdated. For example, OIRSA notes that regionally accepted technical rules on food safety (Reglamento Técnico Centroamericano 67.01.33:06) do not include HACCP, which is a minimum requirement for export to Europe. Even within Central America, food safety standards differ between countries, as the Reglamento Técnico Centroamericano is a set of guidelines which are implemented differently in each country.

Due to the lack of harmonization of national standards and inspection mechanisms in the region, companies must comply with different standards for each export destination in the region and Europe. This puts a burden on companies which need to invest resources in compliance with each of the standards.

Additionally, processors experience delays in their export processes due to excessive bureaucracy, legislative procedures and documentation requirements. Particularly procedures for obtaining sanitary certificates take a lot of time due to inefficient procedures by the authorities. For example, national authorities still require certificates of compliance with national standards when exporters already have a certification for compliance with high international standards. The international certificate makes the national certificate redundant (Source: Conference report of Isabel Escalante).

A Trade Control and Expert System (TRACES) to facilitate the rapid and efficient exchange of documentation related to Food safety does not yet exist in Central America. The existing system lacks basic information and the responsible local governments show a lack of interest to improve the system.

The companies receive insufficient support from the different authorities to comply with the requirements. Dissemination of information about the legal framework is insufficient and exporters

experience a lack of understanding by the authorities of their problems with respect to compliance with the rules.

In December 2019, the regulation on quality (Reglamento official de calidad) will come into force. Yet, there is very little information about the new regulation available according to OIRSA.

According to the field research for this VCA, the legal framework for food safety has been one of the main points of concern for regional integration in the agro sector.

6.3.2. Opportunities in the value chain

A. *Waste stream valorisation*

Processing presents a major opportunity in areas of Central America with large concentrations of producers of fresh fruits and vegetables which are unable to export (part of their produce) to the fresh market due to certain quality requirements and unable to find less discerning local fresh markets for their products. In the export market for fresh products, quality standards in terms of size, weight and colour are very high. As described in the VCA for fresh fruits and vegetables, the share of waste materials for many companies is as high as 10-15%. In most segments of the PFV market, these product characteristics are irrelevant, because the fruits and vegetables lose such qualities during processing.

The FFV and PFV sectors are mutually reinforcing. The uptake of products which are not suitable for the fresh export market strengthens the fresh fruits and vegetables sector by giving value to the 'waste' materials of the fresh sector. This can lead to improvement of price competitiveness of FFV exporters. Especially when producers have excessive amounts (of low grades) which they cannot sell on the FFV market, the processing industry may present an opportunity to recover part of their investments.

At the same time, the PFV sector can benefit from a strong FFV sector with a strict sorting and grading system as the processing industry relies primarily on supplies of fruits and vegetables which are sorted out by the fresh market.

B. *Market development for producers of fresh fruits and vegetables*

In some cases, the PFV market is easier to enter for producers of fresh fruits and vegetables than the FFV market. Particularly producers which are having difficulty to comply with strict phytosanitary requirements in the fresh market may find an alternative market for PFV. In the PFV market, higher maximum pesticide residue limits on the fresh fruits and vegetables are acceptable when the outer layer (i.e. peels) with the highest concentration of residues are thrown away. When the outer layer is not removed, as is for example the case for dried grapes, MRLs pose the same challenge in the fresh market as in the market for the processed product.

The PFV market also offers an alternative for small producers of fresh fruits and vegetables which cannot meet the delivery terms in the fresh market. The FFV market requires production planning to enable frequent deliveries of stable volumes (multiple deliveries per week). PFV exporters have more time and flexibility to aggregate sufficient volumes for export.

C. *European demand for natural, healthy and convenient foods*

Demand for fruits and vegetables with high amounts of nutrients (e.g. 'superfruits') in Europe is particularly strong. Many products from Central America including passion fruit, rambutan, pitahaya and mangosteen can be positioned as natural and healthy (super)fruits when they are produced and preserved without additives.

Besides 100% NFC fruit juices without added sugars, the frozen fruit (and vegetables) subsector shows promise. Central America produces many exotic and tropical fruits which can benefit from European demand for natural and healthy foods. Frozen fruit exports are growing and Procomer has expressed interest in promoting this subsector and has asked CBI to focus the new project specifically on this sub-sector (next to Specialty Coffees and cacao). Within the vegetable sector,

there have been successful experiences in Costa Rica for tubers; problems with the handling of fresh tubers and market instability led the industry to focus on processing (soups, cakes, etc.).

Exports of canned fruits to Europe show healthy growth and particularly exports of exotic fruits have potential. In Europe, demand for products canned without sugar syrup or other additives are particularly interesting. Exports of many canned vegetables offer less opportunities. Exports of canned palm hearts are even in decline. Existing palm heart canning companies may benefit from CBI support to switch to more promising product groups.

D. *CSR for positive distinction from competitors*

CSR is gaining importance in the European processed fruits and vegetables market. This increases the requirements that Central American companies must meet. However, Central American exporters may also turn CSR into a competitive advantage. CSR provides an opportunity to create a Unique Selling Proposition and avoid direct competition with more price competitive suppliers from other countries.

Some of the most relevant CSR measures to be taken by SMEs in the PFV value chain:

- Secure transparency in the raw material supply chain (through traceability) to enable identification of CSR issues at raw materials level such as excessive use of chemicals
- Provide technical assistance and incentives to raw material producers for minimizing chemicals use (e.g. training on Integrated Pest Management)
- Include poor smallholders in the supply chain by establishing an out-grower scheme or organizing them in a cooperative to achieve economies of scale for cost-efficient sourcing (e.g. consolidation of supplies) and standardizing quality
- Secure decent working conditions for employees in human resource policies such as living wages, occupational health and safety and the right to organize themselves in labour unions or similar organisations
- Prevent soil erosion and degradation at farmers through training in soil management
- Promote water management to reduce unnecessary water use
- Install energy efficient equipment (e.g. well insulated freezers) and policies on energy use to reduce unnecessary energy use

E. *Organic certification*

Demand for organic PFV are growing in Europe. This provides opportunities for Central American exporters to supply organic certified products. Organic certification is particularly interesting for PFV producers which aim to position their products as more natural and healthy than products of competitors. The organic certificate strengthens such a product image. Especially in commodity markets, such distinction from competitors is important to prevent the need for competition on price only.

Currently, production of organic fruits and vegetables in Central America is still small. Refer to the chapter on fresh fruits and vegetables for details.

To market processed fruit and vegetables and edible nuts in the EU as organic, they must be grown using organic production methods which are laid down in EU legislation and growing and processing facilities must be audited by an accredited certifier, before a producer may put the EU organic logo on their products, as well as the logo of the standard holder (e.g. Soil Association in the UK, Naturland in Germany).

Rainforest Alliance is not very big yet in the market for processed fruit and vegetables and edible nuts, except for the market of fruit juices (e.g. the brand Innocent).

F. Niche markets

In niche markets for products such as pitahaya, mangosteen and unique pineapple products, volume requirements are lower. This provides opportunities for Central American SMEs with a small processing capacity.

6.4. Possible solutions and support actions

6.4.1. Solutions and support actions

A. Strengthening collaboration between producers and processors in clusters

Related to constraints:

- (A) High volume requirements are barrier to entry for SMEs
- (C) High raw material costs
- (D) Lack of a reliable, competitively priced, stable, and good quality supply of raw material

Related to opportunities:

- (A) Waste stream valorisation
- (B) Market development for producers of fresh fruits and vegetables

The FFV and PFV sector can mutually benefit from strict sorting and grading of fruits and vegetables. Particularly producers targeting export markets for FFV, which cannot sell their low grades to these export markets nor have access to local markets, benefit from valorisation of their waste stream. Processors benefit from increased access to raw materials.

Establishment of sorting and grading systems requires standards/grades based on international market requirements. As many companies are currently applying their own specific standards, establishment of one acceptable and widely recognised standard requires collaboration between different stakeholders.

Establishment of effective sorting and grading systems requires clusters of fruits and vegetable producers and processors which collaborate on logistics. They must work together on production planning and logistical arrangements.

In certain cases, promotion of effective collaboration in a cluster can enable processing of fruits and vegetables which are only available in limited quantities in the area around the processing facility (i.e. niche products). Such clusters have a particularly good chance of success when the following conditions apply:

- Production areas of these different fruits and vegetables are close to each other
- Production areas of these different fruits and vegetables are close to an existing processing facility
- Production exceeds demand from the fresh market (assuming that the fresh market pays higher prices) or lower grades are available for processing. In both cases, supplies must still have a certain scale (around 10-20 tonnes) to enable cost efficient processing.

In case the raw material producers have the capacity to export themselves, the promotion of tolling services by the processor can open up opportunities. External experts including CBI experts can provide technical assistance on such business development.

B. Improving access to finance

Related to constraints:

- (B) High investment costs for SMEs in certain sub-sectors limit market entry
- (E) Lack of access to finance

Working capital: Financing the working capital of processors is crucial for their success in European markets where payment terms are usually 90-120 days. Banks can provide working capital when processors have solid business plans and control over their cashflow. The latter will require production planning in cooperation with the producers. External experts can support the processors with production planning, cashflow analysis and business planning.

In El Salvador, the Programa Banca Agropecuaria supports development of smallholder farmers through improvement of their access to finance. The programme is executed by the Banco de Desarrollo de El Salvador (BANDESAL) and includes triangulation of contracts between producers, processors and BANDESAL. This can provide a solution to the working capital problems of processors and the model may be replicated in the other Central American countries.

Investments: Promotion of investments in the PFV sector will increase access to finance for investment in modern technology. Modern technology can significantly improve the competitiveness of Central American processors. Besides financial institutions, universities and

other knowledge institutes can support investments in modern technology through studies on the costs and benefits of (new) processing technology. Such studies or pilot projects can establish the financial feasibility of the technology and help processors to make informed decisions about investing in such technology. Through inclusion of such information in their business plans they can further improve their access to finance for respective investments. Particularly projects on energy efficient freezing technology can have a positive impact on both price competitiveness and energy use of processors of frozen fruits and vegetables.

C. Reducing costs and time of transport

Related to constraints:

- (F) Expensive transport

Eco-Driving Courses for truckers can have a great impact on fuel efficiency and costs of transport. Improvement of access to finance for transport companies will also enable them to purchase more fuel efficient vehicles. Finally, the Plataforma Digital de Comercio Centroamericana (PDCC) can provide part of the solution by reducing waiting times at the border.

D. Improving coherence in food safety standards

Related to constraints:

- (H) Lack of compliance with international standards
- (J) Underdeveloped legal framework for exports

Harmonising food safety standards on regional level will reduce the burden on companies to comply with different standards and will also reduce related barriers to regional trade. OIRSA is in a good position to take a lead in this process, as it is an intergovernmental institution with expertise in food safety and a mandate in different countries to improve food safety.

Moreover, OIRSA is supported by SIECA which already developed a strategy for facilitating trade and competitiveness in the Central American region[382]. OIRSA and SIECA can strengthen the communication and information exchange with the European Food Safety Authority (EFSA) to align food safety standards with requirements of the European market. SIECA/CBI can support the creation of a stronger institutional linkage between OIRSA and EFSA.

E. Dissemination of food safety standards

Related to constraints:

- (H) Lack of compliance with international standards
- (J) Underdeveloped legal framework for exports

Publication of manuals and training courses will improve the understanding of food safety standards by processors and authorities responsible for their enforcement. OIRSA already has such publications and training courses and can improve its outreach through cooperation with other supporting institutions such as SIECA and CEMPROMYPE. CBI can support OIRSA to align the contents of their manuals and training courses to European buyer requirements.

CBI and OIRSA can also provide support to exporters for preparing the required export documentation and improve their understanding of terminology and the authorities involved.

F. Reduction of bureaucracy

Related to constraints:

- (J) Underdeveloped legal framework for exports

Streamlining of procedures by the authorities responsible for enforcement of regulatory standards will reduce costs and delays for exporters. Particularly the Ministries of Health responsible for food safety management need support from organisations such as the International Trade Centre (ITC). They can improve their services to facilitate compliance by exporters. Besides streamlining of procedures, the authorities need to offer more support to exporters to comply with their requirements.

More rotation in the personnel of authorities responsible for control of compliance may also help to prevent corruption.

[382] https://s3-us-west-2.amazonaws.com/web-sieca/cooperacion+y+proyectos/Estrategia+Centroamericana+de+Facilitación+del+Comercio+y+Competitividad+con+Énfasis+en+Gestión+Coordinada+de+Fronteras..pdf

Establishment of a Trade Control and Expert System (TRACES) for digitalisation and facilitation of the exchange of documents can further speed up procedures and reduce related costs. The Plataforma Digital de Comercio Centroamericana (PDCC) can provide the solution. SIECA and the Banco Interamericano de Desarrollo (BID) are responsible for development of this platform which is financed by the European Union (€ 8 million).

Without interventions by CBI or its partners in the improvement of trade policies and respective implementation by Central American governments, exporting SMEs will experience more difficulties and this may reduce their rate of success.

G. Supporting certification of food safety management

Related to constraints:

- (H) Lack of compliance with international standards

Technical and financial support to exporters for certification of food safety management will considerably improve the competitiveness of Central American exporters. It is a minimum requirement of many European buyers.

Exporters in all Central American countries can benefit from certification of compliance with international standards. However, in Costa Rica, many exporters already have systems to trace back products to individual producers and their own food safety management systems. In many cases, these systems do not comply fully with international standards and/or are not certified. In other Central American countries, many exporters need additional training in food safety management to prepare for certification.

Different organisations can provide the necessary training and possibly finance. In Costa Rica, where many exporters can benefit from upgrading and/or certification of their food safety management to international standards, CADEXCO's Programa Excelencia Exportadora can be helpful. This programme in different value chains addresses group and individual capacities to certify for export markets and pay for the first year of certification. CADEXCO will select 20 companies. CBI can collaborate with CADEXCO on this topic.

In El Salvador, Coexport with support from USAID has a programme called "Exportar con Calidad" which incentivizes certification of compliance with international standards in different sectors. CBI can cooperate with Coexport to expand their programme.

H. Capacitating certifiers and laboratories

Related to constraints:

- (H) Lack of compliance with international standards

Stimulating existing certifiers in Central America such as Control Union, IMO and BCS to improve their services by offering support with capacity building and possibly achieving accreditations for their services. This will enable exporters to use domestic or regional certification services instead of European services. This leads to substantially lower costs of certification and stimulates improvement of food safety /quality management through certification.

OIRSA can provide training of auditors in different food sub-sectors.

I. Providing guidance on more advanced quality management

Related to constraints:

- (H) Lack of compliance with international standards

Benchmarking of exporters by European experts and buyers can improve the understanding by exporters of their competitiveness in Europe and help them to identify gaps in their capacities. The PFV exporter Burke Agro pointed out during the PFV session of CBI's regional conference in Guatemala in March 2018 that CA exporters could benefit from feedback from buyers or other experts on quality management. For example, the exporters can raise questions on such topics during meetings with buyers at trade fairs, which CBI and its partners can organise.

Burke Agro also recommended CBI to partner with SGF to support fruit juice exporters. SGF certification can further improve the competitiveness of Central American fruit juice exporters.

J. Improving market knowledge

Related to constraints:

- (G) Lack of knowledge on European market

Related to opportunities:

- (C) European demand for natural, healthy and convenient foods

CBI's Market Intelligence and European experts will improve the understanding by Central American exporters of the European market. Particularly knowledge on buyer requirements and relevant standards and certification requirements will help the exporters to make informed decisions about investments in quality management and certification.

CBI already offers studies on many relevant processed fruits and vegetables. Additional tailored studies on the European market for processed okra, avocado and exotic fruits such as mangosteen, rambutan and dragon fruit will benefit respective Central American suppliers.

Participation in international trade fairs such as Fruit Logistica, ANUGA, SIAL, PLMA and Biofach will enable Central American exporters to get first-hand experience in marketing their products in Europe. The trade fairs provide a great opportunity to learn from competitors and receive feedback from buyers on their products. Of course, participation also provides many opportunities to meet potential buyers, develop and maintain business relationships and even close deals.

K. Supporting companies to improve social responsibility performance

Related to constraints:

- (I) Lack of knowledge on CSR by processors

Related to opportunities:

- (D) CSR for positive distinction from competitors
- (E) Organic certification

Implementation of CSR is a type of product development which will help Central American companies to improve their competitiveness on the European market. First of all, CBI can transfer knowledge on CSR to improve the understanding of companies. They particularly need knowledge on the following sustainability risks: human rights (especially labour exploitation), biodiversity loss, pollution by agro-chemicals, waste, and water and energy use.

Secondly, CBI can support companies with improvement of their CSR performance. On processor level, reduction of waste and energy consumption are major areas for improvement. Technical and financial support for development and adoption of energy efficient technology by processors will lead to a reduction in energy use. Lower costs of energy and improved price competitiveness are an additional result. In Costa Rica and possibly other countries as well, CBI can also stimulate companies to set up Comités Permanentes de Trabajadores to prevent or address human rights issues.

Sustainable sourcing is another area for improvement. CBI and partners can support processors with development of more sustainable sourcing practices to improve CSR of processors and achieve impact on producer level, possibly including conservation of biodiversity and reducing pollution by agro-chemicals. Technical assistance to producers of fruits and vegetables will help them to produce higher quality and improve productivity. This also benefits exporting processors which need large quantities of high quality products to meet international standards.

Support with organic certification can open up the growing European market segment for organic PFV to Central American exporters and offer an opportunity for product distinction to avoid direct competition on price. This is most feasible for processors which have strong control over their supply chain through their own farms, contract-growing or strong relations with large-scale farmers or well organised producer groups. In these cases, the processor can cooperate or even co-invest with the supplier to obtain organic certification.

6.4.2. Considerations for recruitment of participants for the CBI programme

The exporters' pool for processed fruit and vegetables in Central America is limited; the estimated number of eligible companies to the CBI programme amounts to a maximum of 10-15 companies.

- Costa Rica: max. 10-12 companies. See reference directory (linked through Procomer): https://directorioscostarica.com/listado/pulpas-de-frutas,productos-congelados,frutas-procesadas,jugos,pure-de-frutas (fruit and vegetable purées, fruit pulps, frozen fruits, IQF fruits, concentrates for food industry, juices)
- Nicaragua: max. 1-2 companies; example: VegyFruit (website N/A; company interviewed during field research) (fruit pulps)
- Honduras: max. 3 companies, FIDE directory (2014): https://www.dropbox.com/s/z7ekhhl13q2zq9r/DirectorioExportadores2014.pdf?dl=0 (preserved pineapples, orange juice, citric juices)
- Guatemala: fruits (mainly frozen), max. 5 companies: http://export.com.gt/agexport/directorio/#/directorio/1/2////; vegetables (mainly frozen): max. 5 companies: http://export.com.gt/agexport/directorio/#/directorio/1/5////. Other processing: max. 3 companies http://export.com.gt/agexport/directorio/#/directorio/2/1//// (example: jams,
- Panama: max. 2-3 companies http://embajadadepanama.com.co/wp-content/uploads/2016/12/0549_161004145702_001.pdf (juices, conserved products)
- El Salvador: max. 2-3 companies https://drive.google.com/file/d/1WLZ5DDbgLiMsp1QPepNh473501_baWRy/view (frozen fruit and vegetables, IQF okra and pulses, jams)

Export-competent companies within the processed fruit and vegetable sector in Central America are mainly concentrated in Costa Rica and Guatemala. A focus on these countries will make the recruitment process most effective. Procomer has expressed particular interest in promoting the frozen fruits and vegetables subsector and has asked CBI to focus the new ECP specifically on this sub-sector. They are a valuable partner for recruitment of participants. In Guatemala, AGEXPORT can be a valuable partner for the recruitment in this sector.

This VCA has shown that successful entry to the European PFV market requires scale. Therefore, scale must be one of the main selection criteria in the recruitment process. The previous CBI programme in Central America has already shown that many SMEs are not strong enough to be successful in Europe. This reduces the amount of eligible companies for the CBI programme. Alternatively, CBI can consider to be more flexible with the selection criteria and allow large companies with a turnover of up to € 5 million or more to participate. When these companies source their raw materials from SMEs, CBI may still contribute indirectly to SME development.

The analysis of European demand shows that spicy sauces are a growing segment of the market for foods and beverages. In addition, table 5 shows that the salsas and preparations sub-sector in Costa Rica consists of a relatively large number of companies. Although salsas were previously not a focus product in CBI programmes, inclusion of salsas companies will enlarge the pool of potential ECP participants and may help to achieve scale in the ECP. Moreover, this product group can offer opportunities for promotion of intra-regional trade.

7. Fish and Seafood Value Chain

7.1. Key European market characteristics and Central America's competitiveness on the European market

7.1.1. Supply from Central America

Fish and seafood production in Central America

Central American production of fish and seafood is derived from FAOSTAT's Fishery and Aquaculture Department[383]. The analysed figures reveal's Panama's significant market share in total Central American production (36%, in volume), followed by Honduras (16%), Nicaragua (15%) and El Salvador (14%). Guatemala (10%) and Costa Rica (9%) play more modest roles in total Central American production.

The figures also show important variations in terms of capture versus aquaculture production, as well as in the product categories which play the most important role in total production, as seen below:

Table 7.1. Fish and seafood production in Central America, 2015

Countries and product groups	Fish and seafood production 2015 (tonnes)	Growth or decline, annual, since 2011	Share of total production 2015
Panama			
Total	151,465 tonnes	-4%	-
Capture	*142,315 tonnes*	*-4%*	*94%*
Marine fishes	*140,673 tonnes*	*-4%*	*93%*
Crustaceans	*1,197 tonnes*	*-18%*	*1%*
Freshwater fishes	*405 tonnes*	*-29%*	*0.3%*
Aquaculture	*9,150 tonnes*	*+5%*	*6%*
Crustaceans	*7,861 tonnes*	*+6%*	*5%*
Marine fishes	*1,200 tonnes*	*+41%*	*1%*
Honduras			
Total	65,891 tonnes	+2%	-
Capture	*10,791 tonnes*	*-1%*	*16%*
Crustaceans	*7,684 tonnes*	*+5%*	*12%*
Marine fishes	*1,956 tonnes*	*-2%*	*3%*
Molluscs	*851 tonnes*	*-15%*	*1%*
Aquaculture	*55,100 tonnes*	*+2%*	*84%*
Freshwater fishes	*30,100 tonnes*	*+11%*	*46%*
Crustaceans	*25,000 tonnes*	*-5%*	*38%*
Nicaragua			
Total	65,199 tonnes	+7%	-
Capture	40,639 tonnes	*+5%*	*62%*
Marine fishes	*16,814 tonnes*	*-4%*	*26%*
Molluscs	*11,462 tonnes*	*+19%*	*18%*
Crustaceans	*9,261 tonnes*	*+8%*	*14%*
Aquaculture	24,560 tonnes	+12%	*38%*
Crustaceans	*24,530 tonnes*	*+12%*	*38%*
El Salvador			
Total	59,188 tonnes	0%	-
Capture	52,445 tonnes	-1%	*89%*
Marine fishes	*51,363 tonnes*	*-0.1%*	*87%*
Crustaceans	*593 tonnes*	*+14%*	*1%*
Aquaculture	6,743 tonnes	+8%	*11%*
Freshwater fishes	5,639 tonnes	+8%	*10%*
Crustaceans	1,084 tonnes	+9%	*2%*
Guatemala			
Total	43,847 tonnes	1%	-
Capture	21,798 tonnes	*+2%*	*50%*
Marine fishes	*18,976 tonnes*	*+4%*	*43%*

[383] http://www.fao.org/fishery/statistics/global-consumption/en

Freshwater fishes	*2,360 tonnes*	*0%*	*5%*
Aquaculture	22,049 tonnes	+1%	*50%*
Freshwater fishes	*13,504 tonnes*	*+25%*	*31%*
Crustaceans	*8,545 tonnes*	*-14%*	*19%*
Costa Rica			
Total	38,203 tonnes	-7%	-
Capture	15,700 tonnes	*-10%*	*41%*
Marine fishes	*12,309 tonnes*	*-13%*	*32%*
Crustaceans	*2,385 tonnes*	*+11%*	*6%*
Freshwater fishes	*1,000 tonnes*	*0%*	*3%*
Aquaculture	22,503 tonnes	*-5%*	*59%*
Freshwater fishes	*18,203 tonnes*	*-7%*	*48%*
Crustaceans	*2,682 tonnes*	*-3%*	*7%*
Diadromous fishes	*897 tonnes*	*+4%*	*2%*

Source: FAOSTAT Fisheries and Aquaculture, 2018

Within Central American supply of fish and seafood we can make a distinction between capture production and aquaculture. Above mentioned production figures show that Panama is the largest producer of fish and seafood, but with a strong orientation towards capture production (which accounts for 94% of its total production in 2015). Panama's production shows generally decreasing figures since 2011, at an annual rate of -4% due to national regulations established in December 2010 aimed to restrict the long-line fishery, but recently amended (September 2017). It is expected that national marine fish production will be reactivated in the short/medium term, since marine fish is the most important subsector among Panamanian fisheries.

Like Panama, El Salvador's production is also strongly oriented towards capture production (89%), with a focus on the product category marine fishes and shrimp. Aquaculture shows interesting growth tendencies (at an annual +8% growth since 2011) for both freshwater fishes (tilapia) and crustaceans (marine shrimp).

After Panama, Honduras is Central America's largest fish and seafood producer. Honduras' production relies largely on aquaculture production (as much as 84%), whereby both freshwater fishes and crustaceans (marine shrimp) play an important role. Production of marine shrimp has showed some decline since 2011, at an annual rate of -5%.

Nicaragua focuses more on capture production (62%) and this shows a substantial growth (+5% annually) since 2011. In relative production size at the product level however, aquaculture production of crustaceans (marine shrimp) plays the most important role in Nicaraguan fish and seafood production (38% share), growing at a strong rate of +12% annually since 2011.

Guatemala's production is equally divided between capture and aquaculture in terms of production volume. The most important product categories are marine fishes (43%) and freshwater fishes (31%), the latter showing strong growth in recent years.

The country that produces the lowest volume of fish and seafood among Central American countries is Costa Rica. Its total production has declined by an annual rate of -7% since 2011. Nearly half of Costa Rica's production volume is orientated towards freshwater fishes (tilapia) from aquaculture.

Fish and seafood exports from Central America

Exports of fish and seafood from Central America, per country, were derived from ITC Trademap. The figures presented below highlight the main products exported per country, as well as the development of exports since 2014 and main export markets.

Table 7.2. Fish and seafood exports from Central America, main export markets, 2016

Country	Exports 2016 (volume / value), main product groups and products		Growth/declines since 2014, annual (volume /value)		Main export markets
HONDURAS	72,108 tonnes	USD 424 million	+1.0%	+0.4%	USA (38%) Unspecified (20%) Mexico (10%) UK (10%) Chinese Taipei (5%) Spain (3%)
Crustaceans	*60,301 tonnes*	*USD 354 million*			
Frozen shrimps and prawns	*56,066 tonnes*	USD *305 million*			
Frozen rock lobster and other sea crawfish	*1,781 tonnes*	USD *39 million*			
Shrimps and prawns	*2,316 tonnes*	USD *8 million*			
Fish fillets and other fish meat	*9,737 tonnes*	*USD 58 million*			
Fresh or chilled fillets of tilapia	*9,279 tonnes*	USD *56 million*			
Molluscs	*445 tonnes*	*USD 6 million*			
Cuttle fish	*211 tonnes*	*USD 3 million*			
Molluscs, smoked, frozen, dried, salted or in brine	*171 tonnes*	*USD 2 million*			
Aquatic invertebrates	*931 tonnes*	*USD 4 million*			
*Sea cucumbers**	*233 tonnes*	*USD 3.6 million*			
Fish, fresh or chilled	*603 tonnes*	*USD 1.7 million*			
Unspecified	*345 tonnes*	USD *1.1 million*			
NICARAGUA	38,562 tonnes	USD 296 million	-5%	-2%	USA (34%) Spain (18%) Chinese Taipei (16%) France (12%) Mexico (4%) Honduras (3%)
Crustaceans	*25,720 tonnes*	*USD 232 million*			
Frozen shrimps and prawns	*24,996 tonnes*	USD *141 million*			
Frozen rock lobster and other sea crawfish	*2,553 tonnes*	*USD 81 million*			
Frozen fish	*8,528 tonnes*	*USD 19 million*			
Yellowfin tunas	*3,647 tonnes*	*USD 8 million*			
Fish, fresh or chilled	*2,314 tonnes*	*USD 16 million*			
Unspecified	*2,262 tonnes*	*USD 16 million*			
Aquatic invertebrates	*651 tonnes*	*USD 15 million*			
Sea cucumbers	*582 tonnes*	USD *15 million*			
Molluscs	*643 tonnes*	*USD 8 million*			
Fish fillets and other fish meat	*671 tonnes*	*USD 5 million*			
PANAMA	38,087 tonnes	USD 138 million	-6%	-9%	USA (45%) Spain (11%) Chinese Taipei (8%) Denmark (7%) Vietnam (7%)
Crustaceans	*10,021 tonnes*	*USD 67 million*			
Frozen cold-water shrimps and prawns	*5,978 tonnes*	USD *38 million*			
Frozen shrimps and prawns	*3,855 tonnes*	USD *27 million*			
Fish, fresh or chilled	*13,594 tonnes*	*USD 42 million*			
Salmonidae	*9,195 tonnes*	*USD 23 million*			
Cobia	*879 tonnes*	*USD 10 million*			
Frozen fish	*11,114 tonnes*	*USD 23 million*			

Unspecified	*3,381 tonnes*	*USD 8 million*			Italy (6%)
Yellowfin tunas	*2,554 tonnes*	USD *5 million*			
Swordfish	*788 tonnes*	*USD 4 million*			South Korea (6%)
Fish fillets and other fish meat	*1,189 tonnes*	*USD 4 million*			
Unspecified, excl. fillets	*866 tonnes*	*USD 3 million*			
Frozen fillets of tuna	*145 tonnes*	*USD 895,000*			
Molluscs	*1,945 tonnes*	*USD 1.5 million*			
Cuttle fish	*1,712 tonnes*	USD *1.5 million*			
COSTA RICA	11,437 tonnes	USD 84 million			
Fish fillets and other fish meat	*6,083 tonnes*	*USD 41 million*			USA (80%)
Fresh or chilled fillets of tilapia	*4,846 tonnes*	USD *33 million*			Germany (9%)
Frozen fillets of tilapia	*669 tonnes*	*USD 3 million*			
Fresh or chilled fillets of trout	*168 tonnes*	*USD 1.2 million*			Hong Kong (4%)
Fish, fresh or chilled	*3,614 tonnes*	*USD 26 million*	-17%	-14%	
Unspecified	*1,511 tonnes*	USD *10 million*			
Swordfish	*1,036 tonnes*	USD *8 million*			Belgium (2%)
Yellowfin tunas	*866 tonnes*	*USD 7 million*			
Crustaceans	*1,127 tonnes*	*USD 12 million*			
Frozen shrimps and prawns	*1,076 tonnes*	*USD 11 million*			Spain (1%)
Dried, salted and smoked fish	*71 tonnes*	*USD 4 million*			
Shark fins	*56 tonnes*	*USD 3.6 million*			
Frozen fish	*521 tonnes*	*USD 1.0 million*			
Dogfish and other sharks	*290 tonnes*	USD *474,000*			
Unspecified	*56 tonnes*	USD *320,000*			
Mackerel	*148 tonnes*	USD *216,000*			
GUATEMALA	8,933 tonnes	USD 56 million			
Crustaceans	*8,314 tonnes*	*USD 54 million*			USA (39%)
Frozen shrimps and prawns	*7,885 tonnes*	USD *53 million*			Mexico (31%)
Fish, fresh or chilled	*403 tonnes*	*USD 1.1 million*	-18%	-9%	
Unspecified	*386 tonnes*	USD *1.0 million*			France (16%)
Fish fillets and other fish meat	*147 tonnes*	*USD 964,000*			
Frozen fillets of tilapia	*141 tonnes*	*USD 954,000*			Spain (13%)
Dried, salted and smoked fish	*67 tonnes*	*USD 105,000*			
Dried fish, even salted but not smoked (excluding fillets, offal and cod)	*35 tonnes*	USD *71,000*			Chinese Taipei (1%)
Shark fins	*32 tonnes*	USD *34,000*			
EL SALVADOR	5,499 tonnes	USD 15 million			Spain (48%)
Frozen fish	*5,018 tonnes*	*USD 10 million*	+142%	+61%	USA (26%)
Yellowfin tunas	*1,907 tonnes*	*USD 5 million*			
Bigeye tunas	*1,553 tonnes*	*USD 3 million*			Hong Kong (11%)
Dried, salted and smoked fish	*257 tonnes*	*USD 4 million*			
Dried fish, even salted but	*225 tonnes*	*USD 2 million*			

not smoked (excluding fillets, offal and cod)					Brazil (7%)
Fish, fresh or chilled	*196 tonnes*	*USD 1.3 million*			

Source: ITC Trademap, 2018
*HS codes: 030811 and 030819

These figures show that, even though Panama registers the largest fish and seafood production in Central America, Honduras and Nicaragua are the largest exporters in the region, accounting for respective shares of 42% and 29% of total Central American exports in 2016. Panama accounted for a share of 14% of total exports. This discrepancy is due to Panama's high production of anchoveta (*Cetengraulis mysticetus*, species of the anchovy family) and arenque (*Opisthonema libertate* and *O. medirastre*, Pacific thread herring), which are small pelagic species used for the production of fish flour for the feed industry (not for human consumption)[384]. Although these products represent the highest volume, they have the lowest economic value. Its products are used to make fishmeal and fish oil, which in turn are raw materials from different industries such as concentrated feed for aquaculture, chicken and pigs; food industry for human use (margarines, oils and fats); pharmaceutical industry, cosmetics; fats and oils; chemicals, paints, soaps, detergents and building materials. Panamanian fishmeal is exported to Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Germany, United Kingdom, China, Taiwan and Japan.

The product group that is most exported from Central America is *frozen shrimps and prawns,* accounting for over 70% of Honduras' and nearly half of Nicaragua's export value in 2016. It is also an important product group for Panama; together, *Frozen cold-water shrimps and prawns*[385] and *Frozen shrimps and prawns*[386] accounted for nearly half of Panama's exports of fish and seafood in 2016. In Guatemala, over 95% of total exports of fish and seafood in 2016 consisted of *Frozen shrimps and prawns.*

In Costa Rica, the most important export products (in terms of value, in 2016) are tilapia and trout (in fillets). Together, the product groups *Fresh or chilled fillets of tilapia*, *Frozen fillets of tilapia* and *Fresh or chilled fillets of trout* accounted for around 45% of the country's fish and seafood exports in 2016.

El Salvador's figures reveal the relative importance of capture production in the country; its largest export products in 2016 (in value) are frozen *Yellowfin tunas* and *Bigeye tunas*, which accounted for 75% of total exports of fish and seafood. Note that the tuna species exported from El Salvador are accounted for by the only (Spanish-owned) company operating in the country, Calvopesca. Tuna exports are destined to Calvopesca's processing plant in Spain[387], while canned tuna produced in its processing plant in El Salvador is mainly sold in the national market and also exported to other Central American countries.

The USA is the largest export destination for most Central American exporters of fish and seafood, but European countries also play and important role as a destination for Central American exports, with certain concentration around Spain, Germany, France and the UK.

7.1.2. European demand

European fish and seafood demand

Total exports of fish and seafood from Central American countries to Europe amounted to USD 440 million in 2016. This is a small share of the total European imports; however, Europe is the largest market for seafood worldwide (20-25% of the global market[388]), and provides wide opportunities for suppliers from various origins. EU consumers spent € 54 billion for buying fisheries and aquaculture products in 2015[389]; however, the EU's self-sufficiency in fish and seafood amounts to nearly half of its total consumption[390].

[384] Fish and seafood expert Claudia Stella Beltrán Turriago
[385] From wild catch
[386] Cultured vannamei
[387] Fish and seafood expert Claudia Stella Beltrán Turriago
[388] https://www.cbi.eu/sites/default/files/market_information/researches/trade-statistics-fish-seafood.pdf
[389] https://ec.europa.eu/fisheries/eu-fish-market-2016-edition_en
[390] https://ec.europa.eu/fisheries/eu-fish-market-2016-edition_en

Within the European markets, demand of seafood products vary per species. While the largest markets for shrimp are Spain and the United Kingdom, for rock lobster these are France and Belgium.

Eurostat figures, aggregated according to CBI's product tree for fish and seafood, reveal that Central America's largest product category in relation to total European imports is frozen crustaceans. In this product category, Central America contributed to 3.6% of total European imports in 2016 (€ 181 million). The main product supplied by Central America in this category was frozen shrimp (nearly 80% of the region's total frozen crustacean supplies to Europe) and frozen rock lobster (at around 20% of the total supplies).

With the exception of frozen crustaceans and frozen fish, in which Central American suppliers contributed to a share of 1.2% of total European imports in 2016 (€ 76 million), other product categories show a very modest role to the region's suppliers, as shown below:

Table 7.3. European imports of fish and seafood, global and from Central America, 2016

	European imports 2016 (volume / value)		Growth or decline since 2012, annual (volume/value)		Main suppliers to Europe, and their market shares* (value)
Frozen crustaceans					
EU 28 imports	*657,165 tonnes*	***€ 5.0 billion***	1%	8%	Ecuador (13%)
From Central America	22,516 tonnes	€ 181 million	1%	12%	India (11%)
Nicaragua	*11,144 tonnes*	*€ 93 million*	-0.3%	11%	Argentina (9%)
Honduras	*6,698 tonnes*	*€ 53 million*	4%	15%	Bangladesh (6%)
Panama	*2,453 tonnes*	*€ 16 million*	-0.4%	8%	Spain (5%)
Guatemala	*1,582 tonnes*	*€ 11 million*	-3%	10%	Netherlands (5%)
Costa Rica	*639 tonnes*	*€ 8 million*	9%	20%	Vietnam (5%) Belgium (5%)
Frozen fish					
EU 28 imports	*2.2 million tonnes*	***€ 6.4 billion***	*1%*	*5%*	Norway (8%)
From Central America	43,141 tonnes	€ 76 million	19%	15%	Netherlands (8%)
Panama	*15,162 tonnes*	*€ 30 million*	*0.4%*	*-0.1%*	Spain (6%)
El Salvador	*16,580 tonnes*	*€ 27 million*	*n/a*	*n/a*	USA (5%)
Guatemala	*10,943 tonnes*	*€ 18 million*	*14%*	*9%*	China (5%)
Nicaragua	*369 tonnes*	*€ 466,273*	*115%*	*69%*	Vietnam (5%)
Costa Rica	87 tonnes	€ 248,566	44%	21%	Germany (4%) Russia (4%) Namibia (4%) Chile (4%)
Frozen cephalopods					
EU 28 imports	*1.1 million tonnes*	***€ 5.1 billion***	*3%*	*8%*	Morocco (18%)
From Central America	161 tonnes**	€ 33,454**	n/a	n/a	Spain (14%)
Guatemala	*140 tonnes***	*€ 17,891***	*n/a*	*n/a*	India (7%)
Honduras	*21 tonnes***	*€ 15,563***	*n/a*	*n/a*	China (6%) Netherlands (5%)
Fresh cephalopods					
EU 28 imports	*337,623 tonnes*	***€ 1.5 billion***	*-2%*	*6%*	Spain (17%)
From Central America	16 tonnes**	€ 33,454**	n/a	n/a	Morocco (14%)
Guatemala	*14 tonnes***	*€ 15,563***	*n/a*	*n/a*	India (11%)
Honduras	*2 tonnes***	*€ 17,891***	*n/a*	*n/a*	Falkland Islands (10%)
Fresh crustaceans					
EU 28 imports	*83,339 tonnes*	***€ 830** million*	*-3%*	*4%*	Netherlands (22%)
From Central America	n/a	€ 5,610	n/a	n/a	UK (18%)
Costa Rica	*n/a*	*€ 4,528*	*n/a*	*n/a*	USA (14%)
Nicaragua	*n/a*	*€ 1,082*	*n/a*	*n/a*	Canada (8%) Spain (7%)
Fresh fish					
EU 28 imports	*1.7 million tonnes*	***€ 10 billion***	*-3%*	*4%*	Norway (47%)
From Central America	100 kg	€ 451	n/a	n/a	Sweden (23%)
Panama	100 kg	€ 451	n/a	n/a	Denmark (8%) UK (4%)

Source: Eurostat, 2018
*Includes intra-European trade
**2015 data

Nicaragua (€ 93 million) and Honduras (€ 53 million) accounted for around 80% of total Central American supplies of frozen crustaceans to Europe in 2016, both registering annual growth in value since 2012, at 11% and 15% respectively. While Honduras almost exclusively supplies frozen shrimps to Europe, Nicaragua plays and important role both in frozen shrimp (around 60% of its supplies of frozen crustaceans to Europe) and frozen rock lobster (around 40% of frozen crustacean supplies). In fact, Nicaragua is the largest supplier of frozen rock lobster to the EU.

Other suppliers of frozen shrimps to the EU are: Ecuador, India, Argentina and Vietnam. In frozen rock lobster, and behind Nicaragua, the main suppliers to the EU are: Bahamas and Cuba.

For frozen fish, Panama (€ 30 million), El Salvador (€ 27 million) and Guatemala (€ 18 million) accounted for 85% of Central American supplies to Europe. The species supplied to Europe mainly consisted of yellowfin tuna, swordfish, skipjack or stripe-bellied bonito and bigeye tuna.

In other product categories, Central American suppliers play a modest role, registering inconsistent figures over the review period (2012-2016).

Analysis of demand per product group

Further analysis of the European market was carried out for the most important product groups, from both offer and demand perspectives: shrimp, rock lobster and reef fish. The European markets for tilapia and cobia were also investigated. The species focus has been determined through a preliminary discussion with various European importers from the United Kingdom, Belgium, Germany and Spain, which served to assess their interest in sourcing specific products from Central America. Although the tilapia market in Europe is in decline, the product was added due to its relative importance in Central America's aquaculture production.

Shrimp: The EU is the world's second largest importer of exotic shrimp. In the first three quarters of the year 2017 Europe imported more than 2.7 billion dollars' worth of exotic shrimp. In terms of value, the four main suppliers to the EU in 2017 were Ecuador, Argentina, India and Bangladesh[391]. The market demand for exotic shrimp is not the same in the entire European market. A differentiation can be made between North Western European markets and Southern European markets.

- North Western European markets (Netherlands, United Kingdom, Germany and Belgium): The North Western EU markets are price-driven markets, where quality is subordinated to price. The main exotic shrimp that is being sold is vannamei and small volumes of black tiger shrimp. The main specifications are peeled undeveined (PUD) shrimp raw or cooked. Main sources of vannamei used in these markets are Asian countries like India and Vietnam.
- Southern European Markets (Spain, France and Italy): The demand and requirements for shrimp in the Southern European markets are generally defined by its large cooking sector, which is the main market for vannamei sourced from Central America. The Southern European markets are quality-driven; with high requirements on colour and main product that is being imported are head on shell on (HOSO) shrimp in air-blast frozen or semi-individually quick frozen. For Spain, France and Italy the import of shrimp from Ecuador makes up a substantial part of shrimp imports.

Rock lobster: Rock lobster *(Panulirus argus)* is from the importer and exporter perspective very interesting due to its high price and low availability. The European market for rock lobster is a product with stable demand and quite stable price levels. European importers clearly state that, if the supply would increase, the European market could absorb more product and there is definitely unmet market demand to be covered. In almost all markets rock lobster is preferred over the Canadian lobster; however, as demand is growing and sometimes supply of rock lobster is low, Canadian lobster is considered as an alternative for rock lobster.

The main traders of Rock lobster are located in France, with a few smaller ones in countries like Netherlands, Belgium, Spain and Germany. The dominance of traders in France can be explained by the fact that rock lobster is predominantly being sold in France, taking up 60% of the total quantity sold in the entire European market.

[391] ShrimpTails magazine - March 2018, page 55-56

Nicaragua, Honduras and Belize are the most important rock lobster producers in Central America. In Nicaragua and Honduras there are two capture systems: pots/traps and scuba diving. The latter method has restrictions due to bad practices of capture, but most of the fleet that some years ago practiced that system have changed to use pots/traps, which is more sustainable, environment-friendly and safe for fisherfolk. In order to improve its possibility to be sold in the European market, investments could be done to develop fisheries improvement programs (FIPs) with companies interested and available to implement the necessary changes through the respective value chain.

FIPs for rock lobster are currently being implemented in Nicaragua[392] and Honduras[393]. Rock lobster from both countries are red listed (avoid status) by the Monterey Bay Aquarium Seafood Watch Program[394]. As such, any company that is included in the FIPs and therefore included in the process towards MSC certification would merit support. In addition, showcasing support and market potential for certified rock lobster would be an incentive for more value chain actors to want to be included in a FIP. Also note that an FIP should demonstrably make progress. Only if a FIP makes progress, it makes sense to support companies which are participating in this FIP.

Reef fish: On the European market reef fish is a niche product, popular in the ethnic markets and a selected number of food service markets. During interviews, European importers mainly mentioned their interest in snapper, grouper, tooth fish, parrot fish, barramundi, as well as the possibility to source species from Central American they are not yet familiar with.

The demand of reef fish in the mainstream European (retail) markets is lower, as issues on sustainability and traceability will need to be addressed for the retail to be able to adapt it into its regular assortments.

A distinction in demand can be made between North Western European markets and Southern European countries. The present demand for reef fish in North Western Europe is limited to ethnic local markets with their own import channels in Asia with well-established long term relationships. In these ethnic markets there is demand for snapper and tooth fish. In the mainstream North-Western European countries, the strong position and broad availability of well-known and sustainably caught fish types, such as Cod, Alaska Pollock and Hake, are likely to be the main reasons for lower demand for reef fish.

There are other importers in Northern Europe that operate more in high-end foodservice and hotel/restaurant segment of the market that are looking to diversify their sourcing of reef fish, which could be an opportunity for Central America.

On the other hand, demand for reef fish in Southern European countries seems to be more widely adopted in retail, food service and fresh markets. Since reef fish like snappers are already widely available on the fresh markets in these countries, it is more likely for the consumer to adopt reef fish in the same range more easily.

Central America has a wide range of reef fish that could be interesting for the European market, and providing possibilities for exporters in the region. Some of them are different species of groupers, snappers, snook and kingfish, among others. Some pelagic species like yellowfin tuna and dolphinfish (or mahi-mahi) are also caught in national waters of the region, and even near to the 200 nautical miles (limits of the exclusive economic zone - EEZ).

Tilapia: In the past few years, demand for tilapia has decreased quite rapidly. The current European market for tilapia is a price-driven market focused on heavily treated, low quality product. On the European market tilapia is caught between cheaper white fish alternatives like pangasius, Alaska Pollock and double frozen cod. Since tilapia is significantly more expensive than these alternatives and the image of the product has deteriorated over time, tilapia has proven to not be able to compete with traditional white fish alternatives.

The European buyers that still sell tilapia see it is as service product that they continue in their assortment to be able to offer customers a full product range. Being seen as a service product,

[392] https://fisheryprogress.org/fip-profile/nicaragua-caribbean-spiny-lobster-trap
[393] https://fisheryprogress.org/fip-profile/honduras-caribbean-spiny-lobster-trap
[394] http://www.seafoodwatch.org/-/m/sfw/pdf/reports/l/mba_seafoodwatch_caribbeanspinylobster_bahamas_belize_brazil_honduras_nicaragua_report.pdf

main trade is on small order/pallet basis to avoid stock and price devaluation risks. The markets for these limited volumes are the mainstream retail, cash & carry and food service. In the EU retail chains, tilapia is often used for promotional offers, packaging sizes are being decreased and an increasing number of retailers completely exclude tilapia from their frozen white fish assortment.

There are very few exceptions, such as the small niche market in France that imports high quality fresh tilapia directly from Brazil. This is a small niche market, with little growth potential and would only have potential for Central American suppliers as substitution for Brazil's supplies; for example during Brazil's self-imposed ban on fish and seafood exports to Europe[395].

Cobia: Cobia is a well-known product among buyers in retail and food service, but market demand is still underdeveloped. European buyers find Cobia too expensive to include the product into their assortment, since it could not compete with the price levels of well-known and sustainable wild caught white fish alternatives in the mainstream markets, as described in the next section on market trends. The alternative market for Cobia consists of high quality, high price, for the high-end market. This is a promising product to make fillets, sushi and sashimi, well appreciated for being white and firm flesh. At global level, there are very few cobia aquaculture producers. In Central America, there is an industrial company in Panama exporting cobia (Open Blue[396]).

7.1.3. Market trends

Opportunities and threats

Sustainability
Demand for sustainable fish and seafood is growing especially in Northwestern countries, but sustainability becomes increasingly more important in the Southern European and Eastern European countries as well, remarkably in retail channels. Most accepted certifications are GlobalG.A.P. and Aquaculture Stewardship Council (ASC)[397] for aquaculture and Marine Stewardship Council (MSC)[398] for wild caught fish and seafood. Organic / green leave certification is a niche market, but also well accepted in the European Union. While organic does receive a premium price, ASC/MSC certification is more a market access requirement than a premium product.

The uniformity of the European market is likely to increase further by initiatives such as the Global Sustainable Seafood Initiative[399], which will benchmark certification initiatives and offers retailers a tool to work with more than one certification initiative.

In important markets for Central America like Spain this will have a limited impact, since sustainability is not required to a large extent. However, in Western Europe it may mean that retailers will also accept Best Aquaculture Practices (BAP)[400]-certified products and producers don't necessarily have to certify with ASC anymore. BAP certification accepted by EU countries will become an opportunity when BAP and ASC are both benchmarked by Global Sustainable Seafood Initiative (GSSI)[401]. In particular, industrial aquaculture producers of shrimp and tilapia in Central America have implemented BAP, since their products are mostly oriented to international markets, thus they will be able to profit from this development.

Shrimp farming and antibiotics
As stated above, the four main suppliers of shrimps to Europe in 2017 were Ecuador, Argentina, India and Bangladesh. With respect to the increasing European demand of shrimp, new sources covering exotic shrimps are being identified.

The problems in the main sourcing countries with antibiotics and treatments resulted in European buyers actively looking for ways to change their sourcing strategies towards alternative more reliable sources. Shrimp is increasingly being adapted in the regular diet of the European

[395] https://www.neweurope.eu/article/brazil-bans-fish-exports-eu/
[396] https://www.openblue.com/
[397] https://www.asc-aqua.org
[398] https://www.msc.org
[399] http://www.ourgssi.org
[400] Best Aquaculture Practices - https://www.bapcertification.org
[401] http://www.ourgssi.org

consumers. Its market potential is therefore growing and with this, the unmet demand that needs to be covered.

Over the last 10 years, the EU Directorate-General for Health and Food Safety (DG Sante) has been increasingly focused on Indian shrimp. In 2016, the EU changed the necessary number of fish exports inspected from 10% to 50%, among other actions taken to control the export of antibiotic-contaminated shrimp to the EU. This slows the import process and raises the price of Indian shrimp in the EU. Despite these additional precautions, EU inspections still found incidents of non-compliance, triggering an EU audit and the possibility of new measures, such as 100% inspections or even an overall ban[402].

The above-mentioned development has already affected the sourcing strategies of European companies. For example, UK-based retail and foodservice customers of shellfish importer and processor Big Prawn Co have begun requesting a shift away from sourcing farmed Indian shrimp[403].

The main shift is towards Vietnam and Indonesia and, to a certain extent, to Ecuador. In general, suppliers from Central and South America cannot compete against the cheaper production costs in Asia. Also, while India exports mainly into Western Europe, Central America and South America mainly supply into Southern Europe. This is partly because of production characteristics (more HOSO[404] products for cooking markets), but also because of the language barrier at many North European importers. In general, however, the problems with antibiotics shift sourcing to "cleaner" sources, which can directly or indirectly benefit Central American suppliers.

Shrimp farming and certification
In recent years certification trademarks have become common in the mainstream market as well. This is especially true in the case of large supermarket chains in Northern and Western Europe. Currently, frequently required certificates are GlobalG.A.P. and Aquaculture Stewardship Council (ASC). GlobalG.A.P. is increasingly less relevant, while ASC is increasingly relevant. The only large buyer pushing for GlobalG.A.P. is Heiploeg. The lack of certification is not a deal breaker at this moment for being able to do business in South European countries; however, certification is becoming increasingly more important, especially in retail channels.

The availability of ASC-certified shrimp in Europe has grown fast in the past few years. They became available in the Scandinavian market in late 2014, other countries in Northern and Western Europe followed in 2015. Worldwide, in the past few years numerous shrimp farms have gained ASC certification. Examples are farms in India, Vietnam and Ecuador.

Frozen white fish and certification
Sustainability certification for white fish species is becoming increasingly important, because consumers are becoming more conscious of sustainability issues relating to fisheries and aquaculture. Sustainability certification is therefore expected to become a market access requirement throughout Northern and Western Europe; in Southern Europe, it's also increasingly important in retail channels. Marine Stewardship Council (MSC) is the most important certification scheme for captured white fish[405]. For cultured white fish, the Aquaculture Stewardship Council (ASC)[406] and Global Good Agricultural Practice (GLOBALG.A.P)[407] certification have a leading position. While GlobalG.A.P. is increasingly less relevant, ASC becomes more and more relevant.

Increasing acceptance of white fish species[408]; tilapia market shows weakness
Consumers in Europe are showing a growing interest in new and exotic white fish species, especially reef fish (grouper/snapper) and cobia. At the same time that consumer access to tropical fish products increases, there is substantial growth in demand for high quality fish. This has resulted in a wider acceptance of fish species that were relatively unknown before.

---

[402] https://seafood-tip.com/sourcing-intelligence/new-dialogue-tackle-issues-india-europe-shrimp-trade/
[403] https://www.undercurrentnews.com/2017/10/05/big-prawn-boss-sees-customers-urging-move-away-from-indian-shrimp/
[404] Head on shell on (*HOSO*)
[405] Friend of the Sea certification is under scrutiny and is only accepted in a few markets.
[406] https://www.asc-aqua.org
[407] https://www.globalgap.org/uk_en/
[408] The white fish market is consolidated and concentrates around pollock, pangasius and still to a certain extent tilapia. Willem van der Pijl, Seafood Trade Intelligence Portal

One of the recent examples is the effort to introduce cobia as a new tropical delicacy for the European market. For the coming years, however, it will probably still represent a niche product as price is high and available volumes worldwide are low. Previously, species that have successfully penetrated mainstream markets in Europe are pangasius and tilapia.

In 2015, Pangasius had a share of 9% in European imports, behind cod and Alaska Pollock (both one third of the market), and hake (14%). Tilapia takes only 2% in total European imports.

Europe is a relatively weak market for tilapia, except for the stable demand in ethnic markets (food stores for Chinese, Indian and North African customers) in countries such as the Netherlands, Germany and the UK. Other than in the retail and foodservice, where tilapia fillets dominate, this tilapia is mainly sold whole round. There could be some opportunity for Central American suppliers, especially in certain species that are being sold as whole round, but they need to be ready to compete on price with Asian suppliers. The added value for Central American suppliers is the flexibility of being able to mix different sizes in one container, and the fact that, as volumes are lower than in other Latin American countries, service is considered to be higher.

In the mainstream German market, hardly anyone eats tilapia and the rest of Europe is following. Recently in 2016, the tilapia fish aquaculture received negative attention due to the deadly Tilapia Lake Virus (TiLV). TiLV has caused great damage to tilapia fish stocks in Ecuador and Israel since 2009. The trend away from tilapias is expected to continue, also in the North American market.

7.1.4. Competition and benchmarking

Shrimp: Central America cannot compete with peeled treated shrimp products from Asia (because of price). However, they might be able to compete with head on shell on (HOSO)/ headless shell-on (HLSO) untreated products from Ecuador and Argentina.

It should be noted that Central America focuses on more quality for a higher price in European niche markets instead of high volumes for the cheapest prices and chemical inputs. It caters for a market in Northern Europe for smaller breakdowns (and not full containers) and a more customized service. This flexibility can be the competitive advantage of Central America over Ecuador in the short term. For the mid and long term it is possible to look at the refreshed market (i.e. seafood that has been frozen then thawed, or "slacked out" for resale) in North Western Europe, which is the biggest growth market with higher prices.

European buyers' perception of Central American shrimp is a high quality "clean" shrimp without any additives. In addition, one of the biggest advantages of Central American shrimp compared to Ecuador (main competitor on the market) is its wide range of sizes. However, it is expensive and coming from a source that is still in development and currently only a few certified suppliers are there. Argentinian shrimp is another species (*Pleoticus muelleri*) and wild caught shrimp, that is mainly recognized for its taste and color after cooking.

Rock lobster: Contrary to shrimp (where there is abundance in the global market), supply of rock lobster is short. Import volumes are stable and so are the prices. For many importers, rock lobster is a side business, where the competitive edge of Central America could be export of mixed containers.

Competition is coming from Canada, where cold water lobster is exported; however, competition is only significant in times when supply from rock lobster is low. In most EU countries, rock lobster continues to be preferred over the cold water lobster. The competitive edge could be on exporting mixed containers, while establishing direct export relations with European importers so as to retain part of the margin that currently goes to traders.

Tilapia: The market for tilapia is very price driven and as in the market for shrimp, the expectation is that Central American suppliers are unable to compete with the price levels from Asian suppliers. They are expected to not get the price they would need for their product. There are always specific projects and/or niche markets that could offer opportunities. Note that ASC certification doesn't particularly offer wider opportunities for Central America, since the largest Indonesian and other Asian suppliers are ASC-certified.

Reef fish: European buyers are competing with Chinese buyers for Asian reef fish. With the increased demand of China for reef fish, and the Chinese buyers being able to pay for the product,

it is almost impossible for the European buyers to continue buying Asian reef fish and they are looking for new sourcing countries for species such as snapper, grouper, tooth fish, parrot fish and barramundi. Central American suppliers of reef fish have an opportunity and highly competitive position in comparison to their Asian competitors as they can fill a demand and importers are willing to pay for good quality.

Cobia: On the mainstream market, cobia faces fierce competition from cheaper white fish alternatives like Cod, Alaska Pollack and haddock. As a premium product, European importers acknowledge its value for food service, but it has to compete with established substitutes like black cod.

In general, the competition on all mentioned fish species will come from outside Central America, and Central America is considered an alternative for existing sourcing countries. Especially for shrimp and rock lobster the market is able to absorb all volumes available, as long as it is offered at the right price (especially for shrimp). For reef fish and cobia, the same is expected; the market for tilapia is in decline.

7.2. Structure, governance and sustainability of the value chain

7.2.1. Structure

Most fisheries in Central America are semi-industrial and artisanal. Two exceptions are the tuna industry (high-level industrial activity in five of seven Central American countries – including Belize) and small pelagics[409] (mainly anchoveta and Pacific thread herring) in Panama, where only two companies are dedicated to this activity and there is no possibility for expansion.

For aquaculture, the scale and structure of production varies per product:

- Marine shrimp farms are industrial projects for exports throughout the region, some of which also have links with small producers. El Salvador is the exception, where all projects are of a small or medium scale, developed by cooperatives of ex-combatants of the armed conflict in the 80s. Their production is sold to intermediaries and direct buyers in the national market.
- Tilapia and trout farming is done industrially, on a medium and small scale. Some companies provide seeds to small producers who can swell their industrial production.

Actors in the value chain

Artisanal fisherfolk and aquaculture producers
Most Central American countries have an active artisanal fisheries and aquaculture sector, which involves communities in the most vulnerable areas of the region (example: Caribbean coast). These areas often rely on little infrastructure and resources to professionalize the sector.

Artisanal fisherfolk and aquaculture producers often supply to the local market, due to their insufficient and inadequate equipment and lack of quality control protocols and certification that meet export requirements. In the absence of a market, artisanal players are often forced to throw out part of their products (example: estimated at 15% in Guatemala) due to the lack of equipment or cold chain systems to preserve the product.

Frequently, fisherfolk use intermediaries to sell their products in the national market; intermediaries have traditionally financed the equipment needed for fishing operations in exchange for the production. Intermediaries also have a higher level of negotiation power and supply management than artisanal players. This doesn't happen in aquaculture since most producers work with their own funds.

Central America also has a number of cooperatives and associations of fisherfolk and aquaculture producers (to a lower extent), which organize and aggregate smaller players, thus offering higher volumes to the (domestic) market and improving their positioning in the chain and in the dialogue with national authorities and international organizations. Particularly cooperatives, associations or independent producers of fishing and aquaculture with better production practices have agreements with processing plants who buy their production in order to be part of the exportable offer.

[409] Found near the ocean surface or in middle depths.

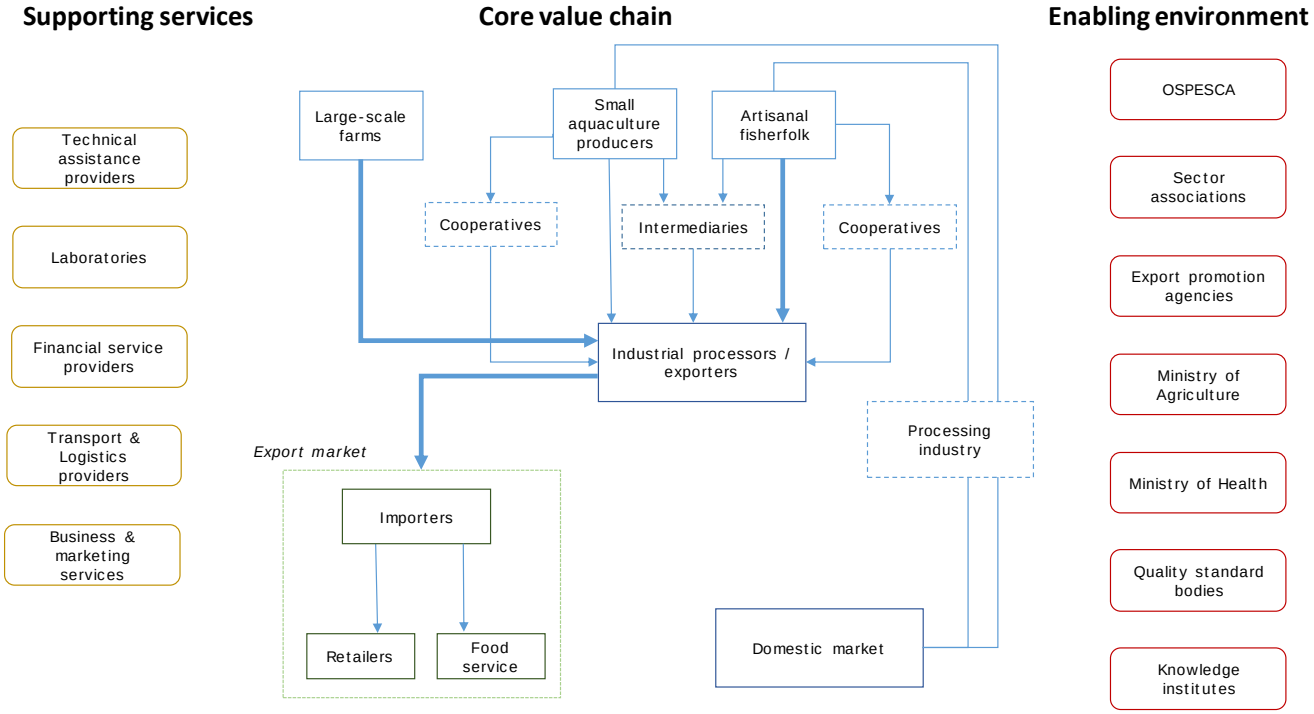
(Semi) Industrial processors and exporters
In the case of aquaculture, particularly shrimp production, producers/exporters with industrial capacities have a high level of vertical integration in their value chains. The larvae used in shrimp farms are developed in their own laboratories, production takes place in their own food safety-compliant farms, and processing takes place in their own processing plants. Exports are strongly integrated into this process.

In some cases, and in some Central American countries like Honduras, Nicaragua and Costa Rica, larger shrimp farms provide larvae, feed inputs and technical assistance to small/artisanal producers. But only in a few occasions are these small producers included in the export value chain, and are de facto suppliers to these larger industrial players. When it happens, the best proportion of their production is bought by processing plants to include it in the exportable offer.

One example of this, identified during the field research, is the cooperation between Granjas Marinas and small producer ICAMAR in Honduras. In this model, Granjas Marinas provides the inputs (larvae and feed – which accounts for 60% of the production costs), and buys the product from ICAMAR. In Nicaragua, smaller producers are often trained in Good Aquaculture Practices and are sometimes incorporated into the export chain. In El Salvador, the Ministry of Agriculture (supported by international funds), developed several plants for the production of fish larvae (in the case of tilapia, the material was imported from the UK, Costa Rica and the USA) sold to small producers at market price; however, production did not pick up.

Within the fisheries sector, semi-industrial and larger industrial players inevitably depend on fishing communities to obtain their supplies. In fact, industrials are important generators of employment in their areas of operation and, when they are interested to buy the production of artisanal fisherfolk, they provide the means of production (ice, equipment, fishing boats, etc.) for the fisherfolk to realize their fishing operations. After each fishing operation, industrial processors receive the products (preserved in ice) at their food safety-compliant processing facilities, where the products are transformed according to the target market, packaged, and finally exported.

Figure 7.1. Visual representation of the fish and seafood value chain in Central America



7.2.2. Governance

Regulating organizations
The fish and seafood sector in Central America presents three different institutional models: decentralized entities with their own infrastructure but linked to the Ministry of Agriculture (Costa

Rica), centralized directions at the Ministry of Agriculture (El Salvador, Guatemala and Honduras) and institutions of ministerial level (Nicaragua and Panama)[410].

In all cases except for Nicaragua, Ministries of Agriculture are the highest authorities representing the fisheries and aquaculture sector before the Presidency of the Republic or the cabinet council.

Country	Fisheries and aquaculture authority	Type of institution	Superior authority
Costa Rica	INCOPESCA: Instituto Costarricense de Pesca y Acuicultura	Decentralized	Ministry of Agriculture and Livestock
El Salvador	CENDEPESCA: Dirección General de Desarrollo de la Pesca y la Acuicultura	Centralized	Ministry of Agriculture and Livestock
Guatemala	DIPESCA: Dirección de Normatividad de la Pesca y Acuicultura	Centralized	Ministry of Agriculture, Livestock and Nutrition
Honduras	DIGEPESCA: Dirección General de Pesca y Acuicultura	Centralized	Secretary of Agriculture and Livestock
Nicaragua	INPESCA: Instituto Nicaragüense de Pesca	Ministerial	Presidency of the Republic
Panama	ARAP: Autoridad de los Recursos Acuáticos de Panamá	Decentralized	Represented at the Presidency of the Republic by the Ministry of Agricultural Development

The different institutions, either decentralized, centralized or at ministerial level, have similar mandates and attributes. They revolve around representing the sector nationally and internationally, generating policies, regulating and promoting the fisheries and aquaculture sectors, also focusing on sustainability/sustainable use of resources, economic development, research and partnerships. Their existence and mandates have been established by national laws, and they are closely attached to the ministries that govern them, as well as institutes and services regulating agricultural and livestock health. In most cases, these institutions also contain a steering committee/ board of directors represented by the government and the private sector. In Guatemala, for example, this is not the case, but public and private actors do coordinate and cooperate, especially with the more organized/industrial fisheries and aquaculture production.

Private sector associations and export promotion agencies

The industrial fisheries and aquaculture sector is also represented in most Central American countries by sector organizations. They represent the interests of the sector before national authorities, regional organizations as the Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA); in fact, OSPESCA has a consultative instance integrated by the Organización de Empresarios Centroamericanos de la Acuicultura y Pesca (OECAP) and the Confederación de Pescadores Artesanales de Centroamérica (CONFEPESCA), as well as other stakeholders at national and international level. The sector organizations identified during this research were:

- Nicaragua: Cámara de Pesca de Nicaragua (CAPENIC).
- Costa Rica: Cámara Nacional de Exportadores de Productos Pesqueros y Acuícolas (CANEPP).
- Panama: the Asociación Panameña de Exportadores (APEX) has a specific commission for fisheries and aquaculture, as well as the Asociación Panameña de Exportadores de Productos del Mar (APPEXMAR). In addition, the Ministerio de Comercio e Industrias (MICI) organizes the participation of companies in the Seafood Expo, in Brussels.
- Guatemala: the Asociación Guatemalteca de Exportadores (AGEXPORT) has a specific commission for fisheries and aquaculture.
- El Salvador: Cámara Salvadoreña de la Pesca y la Acuicultura (CAMPAC); Fundación Propesca El Salvador, and Asociación Salvadoreña de Acuicultores de El Salvador (ASSAL).
- Honduras: Asociación de Pescadores del Caribe (Apesca); Asociación de Pescadores Industriales del Caribe de Honduras (Apicah).

The aquaculture/shrimp sub-sector also has independent representation in some Central American countries due to their high importance to the economy. This is the case in Nicaragua (Asociación

[410] http://www.fao.org/3/a-i3757s.pdf

Nicaragüense de Acuicultores - ANDA) and Honduras (Asociación Nacional de Acuicultores de Honduras - Andah)[411]. In Nicaragua, the ANDA closely coordinates its activities with CAPENIC; for example, related to the national sector strategy.

The artisanal fisheries and aquaculture sub-sectors also have representation in some countries. It's a sector of high importance for local incomes, but with low (direct) export potential. Even though associativity among artisanal producers/fisherfolk remains limited, they are represented by local unions, federations and associations; examples:

- Nicaragua: Unión de Cooperativas de Camaronicultores; Federación Nicaragüense de Pescadores Artesanales (FENICPESCA).
- Honduras: Federación Nacional de Pescadores Artesanales de Honduras.
- Panama: Asociación Panameña de Productores de Camarones (APAPROC), focusing on small producers of marine shrimps.
- Guatemala does not have a mechanism where smaller organizations are represented; however, DIPESCA works with smaller players in technical assistance and capacity-building.
- In El Salvador, 4 different federations consolidate 110 artisanal fisherfolk and aquaculture producers, focusing on developing and creating strategies for the sector.

The export promotion agencies in different Central American countries have a mixed involvement with the fisheries and aquaculture sector. In some countries, the agencies have a special committee or department dedicated to this sector (as mentioned above, such as Panama and Guatemala), while others have no specific involvement often due to existing sector representation in other instances (example: APEN, in Nicaragua).

Regional

The regional efforts for the Central American fisheries and aquaculture sector is institutionalized within the General Secretariat of the Central American Integration System / Sistema de la Integración Centroamericana (SICA), which incorporates the Organization for the Fisheries and Aquaculture Sector of the Central American Isthmus / Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA). The regional framework covers Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, plus the Dominican Republic.
OSPESCA's aim is to promote a sustainable and coordinated development of fisheries and aquaculture in the context of the Central American integration process, defining, adopting and implementing policies, strategies, programs and projects covering regional fisheries and aquaculture. OSPESCA has both a political and technical composition, involving in its structure Ministries of Agriculture, fisheries and aquaculture authorities as well as working groups which discuss and provide technical assistance on specific subjects. Within OSPESCA, the private sector is represented in two instances: the Organización de Empresarios de la Acuicultura y la Pesca (OECAP) for the industrial sector, and the Confederación de Pescadores Artesanales de Centroamérica (CONFEPESCA) for the artisanal sector.

The regional implementation of activities follows the Política de Integración de la Pesca y la Acuicultura (fisheries and aquaculture integration policy). The current policy (2015-2025) describes topics of institutional strengthening, governance, climate change, sustainable production, security, intra and extra regional trade, as well as linkages with tourism and international relations[412].

Another regional/ inter-governmental organization of relevance to the fish and seafood sector is the Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA)[413] (with Headquarters in San Salvador, El Salvador), which focuses on phytosanitary (and animal health) and food safety issues through scientific and technical assistance. OIRSA has a specific regional programme for aquaculture and health (Programa Regional de Sanidad Acuícola)[414] and other cross-sector programmes. State members of OIRSA are represented through their Ministries of Agriculture and Livestock. OIRSA also provides OSPESCA with technical assistance in food safety and traceability.

International cooperation

OSPESCA has a complete overview of its engagement in specific ongoing projects and programmes on its website[415], thus providing a regional directory. The fisheries sector, due to its sustainability status and vulnerability, receives more interventions than the aquaculture sector − though the

[411] http://www.andah.hn
[412] https://www.sica.int/busqueda/secciones.aspx?IdItem=79009&IdCat=48&IdEnt=47
[413] https://www.oirsa.org
[414] https://www.oirsa.org/informacion.aspx?id=75
[415] https://www.sica.int/busqueda/busqueda_basica.aspx?IdCat=23&IdMod=4&IdEnt=47

artisanal acquaculture sector also benefits from interventions such as the Proyecto Alianza de Integración en la Pesca y la Acuicultura (ALINPESCA)[416] finalized in March 2018 and funded by the government of Taiwan (previously identified by CBI).

During the field research in Central America, other interesting initiatives were identified, the most relevant for CBI's programme being **World Wildlife Fund (WWF)'s Proyectos de** Mejoramiento Pesquero (PMP) (Fishery Improvement Project – FIP) de Langosta Espinosa en Honduras y Nicaragua[417]. The aim of these projects is to improve the sustainability in the capture of lobster. In Nicaragua, the project aims at implementing the Marine Stewardship Council (MSC) certification for lobster capture using sea cages/traps. This will provide a more sustainable market-oriented proposition to the region's lobster, a sub-sector marked by sustainability concerns.

Other programmes at country level have been identified. In Nicaragua, the following were mentioned in terms of targeting fishing populations in coastal areas: **IFAD's Programa de** Desarrollo de los Sistemas Productivos Agrícola, Pesquero y Forestal en territorios indígenas de' RAAN y RAAS (NICARIBE)[418] and **World Bank's Proyecto de Apoyo para el** Incremento de la Productividad, Seguridad Alimentaria y Nutricional en la Costa Caribe Nicaragüense (PAIPSAN)[419].

The United Nations Development Programme (UNDP) is also active in several programmes and projects in fish and seafood regionally and in countries like Guatemala[420].

These international cooperation initiatives and stakeholders complement CBI's initial list of international players active within the fish and seafood sector in Central America:

- The Food and Agriculture organisation of the United Nation (FAO) is very active in this sector. Its main activities comprise knowledge accumulation, knowledge networking, sharing of policy expertise, providing a meeting place for nations and implementation of knowledge in local circumstances. It supports many technical cooperation programmes in this sector in Central America. For example, in El Salvador, FAO supported the Plan de Desarrollo Sustentable de la Pesca y la Acuicultura de El Salvador[421].
- The World Wide Fund for Nature (WWF) aims to mitigate the degradation of the natural environment and to build harmony of humans with nature. It conserves natural biodiversity and promotes sustainable use of natural resources. WWF works on diverse levels: from on-the-ground reservation, through entrepreneurial cooperation to high-level advocacy. Within the water ecosystems of Central America, WWF is involved in the protection of marine turtles, Central American Reef and the sustainable catches of tuna.
- Japan International Cooperation Agency (JICA) in Central America is involved in projects on agricultural production improvement by means of grants, technical assistance and expertise. In 2005 JICA participated in a sustainable management project Fishery in the *Golfo de Nicoya* (Costa Rica) together with INCOPESCA and UNA to research the effect of fishing terms. In addition, it developed the technology to cultivate Pacific oyster (*Crassostrea gigas*) in El Salvador, until 2013.
- Spanish Cooperation Agencia Española de Cooperación Internacional (AECID) is active in Central America, for example in sustainable production issues. AECI contributed to the development of the *Plan de Apoyo de la Pesca de Centro América (PAPCA)* until 2010 through the support of SICA/OSPESCA.
- Swisscontact in Central America is mostly involved in promotion of agricultural producers and other artisans and bringing market and entrepreneurial knowledge into the region. The fisheries and aquaculture sectors belong to their focus areas.

[416] https://www.oirsa.org/noticia-detalle.aspx?id=5498
[417] http://www.wwfca.org/especies_yllugares/langosta_espinosa/ , https://fisheryprogress.org/fip-profile/nicaragua-caribbean-spiny-lobster-trap and https://fisheryprogress.org/fip-profile/honduras-caribbean-spiny-lobster-trap
[418] https://www.ifad.org/web/operations/project/id/1505/country/nicaragua
[419] http://projects.worldbank.org/P148809?lang=en
[420] http://www.gt.undp.org/content/guatemala/es/home/presscenter/articles/2017/11/23/construyen-estrategia-nacional-de-investigaci-n-marino-costera-enimc-en-guatemala.html
[421] http://www.mag.gob.sv/lanzamiento-del-plan-de-desarrollo-sustentable-de-la-pesca-y-la-acuicultura-de-el-salvador

- The Inter-American Development Bank (IDB) is active in Central America, and has been active in this sector too.
- IDH: Following the successful certification of 90% of the shrimp sector in Belize, WWF Guatemala/Mesoamerica and the IDH FIT Fund are partnering to replicate this work in the region. With financial support from the FIT Fund and technical support from WWF Guatemala/Mesoamerica and WWF Ecuador, a shrimp producer group in Honduras (Granjas Marinas Group (GGM)) have managed to obtain ASC certification of Pacific white shrimp (*Litopeneaus vannamei*) shrimp farms.
- The Centro Tecnológico del Mar / Fundación CETMAR is implementing a project to improve the situation of women in the Nicaraguan fisheries and aquaculture sector, financed by the European Union and the Spanish province of Galicia, from 2014 to mid 2017[422].
- The Government of Taiwan finances "Alianzas de Integración en la Pesca y la Acuicultura" (ALINPESCA) project with USD 2.3 million USD implemented by OSPESCA and the Central American member countries of SICA. It aims to strengthen the regional integration process, through the integration of fisheries and aquaculture institutions, artisanal fisherfolk and fish farmers of the region[423]. Taiwan also supports a tilapia farming project in Honduras[424]
- USAID and the Government of Denmark (DANIDA) have supported the shrimp farming sector in Guatemala[425].

7.2.3. Intra-regional trade

There's little activity in regional trade for fish and seafood amongst Central American countries, excluding illegal cross-border trade (example: shrimps from Honduras to El Salvador through the Gulf of Fonseca[426]). Problems in the harmonization of standards and controls by health and food safety authorities, as well as their capacities for inspection, pose one of the challenges in further intra-regional trade. It was also reported that the supposed incidence of diseases such as Infectious Hypodermal and Hematopoietic Necrosis (IHHNV), which sometimes do not cause problems at export markets, are used by Central American countries to ban imports from each other.

In regional markets, both fresh and frozen products are well accepted. Exporters sell their products in traditional markets like United States, Mexico and some Central American countries. On the other hand, Europe is perceived by the industry as an interesting market due to their prices. Sector expert Claudia Stella Beltrán Turriago points at a few trends and potential products for intra-regional trade in the initial stages of the export chain to Europe:

- Central America has interesting resources like demersal and pelagic species which still seem to be sustainable, according to recent interviews undertaken by the Centro para la Promoción de la Micro y Pequeña Empresa en Centroamérica (CENPROMYPE) project that addressed the regional value chain for these products. Upon the development of the needed changes in vessels and processing plants, this could be an interesting option to export to Europe, mostly because marine fishes account 46% of the regional fisheries and aquaculture production. The pilot project focuses on four countries: El Salvador, Honduras, Costa Rica and Panama.
- There is a possibility to integrate fisherfolk, processing plants and exporters in a regional value chain to export to Europe, taking advantage of the Association Agreement between the European Union and Central America, also because some countries (Honduras, Guatemala and El Salvador) are working to harmonize requirements at customs. Integrating these actors within an export-oriented chain would attract technical assistance and modern technology from European buyers to the entire value chain. For example, there is a possibility to integrate El Salvador's deep-water shrimps into export chains through EU-registered processing facilities in Honduras and/or Nicaragua.

[422] http://www.cetmar.org/2017/06/a-fundacion-cetmar-reune-a-mulleres-da-pesca-e-a-acuicultura-de-nicaragua-no-ii-foro-nacional-de-cooperativas-do-proxecto-nicapez
[423] http://elmundo.sv/taiwan-entrega-desembolso-para-sector-pesquero
[424] http://www.laprensa.hn/economia/972108-410/taiw%C3%A1n-apoyar%C3%A1-cultivo-de-tilapia-en-honduras
[425] See http://www.fao.org/3/a-i3757s.pdf, p. 31
[426] https://www.centralamericadata.com/es/article/home/AC_Honduras_Prdidas_por_contrabando_de_camarn

7.2.4. Sustainability of the Value Chain

In a pre-assessment phase, CBI identified different sustainability risks for the value chain according to the type of activity/industry. For fisheries, CBI identified decent work and biodiversity as being the riskier areas. In aquaculture decent work (related to health and safety of farm workers), biodiversity (mainly in terms of antibiotics use) and waste disposal have been identified as the most serious concern for the sustainability of the value chain.

Decent work
Within the fisheries sector, most decent work concerns have been found in the fishing of rock lobster. Capture has been partly done by a dangerous method of diving, which imposes a high risk on the collectors – not necessarily because of the method itself, but mainly due to bad practices adopted by scuba divers.

In Honduras and Nicaragua, lobster diving is mostly done by the ethnic group misquitos and is considered a significant social problem. It is linked with issues such as prostitution, alcohol and drugs, which are provided to fisherfolk as incentives/ compensation for the long trips on the sea. The misquitos do not usually accept help, change or interventions from the government, although they express concern about their situation and the need for assistance. Note that several international cooperation projects have worked with the misquitos ethnic group.

The USA currently wants to put restrictions on the purchase of lobster if the producers continue to use the diving method. That is why some companies have already changed their methods, but not all artisanal producers are willing to do this.

However, the sector is changing gradually through the use of cages/traps in the capture of lobsters. In Nicaragua, the WWF FIP that was mentioned previously is implementing the Marine Stewardship Council (MSC) certification for lobster capture using sea cages/traps. As also mentioned previously, this will provide a more sustainable market-oriented proposition to the region's lobster, a sub-sector marked by sustainability concerns.
Another concern within the category of decent work is the fair payment of artisanal fisherfolk; one of the issues identified herein is that high levels of intermediation in the chain lead to an unequal/unfair payment of fisherfolk for their product. However, this chain mainly relates to products that are sold in the national markets, and not to export markets.
Within the issue of health and safety of workers in aquaculture / shrimp farms, no specific issues have been identified as being risky. All export-oriented farms implement Good Agricultural Practices, which tackle these risks to a great extent.

Waste disposal
For the processing of industrial fish, shrimp and seafood products, good practices of processing, packaging and conservation are widely implemented (and certified!) in Central America. This favors not only the food and safety of the products, but also the waste disposal derived from processing.

For aquaculture specifically, the field research investigated issues such as the management of dioxin and heavy metal residues. It was clarified during a focus group in Nicaragua that the management of such residues is part of the National Waste Management Plan, required by the EU for the country to fulfill the necessary export requirements[427]. For this reason, periodic controls are made at company and sector levels. For waste management, the national waste plan required by the EU is in use. Laboratory analysis by means of samples is implemented in all production areas.

Threat to biodiversity
Illegal fishing continues to be a problem in Central America. Even in countries such as Costa Rica, where resource management and certification (MSC) practices have been widely implemented, illegal fishing activities are still reported.

In Guatemala, DIPESCA has a signed agreement with the Navy and DIPRONA (División de Protección a la Naturaleza, part of the Police) in order to be able to supervise the vessels, roads and markets, and to be able to confiscate illegally fishing product and legally act against the fisherfolk and seller. This has proven to be effective in protecting endangered species such as sailfish and even turtles.

[427] https://webgate.ec.europa.eu/sanco/traces/output/non_eu_listsPerCountry_en.htm

In Honduras, (capture) shrimp stocks in the Pacific are depleted, and represent a serious sustainability risk because it has been an important activity in Honduras. Capture of shrimps (using large nets) has also led to the by-catch of other wildlife, particularly in the Caribbean coast, where medium-sized boats are used.

In Honduras snails are also being over-exploited. They are on the list established by CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora).

In addition, rock lobster from both Honduras and Nicaragua are red listed (avoid status) by the Monterey Bay Aquarium Seafood Watch Program[428]. As a contrasting opinion, the Spiny Lobster Working Group of Western Central Atlantic Fishery Commission (WECAFC), part of the Food and Agriculture Organization of the United Nations (FAO), concluded that this fishery chain is still sustainable[429]. Nonetheless, from a sustainability risk perspective, it's highly advisable to only focus on companies that are part of an Fisheries Improvement Programme (FIP).

Within the aquaculture sector, the concerns over the use antibiotics has led to a serious discussion in the region. This discussion has led to technical improvements in the development of larvae and in the management of the shrimp farm − which often led to closing the production cycle to avoid external contamination. During the field research, we also identified a few companies which not do not antibiotics in their production process, such as Industria Camaronera del Sur (Honduras)[430] and Rainbow Export Processing Costa Rica (part of the PureShrimp Initiative, and foreign-owned)[431].

7.3. Value chain bottlenecks, risks and opportunities

7.3.1. Bottlenecks

A. Production does not meet demand

In countries such as Nicaragua, and to some extent Honduras, the traditional focus on artisanal fisheries has caused systemic constraints in reaching scale and meeting market demand. The market exists, but the product is missing.

In Nicaragua, fishing is mainly concentrated in the South of the Caribbean (the Pacific coast does not have ports or fishing infrastructure), but it has archaic methods (lack of technology) and low productivity. Market demand is reportedly high, and increasing, but there is not enough production. It is estimated that only 20% of marine resources are used. Likewise, processing plants do not operate at maximum capacities.

Within the aquaculture sector, where market demand is also increasing, there is limited capacity to expand cultivation areas for shrimp. Virtually all shrimp farms in Central America are located in environmentally-protected mangrove areas that belong to the state; environmental authorities have banned or limited the growth of farms in almost all countries. There is a limited capacity to expand cultivation areas for shrimp, thus better productivity can only be achieved through technology, food safety and good agricultural practices.

Shrimp diseases do not occur as often in Central America as in other part of the world, but they are a great risk for loss of production. Diseases which have occurred in Latin America so far are Taura syndrome (in the 90s), yellow head, early mortality syndrome, etc. These diseases do not affect the health of consumers.

B. Small producers are excluded from export market chains

In aquaculture, many small producers are excluded from the export chain. Most notably in shrimp farms, the exclusion of small producers happen through different mechanisms:

- The trend towards vertical integration of larger producers in most Central American countries has led industrial shrimp producers to close their value chains and focus on their

[428] http://www.seafoodwatch.org/-/m/sfw/pdf/reports/l/mba_seafoodwatch_caribbeanspinylobster_bahamas_belize_brazil_honduras_nicaragua_report.pdf
[429] http://www.fao.org/3/a-i4860b.pdf
[430] http://www.agrolibano.com/esp/mobile/icasur.html
[431] https://pure-shrimp.eu

own farms. Not only does this give them better control over the raw material supplies, but it also increases traceability and food safety compliance.

- The environmental protection status of mangrove areas where shrimps are produced means that only the state has ownership over the land; (renewable) concessions/grants of up to 20 years to private actors. In Honduras, only larger industrial farmers have managed to regularize their situation, whereas smaller producers remain unregularized. As such, they cannot achieve crucial market requirements like health and safety certificates. This is less of an issue in other countries in the region.
- In Nicaragua, industrial shrimp producers tend to close their chains in events of epidemies such as Infectious Hypodermal and Hematopoietic Necrosis (IHHNV), and focus on their own farms. Small producers who partly supply these larger industrial players are automatically excluded from the chain.
- Industrial players have a greater capacity to access technologies and inputs than small and medium-sized producers. This affects the ability of small producers to increase productivity and efficiency in production, which further excludes them from export chains.

In addition, events of trade restrictions (such as Mexico's recent restrictions to Honduran shrimp reportedly due to a supposed yellow head disease incidence) have led exporting companies to supply larger quantities to the domestic market, thus taking away market share from small producers.

C. Quality and food safety issues in artisanal sector

The industrial fish and seafood market is highly formalized, but there is high informality in the artisanal segment which leads to quality and food safety problems.

Even though artisanal and smaller producers work with potentially interesting species and are operating increasingly larger volumes, the quality and safety of their products are often compromised during handling processes due to insufficient quality management systems. Most risks lie in the handling of products in (street) markets, docks and informal shops, with incorrect use of ice blocks (instead of crushed ice) and tin baskets for the storage of products.

This is a result, and a combination, of: lack of business capacities and technical assistance, lack of financing and lack of quality inputs.

D. Lack of interest of fishing companies in the European market

In all Central American countries, fishing companies offer products with high potential on the European market: lobster, snapper, grouper, dorado etc. There is still, however, a lack of interest from these companies in strengthening ties with European buyers. This is due to the high level of requirements that the market demands from suppliers, which makes the European market interesting only when buyers can pay for their efforts and investment in reaching such requirements.

As a result, Central American exports are very focused on the United States, as well as regional markets such as Mexico. There is not much knowledge of direct channels with the European markets.

It was observed that particularly in Nicaragua, Honduras and El Salvador there is limited access to the European market, and this is often true also to aquaculture products. In Nicaragua, about 20% of aquaculture product exports are destined to Europe. In addition to the limitations on registration and strict control of food safety, there is a lack of familiarity with the market, and a general focus on closer markets; as mentioned above, the United States and regional markets.

In the case of Panama, the fish and seafood sector is able to be profitable and sustainable both with demersal and pelagic fish species. United States and Asia are their most important buyers, but some industrial representatives have expressed their interest in the European market.

The prices in Europe might be higher than in other markets, but the commercial advantages in supplying to this market still need to be analyzed and considered by individual companies due to the high investments and changes needed. However, industrials have expressed their interest to explore the possibility to export to Europe.

E. Lack of sustainability certification in fisheries

Central America shows good progress in regional planning and setting of national standards for fisheries (and aquaculture). Currently, the region is working to strengthen monitoring and surveillance. Within these themes, a cross-cutting issue is the lack of certification. In most Central American countries, companies involved in fisheries have had difficulties in reaching sustainability certifications.

As described previously under the section on sustainability, unsustainable fisheries are a threat to biodiversity, and several species are currently under evaluation. In such cases, certifications could address sustainability concerns and facilitate market entry, but still targeting smaller (but growing) markets which demand such certifications.

F. Weak support capacities in market information

While interest in export markets can be spurred by knowledge and familiarity of such markets, the research shows that there is institutional weakness in the provision of market information to fish and seafood companies. This is mainly caused by a low level of articulation between export-promotion agencies and the sector itself, including sector organizations. As highlighted previously, not all export promotion agencies in Central America include fish and seafood in their scope of activities, and there is little market and technical knowledge related to this sector.

As a consequence, market intelligence has been traditionally done directly by the exporting companies themselves; export promotion agencies are usually able to replicate the international market requirements, but without further details on market trends, channels and potential buyers at the product level.

G. Lack of proper financial services and governmental support

The fish and seafood sector suffers from a low level of articulation between formal financial service providers and the private sector. Financial products available currently are not suitable to the sector, and smaller players do not have financial access. Both small producers and the industrial private sector rely on very little governmental incentive.

This results in a lack of liquidity for both small and larger players to invest in equipment and technology to improve production and market positioning. For example, fisherfolk have little autonomy because, in many cases, gasoline and ice needed for fishing operations are provided by intermediaries or processing plants/exporters. In another example, the lack of financing mechanisms prevents further expansion in production of interesting species for aquaculture/cultivation such as cobia, snapper and mussels.

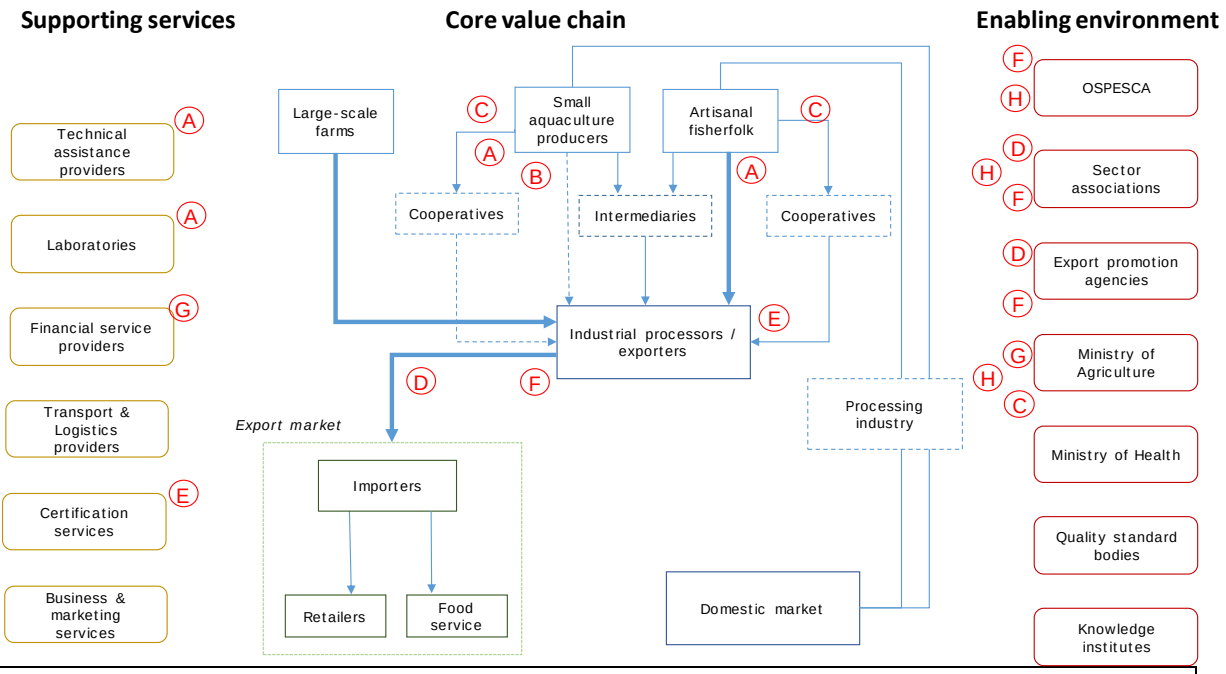
H. Insufficient implementation of sectorial strategies for fishery and aquaculture

Almost all Central American countries have consultative bodies for fisheries and aquaculture, where national authorities and private sector discuss policies and development plans. However, these policies and development plans often not fully or are only partially implemented as a market-oriented sector strategy.

In Nicaragua, for example, the sector is represented through CAPENIC at INPESCA (regulatory) and at the Comisión Nacional de Promoción de las Exportaciones (CNPE), but it is reportedly difficult for the institutions to agree on a long-term and programme-based strategy for the sector. In Costa Rica, the Plan Nacional de Desarrollo de la Pesca y de la Acuicultura[432] has been elaborated and approved by both public and private sector representatives, but its implementation has suffered from several delays.

Figure 7.2. Visual representation of the main bottlenecks on the fish and seafood value chain

[432] https://www.incopesca.go.cr/acerca_incopesca/normativa/decretos/decreto_37587-mag_plan_nac_desarrollo_pesq_y_acuicola.pdf



Bottlenecks	
(G)	*Production does not meet demand*
(H)	*Small producers are excluded from export market chains*
(I)	*Quality and food safety issues in artisanal sector*
(J)	*Lack of interest of fishing companies in the European market*
(K)	*Lack of sustainability certification in fisheries*
(L)	*Weak support capacities in market information*
(M)	*Lack of proper financial services and governmental support*
(N)	*Insufficient implementation of sectorial strategies for fishery and aquaculture*

7.3.2. Opportunities

A. Strengthening trade framework Europe – Central America

The fisheries and aquaculture sector in Central America has strong and institutionalized regional representation through OSPESCA, linked to both public and private sector actors in each country. This is the ideal space and framework to promote the opening or strengthening of trade within the framework of EU-CA Association Agreement (2012), and other advantages such as technical assistance and technology transfer. For example, OSPESCA is supporting CENPROMYPE in the development of the regional value chain of demersal and pelagic fishes. In this context, the trade framework can be optimized by opening up export opportunities to Europe and searching for technical assistance on the European market to improve production processes in Central America.

B. Strengthening ties within Central America

As much as OSPESCA provides representation for the Central American fisheries and aquaculture sector, it also facilitates sector exchange amongst different countries. This can be at a political level, but also in terms of technical exchange and knowledge transfer; example: improvement in larva production for aquaculture and harmonized health standards and controls (with potential involvement of OIRSA as regional health and safety body – within the framework of the OSPESCA-OIRSA agreement).

During the field research, a few regional initiatives were identified at the private sector level that could inspire cooperation at the institutional level; for example, in research and development of disease-resistant species. Guatemalan shrimp company Acuamaya / Mayasal, for example, has developed a larva which is resistant to Early Mortality Syndrome (EMS) which is also used in El Salvador, Costa Rica and by other shrimp producers in Guatemala.

C. There are options for inclusion of small producers in export chains

As mentioned previously, small producers (notably in shrimp production) are excluded from export chains when their products do not fulfill the quality requirements. Nonetheless, the field research showed examples of existing cooperation models between industrial and smaller producers which can be extended in the framework of an export-oriented programme. Upon the provision of proper technical assistance to achieve adequate health and food safety standards (and certification!), as well as proper inputs such as genetically-improved larvae and feed.

There is also potential to spur intra-regional trade; as mentioned previously, there is a possibility to integrate El Salvador's deep-water shrimps or demersal-pelagic fishes into export chains through EU-registered processing facilities in Honduras and/or Nicaragua.

The inclusion of smaller producers can be an interesting proposition to industrial shrimp farms. Environmental authorities in Central America have banned or limited the growth of shrimp farms in almost all countries; demand continues to grow. Therefore, shrimp farming can only grow with the expansion of greater technology and intensive cultivation.

D. Compliance to certification and health standards is high in industrial segments

Industrial processing of products from fisheries and aquaculture in Central America do not present serious quality or food safety issues. Export-oriented companies have all certificates implemented, and excellent management and maintenance of their cold chains. They also receive strict controls from their own health and safety authorities as well as from those in international consuming markets. This means that industrial segments, both in fisheries and aquaculture, represent a potential extension and replication model for the inclusion of small players into the chain.

E. There are existing Fishery Improvement Programs (FIPs) in Central America

Both in Nicaragua and Honduras Fishery Improvement Programs (FIPs) are being implemented for fisheries (specifically rock lobster), with the objective of entering an assessment for MSC certification, supported by the World Wildlife Fund (WWF). This strategy can be extended to the rest of the region.

F. Development of aquaculture cultivation and diversification

In order to increase productivity, and improve the sustainability and traceability status of fisheries products, there is potential to develop cultivation for certain species in Central America. OSPESCA is already active in this subject, and is supporting the diversification of fish and seafood farming in products such as snapper, oysters, seaweed, sea bass and shells as part of the organization's regional development strategy. Private initiatives have also been identified in the cultivation of marine species such as snappers (Nicaragua), and oysters (Costa Rica).

7.4. Possible solutions and support actions

7.4.1. Solutions and support actions

A. Inclusion of small producers in the Export Coaching Programme (ECP)

Related to constraints:

- (A) Production does not meet demand
- (B) Small producers are excluded from export market chains
- (C) Quality and food safety issues in artisanal sector
- Creating market mechanisms to tackle (G) Lack of proper financial services and governmental support

Related to opportunities:

- (C) There are options for inclusion of small producers in export chains
- (D) Compliance to certification and health standards is high in industrial segments

While CBI's Export Coaching Programmes (ECPs) traditionally involve export-ready companies, there is a business case to involve smaller producers in the upcoming programme. This is particularly the case in the aquaculture sector/shrimp production. Most industrial companies in this sector, and which would be export-ready for the programme, already have good connections to the

market and all market requirements achieved. For this reason, most support is needed among players that are not in these conditions.

Existing partnerships between smaller producers and industrial players were identified during the field research. Engagement in such partnerships, or intentions to do so, is suggested as a pre-condition for participation in the programme. In this model, the product would still be processed and exported through the industrial company, but the smaller producer would be able to supply the raw material and receive technical assistance in quality/food safety improvement, certification and marketing, thus gradually reaching higher levels of autonomy and connection to markets. At the time, the industrial shrimp producer would increase its raw material supply base and social impact, while also being able to receive individual coaching and participate in other activities in the CBI programme such as trade fairs.

B. Participation in trade fairs in Europe

Related to constraints:
- (D) Lack of interest of fishing companies in the European market
- (B) Small producers are excluded from export market chains

Related to opportunities:
- (A) Strengthening trade framework Europe – Central America

In order to optimize European market opportunities, and connect Central American suppliers to European buyers, trade fairs remain an essential part of CBI's projects. Trade fairs will also contribute to the sector's knowledge and understanding of the European market. It will also be an opportunity for industrial players to be accompanied, and transfer market expertise to, smaller players. As such, small producers should also attend these events as value chain partners rather than independent exporters. Possibly a parallel market orientation programme can be organized for smaller producers, so as to improve their possibilities to participate in the industrial value chain through training, better business opportunities, and in some cases, equipment.

The main European trade fair for the fish and seafood sector is the Seafood Expo Global, in Brussels[433].

C. Support the regional strategy for European market entry and consolidation

Related to constraints:
- (H) Deficient national sector strategies for fishery and aquaculture

Related to opportunities:
- (A) Strengthening trade framework Europe – Central America
- (B) Strengthening ties within Central America

In partnership with OSPESCA, provide technical and strategic support to compile a market-entry and consolidation strategy for the European market. Technical support from OIRSA when it comes to subjects related to food safety and health can also be optimized in this strategy, especially concerning the alignment with European legislation. The Market Intelligence materials produced in the context of proposed solution *(E)Tailored market studies and import intelligence for Central American species* could play an important role in supporting this strategy.

D. Support to the implementation of Fishery Improvement Projects (FIPs) and certification in fisheries

Related to constraints:
- (E) Lack of sustainability certification in fisheries

Related to opportunities:
- (E) There are existing Fishery Improvement Programs (FIPs) in Central America

CBI could get involved in FIPs in two ways:

[433] https://www.seafoodexpo.com/global/

- Motivating and supporting fisheries companies in the EPC to participate in FIPs or to set up a FIP. Depending on the level of development of these companies, this support may need to start at awareness raising, and reach levels of technical assistance for certification (example: MSC). This can be their pathway to market entry activities.
- Recruiting and motivating companies who are part of a FIP to be part of the ECP, and promote their sustainable solutions in the framework of the programme to incentivize other companies and to share best practices. These companies would also be part of the market entry activities of the ECP.

E. Tailored market studies and import intelligence for Central American's fish and seafood sector

Related to constraints:
- (F) Weak support capacities in market information
- (H) Insufficient implementation of sectorial strategies for fishery and aquaculture

Related to opportunities:
- (A) Strengthening trade framework Europe – Central America

In partnership with CBI's Market Intelligence platform, the ECP can compile tailored market studies to fulfill the information needs from its target group. This can be done in consultation with (and disseminated through) OSPESCA, so as to benefit a larger number of regional actors. Tailored studies can cover both product-market combinations (example: reef fish species in South European markets; rock lobster in North European markets) and/or specific marketing/market access issues (example: how to find buyers; how to develop a branding strategy, etc.).

At the same time, it's recommended to work in partnership with national export promotion agencies in developing market analysis capacities in this sector. This can be done in the framework of tailored studies, which can include a dissemination component in the target countries, thus also contributing to specific national strategies in this sector (thus supporting proposed solution *(C) Support the regional strategy for European market entry and consolidation*).

In addition to focusing the information on the export market itself, the tailored studies could be combined with Import Intelligence products that promote Central America's product offer to European buyers. This could follow the experiences in similar Market Intelligence products produced by CBI; example, in the context of the seafood programme in Peru[434]. These materials could be distributed at trade fairs and other industry events, so as to promote Central America as an origin for fish and seafood, as well as the CBI programme itself.

7.4.2. Possible participants for the CBI programme

All Central American countries are recognized by the European Union and have establishments with an EU number for fishery products[435]. This implies that exporting facilities in these countries are able to fulfill EU requirements for this sector, in particular regarding food safety. Most of these establishments can do both wild and aquaculture products:
- Panama (12 establishments - 8 can do both wild and aquaculture[436])
- Nicaragua (9 establishments - 4 can do both wild and aquaculture)
- Honduras (8 establishments - all can do both wild and aquaculture)
- Costa Rica (6 establishments - 5 can do both wild and aquaculture)
- Guatemala (5 establishments - 4 can do both wild and aquaculture)
- El Salvador (1 establishment)

The above-given list provides a non-exhaustive basis for companies which could be selected for CBI's programme. However, foreign-owned companies such as Open Blue/Ocean Farms (Panama), Pacific Seafood, Sahlman Seafoods and Grupo Farallon Aquaculture (Nicaragua), Deli, St. Peter Fish and Empacadora Litoral (Honduras), Rainbow Export Processing (Costa Rica), Industria Atunera

[434] https://www.cbi.eu/market-information/fish-seafood/peru-potential-seafood-exporter/
[435] https://webgate.ec.europa.eu/sanco/traces/output/non_eu_listsPerCountry_en.htm
[436] The remaining companies can only do wild, and not aquaculture. This remark is also applicable to the other countries. Willem van der Pijl, Seafood Trade Intelligence Portal

Centroamericana (Guatemala), Calvo Pesca (El Salvador) are automatically ineligible as participants of the programme.

Other players in the process of obtaining EU registration, and with interest in doing so, have been identified during the field research. For example, we identified a company which has already implemented food safety certification as part of its trajectory to the EU market (Nicalapia – Nicaragua[437]).

Considering these factors, a total maximum of 15 companies are estimated to be eligible for the programme.

Following the proposed solution ***"(A) Inclusion of small producers in the Export Coaching Programme (ECP)",*** industrial aquaculture companies should be required to apply in partnership with small producers for the programme. Engagement in such partnerships, or intentions to do so, is suggested as a pre-condition for participation in the programme.

In terms of gender-specific focus, there are women-led cooperatives (examples in Nicaragua's shrimp sector are: Lucrecia Lindo, Luisa Amanda Espinoza, Cooperativa 27 de Mayo; in El Salvador: Baneza Landaverde, El Sireto de R. L.), associations and small farms in Central America. Nonetheless, there is no specific women's ownership identified at the level of industrial and export-oriented companies.

In industrial aquaculture, the field research showed instances of female workforce not only in processing facilities, but also in management structure and particularly in laboratories/research departments of shrimp companies (example: Acuamaya, Guatemala[438]). When selecting candidates for the CBI programme, it would be important to look at these levels of involvement as well. In addition, there are women representing industrial fishers' organizations such as in Honduras and Guatemala.

7.4.3. Risk mitigation strategies in sustainability performance

- Decent work:
  - Particularly for fisheries: company selection for the ECP should consider companies' strategies to mitigate risks involved in fishery activities; example: risk reduction in fishing boats; use of safe equipment in reef fisheries; use of lobster traps (not diving) in lobster fisheries. Lobster: Any CBI-supported company involved in rock lobster should be or become an active participant in the existing FIPs.
- Waste disposal:
  - Compliance with the National Waste Management Plan should be checked for potential participants of the CBI programme. Especially in aquaculture, companies should be motivated to treat water before disposal. Water quality management is part of most sustainability standards, thus investing in the certification (or minimally in the implementation of certification protocols) can also contribute to tackling this issue.
- Threat to biodiversity:
  - The stock status of the different species involved in the programme will have to be checked; if there are serious sustainability concerns and there are potential ECP participants involved in these products, they should not be considered eligible. In general, the species listed on the 3 appendices of the Convention on International Trade in Endangered Species (CITES)[439] should provide a list of fish and seafood to avoid in the programme.:
    - Appendix I: includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
    - Appendix II: includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.

[437] http://www.nicalapia.com.ni
[438] http://www.acuamaya.com
[439] https://www.cites.org

- Appendix III: contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

- The CITES-listed species can be checked through the Checklist of CITES Species[440].
- Another source which compiles a list of endangered species of fish, crustaceans and other animals and plants is the page of Earth's Endangered Creatures (EEC) [441], which has a specific section on Central America. EEC acknowledges that different governments and agencies keep different endangered species lists (thus there's no official endangered species list); thus, its indication of endangered species is derived from the US Fish & Wildlife List of Endangered Species (US FWS)[442] and the IUCN Red List of Endangered Species (IUCN)[443]. Trade in the species listed herewith should be avoided.
- Any CBI-supported company involved in rock lobster should become an active participant in the existing FIPs.
- For aquaculture, the eligibility of companies should be based, among other criteria, on the implementation of Good Aquaculture Practices. Preference should also be given to companies certified with sustainability certification (or with intentions to do so).

[440] http://checklist.cites.org/#/en
[441] http://earthsendangered.com/continent.asp?view=all&ID=5&gr=F
[442] https://www.fws.gov/endangered/
[443] http://www.iucnredlist.org/

8. Conclusions

This multisectorial value chain analysis for Central America covers 5 sectors which are fundamentally diverse in terms of scale, structure, actors involved along the chain, level of regulation, market developments and channels, sustainability issues and other factors. Within each Central American country, the 5 sectors also reveal differences in the level of maturity, product range, export-readiness and export-potential, and intra-regional activities.

In the context of the INTEC project / CBI's programme, each sector has potential to generate impact in terms of increased European exports and sustainability performance by Central American SMEs, in different ways and at a different pace.

In this conclusion, the assessment of the potential impact in terms of increased exports to Europe and sustainability performance by SMEs from the Central American region, which could be brought about by a CBI programme in each sector, is consolidated according to the following elements:

- Geographical distribution in Central America
- Export potential and competitive advantage of Central America
- Number of companies involved along the value chain, especially in exports
- Value addition opportunities
- European market demand and opportunities for Central America
- Opportunities for intra-regional trade (as part of an extra-regional export value chain to Europe) and intra-regional cooperation
- Sustainability risks and opportunities
- Alignment with national strategic priorities
- Potential impact on employment generation
- Opportunities to make a positive impact on rural incomes and livelihoods

8.1. Geographical distribution in Central America

Not all value chains show sufficient export potential in all Central American countries.

Specialty coffee is the only value chain which offers sufficient export-oriented activities through the whole region. In the case of cacao and derivatives, the level of activity and export potential is still limited by cacao bean production and productivity issues (example: El Salvador), but there is generally some kind of cacao bean processing or export activities in all countries, including in El Salvador itself (chocolate manufacturing).

Fresh fruit and vegetables is relevant in most countries. Central America's production and exports of fresh fruit and vegetable (and export-competent companies in this sector) are mainly concentrated in Costa Rica, Guatemala, Honduras and, to a certain extent, in Panama. It shows little export potential in Nicaragua and El Salvador – although isolated successful cases can still be found in those countries.

Processed fruit and vegetables shows most activity, potential and enabling environment in Costa Rica and Guatemala, and mainly consist of large companies with access to large volumes of raw materials supplied by fresh fruit and vegetable producers. Individual success cases may still be found in other countries.

Fish and seafood has export-oriented activities in most countries, but shows important limitations in El Salvador – despite potential for export-chain inclusion through Honduran processors.

8.2. Export potential and competitive advantage of Central America

In the Central American coffee sector, some countries still struggle in recovering from the coffee rust, which does pose limitations to production and exports of coffee. But generally, Central America established itself along the years as one of the world's leading specialty coffee producers

and exporters. In most of the countries in the region, more than half of the coffee production can be classified as highest quality.

Central American cacao has nutty and complex flavour characteristics that are sought after in the high-quality chocolate market. The focus for Central American suppliers should be on quality (not quantity), as the region is not competitive in volume-oriented markets. However, production is low compared to other producing countries worldwide.

In the fresh fruit and vegetable sector, Central America has strong position in bananas, pineapples, melons – but these product categories are dominated by large multinationals. Nonetheless, there are existing opportunities for independent producers/exporters in niche markets such as organic. There's also potential for other products/product groups in which producers/SMEs are engaged such as leguminous vegetables, Asian vegetables, berries, avocados, sweet potatoes, exotics. Central America can take a competitive position, but prices must become more competitive, especially in relation to Asian suppliers.

Within the processed fruit and vegetable sector, Central America is already a main supplier of processed pineapple, banana, mango, (water) melon, papaya and peanuts. Central America is particularly strong in juices, frozen products and canned products. There is potential for the processing of interesting raw materials (exotic fruits, pulses, etc.), but there is lack of scale and European buyers indicate that prices are not competitive.

Honduras and Nicaragua are largest Central American exporters of fish and seafood; they take a particularly competitive position for shrimps (perceived as being of "clean" production), but are also suppliers of rock lobster, tilapia, yellowfin tuna. Panama supplies shrimps (from aquaculture and capture) to export markets, as well as frozen fish. Costa Rica (particularly for tilapia, trout, fresh/chilled fish and shrimps) and Guatemala (predominantly shrimps) also report export activities in the sector. El Salvador has an interesting domestic market, but exports (including to Europe) are mainly related to a Spanish-owned tuna company.

8.3. Number of eligible companies involved along the value chain, especially in exports

It's not possible to determine the exact number of potential participants to the CBI programme in the coffee sector, especially when considering the hundreds of cooperatives which could be engaged directly or indirectly in the programme. However, it is possible to provide an indication based on the pool of coffee exporters in different Central American countries. An initial analysis of the pool of exporters in each Central American country indicates that there are at least 20 to 30 coffee exporters in the region eligible for participation in the CBI programme.

The number of export-competent cooperatives and companies in Central America is limited for the cacao sector. The members' list of AMACACAO (consisting of 14 cooperatives and companies) provides a good point of departure to determine eligible cooperatives and companies. However, in the previous CBI Agro Food Programme, a few member companies of AMACACAO already received individual coaching; they are thus not eligible candidates. Considering other AMACACAO members, independent exporters and potential export-competent cooperatives, it can be roughly estimated that a maximum of 10 candidates would be eligible for participation in the CBI programme.

Export-competent companies within the fresh fruit and vegetable sector in Central America are mainly concentrated in Costa Rica, Guatemala, Honduras and to a certain extent in Panama. The export promotion agencies in these countries have a proper overview and access to the companies matching CBI's criteria. An initial analysis of the pool of exporters in each Central American country indicates that there are at least 20-25 eligible companies in the region. Potential product categories covered by these companies are several: bananas, pineapples, melons, watermelons, mangoes, exotic fruit, limes, yuca and other tubers, okra, leguminous vegetables, baby vegetables, zucchini, broccoli, etc.

The exporters' pool for processed fruit and vegetables in Central America is limited and mainly concentrated in Costa Rica and Guatemala; the estimated number of eligible companies to the CBI programme amounts to a maximum of 10-15 companies. The main product categories are fruit and vegetable purées, fruit pulps, frozen fruits, IQF fruits and vegetables, concentrates for food industry, juices, preserved pineapples, orange juice and citric juices. Note that several of the companies involved in this sector are large-scale companies, thus not eligible.

Currently, only a limited number of Central American companies in fish and seafood is allowed to export to Europe (i.e. have a EU registration), with a total of 41 companies. Out of this number, at least 10 are larger scale/ industrial foreign-owned companies and cannot be included in the programme. Even though it's possible that more companies obtain EU registration, the pool of locally-owned exporters is limited; roughly estimated at a maximum of 15 companies in both fisheries and aquaculture (mainly shrimps).

8.4. Value addition opportunities

Central America already has multiple-certified coffees with an extra premium. Extra value addition is possible through quality improvement and higher prices. But value addition through further processing (roasting) is not realistic in terms of exports.

Cacao provides potential in value addition processes. Currently, cacao beans are exported from surrounding countries to a professional and certified chocolate plant in Northern Honduras and processed into semi-finished products (derivatives) like liquor, butter and couverture. However, the industry is still restricted by insufficient cacao bean supplies and an immature export market for value-added cacao products. Quality improvement is also possible in terms of value addition (better prices for better qualities), mostly for producers which are currently outside of export chains.

For fresh fruit and vegetables, there are a few opportunities for value addition; it depends on the product. For example, leguminous vegetables (sugar snaps, mangetouts) are commonly shipped in retail packaging (interesting opportunity especially for Guatemala). Other innovations in storage and cooling solutions are possible. However, opportunities in pre-ripening at origin are less likely. Value addition through organic certification are relevant to small niche markets, but offer growing potential for Central America; fair trade, however, has more limited market potential.

The processed fruit and vegetable sector has the highest value addition potential among all VCs. Processing adds value to the raw material, and there's potential to differentiate entire product offers through different processing techniques. The most highly valued processing methods in Europe are those that preserve nutrients and appearance of fruits and vegetables, while maintaining a low microbiological activity.

Fish and seafood has value addition potential through further certification. However, while organic does receive a premium price, ASC/MSC certification is more a market access requirement than a premium product; value addition through further processing offers limited opportunities, except for freezing/IQF production (which is the most common way to transport fish and seafood from Central America to Europe; i.e. not fresh). For example, conserved products, such as those containing spicy ingredients, vegetables, etc., are produced by European companies themselves, so as to comply with food safety standards (full chain control) and consumer preferences in Europe.

8.5. European market demand and opportunities for Central America

European market demand offers different prospects depending on the value chain.

Specialty coffee shows a growing market in Europe, where the complex high-altitude Arabicas from Central America match the most relevant market trends.

Central American cacao also profits from a growing European market, especially due to its nutty and complex flavour characteristics that are sought after in the high-quality chocolate market. The decline of Venezuelan supplies, coupled with Ecuador's reputational problems, may provide extra opportunities to Central America, but the region's production will need to keep up with this growth.

The European market for fresh fruit and vegetables shows growth prospects for Central America. European importers foresee an ongoing growth of the market for exotic and tropical fruit in the next years, and the risk of market decline is generally very low. There's continuous demand for larger product categories like banana and pineapple, but also increasing opportunities for products such as (Hass) avocado, blueberries, exotics (examples: passion fruit, papaya, granadilla, maracuya, kiwano, cherimoya and carambola), mini-vegetables and leguminous vegetables (sugar snaps and mangetouts). Organic assortments also show potential, with examples in passion fruit, citrus, ginger and sweet potatoes.

Within processed fruit and vegetables, the product categories are diverse and offer mixed opportunities. Processors of commodities such as pineapple, banana and melons require scale to be price competitive on the European market. However, opportunities for SMEs still lie on offer interesting niche products such as healthy and exotic processed fruits and vegetables. Entry requirements are high under any circumstances; compliance requires advanced food safety and quality management systems such as ISO 22000, BRC or IFS.

The fish and seafood sector also shows a mixed record in terms of European market demand. Considering aquaculture, Central American shrimp is suitable for higher-end markets, and will have difficulties competing with cheaper-priced peeled treated shrimps from Asia. Central America's edge lie on its high-quality and "clean" shrimps, and ability to offer flexibility and customer service. Regarding tilapia, the European market is in decline and offers little growth opportunities for Central America. Opportunities for cobia are mainly concentrated around high-end, high-quality and high-priced markets. Within fishery, rock lobster offers interesting opportunities due to its high price and low availability, and Central America could compete by exporting mixed containers. However, competition comes from cold-water supplies from Canada. In addition, the product presents sustainability concerns. For reef fish, opportunities on the European market can be found mainly in niches such as ethnic markets and a limited number of food service markets.

8.6. Opportunities for intra-regional trade (as part of an extra-regional export value chain to Europe) and intra-regional cooperation

Central American countries compete for similar coffee markets in Europe. Intra-regional trade is very limited in the region, and this is not an aspect that can change in the short term. The coffee industry is highly institutionalized and regulated, and each country invests highly in promoting and positioning their origins and micro-regions on the international market. But there's potential involvement of regional organizations and platforms in the programme, most importantly PROMECAFÉ. There's also interesting potential in sharing best practices across the region; due to the high density of interventions related to the coffee sector, CBI can find partners and tools to optimize existing efforts.

The level of intra-regional trade and cooperation in cacao is the highest among the different value chains investigated, and also linked to the production of value-added cacao derivatives. Competition amongst Central American countries causes no serious issues, since cacao production is limited. The industry has organized itself around regional organizations, a milestone being the creation of the cacao sector association AMACACAO with its trademark CUNAKakaw.

Central America shows some activity in intra-regional trade for fresh fruit and vegetables. But the trade flows mainly indicate that these products are imported for domestic consumption; physical consolidation of supplies (for exports) amongst suppliers in different countries is currently not realistic. Opportunities for regional collaboration may include scientific and technical exchange.

There are very limited opportunities for a regionally-integrated export value chain for processed fruit and vegetables. Intra-regional integration requires geographical proximity among producers

of raw materials and processors and this condition only applies in few cases. High costs of transportation and long waiting times at borders further complicate regional integration of these value chains. In addition, there is no regional industry platform supporting the sector. The lack of harmonization of food safety requirements at regional level also results in fewer opportunities.

There's little activity in regional trade for fish and seafood amongst Central American countries, and most of this trade relates to illegal cross-border trade. Problems in the harmonization of standards and controls by health and food safety authorities, as well as their capacities for inspection, are an important challenge. However, there is interesting potential in integrating fisherfolk, processing plants and exporters in a regional value chain to export to Europe, taking advantage of the Association Agreement between the European Union and Central America, as well as in complementing CENPROMYPE's pilot project on regional fisheries value chains.

8.7. Sustainability risks and opportunities

In terms of its sustainability risks and opportunities, the coffee sector still presents challenges which halt its development, but which have shown important progress in recent years. An example is child labour, which has received strong attention from several initiatives in Central America involving the private sector. In terms of fair pricing to producers, the lack of minimum price-setting mechanisms and high level of intermediation still pose a challenge in rewarding producers for their coffee in some countries. The environmental impact of the sector is also negative when it comes to waste management and chemical use; in spite of existing efforts, the sector still has problems in these areas. On the other hand, the high level of shade-grown coffee in Central America mitigates the impact on forest and biodiversity.

Most sustainability risks and opportunities for cacao are related to social elements. In terms of women's representativeness, there are mixed reports within the sector. There is an evident engagement in the first steps of the value chain, and in the production of artisanal chocolate. Past reports evidence a limited role in decision-making positions, but this seems to have improved. For example, women occupy important positions in sector associations. In addition, the cacao sector shows a high level of community engagement and technical assistance to producers, particularly in chains developed for export markets in Europe. However, the research also showed that there are producing communities which remain excluded from export chains and do not profit from support. Also contributing the sustainability opportunities, the cacao sector in Central America is widely covered by certifications such as organic, Fairtrade, UTZ and Rainforest Alliance.

The overuse of agrochemicals and deforestation, the latter mainly resulting from the expansion of production areas, increase the fresh fruit and vegetable sector's sustainability risks. From the social perspective, child labour and decent work aspects also affect the value chain; the private sector is taking actions at national and regional levels to tackle these issues, though. Fair pricing and land ownership have mixed reports. The extended implementation of certifications provide opportunities to tackle the identified issues; each certification has positives and negatives: GlobalG.A.P. (food safety); GRASP (may have limited credibility for social issues), but BSCI, SMETA can be applied - or more comprehensive certifications like SA8000 or Fair trade. Rainforest Alliance and/or organic for environmental issues. Combined certification is also possible.

The processed fruit and vegetables sector presents the least sustainability risks among all value chains investigated. The fact that CSR at processing plant level is gaining importance on the European market can turn sustainability risks into opportunities. The implementation of social and environmental standards such as GlobalG.A.P. (and the add-on GRASP), Sedex Members Ethical Trade Audit (SMETA), Sure Global Fair International Raw Material Assurance and EU organic can add significant value to products.

The fish and seafood sector is highly affected by social and environmental concerns, especially fisheries (example of rock lobster: both Honduras and Nicaragua are red listed (avoid status) by the Monterey Bay Aquarium Seafood Watch Program). These can be partly addressed through FIPs and certification; but will require special attention and commitment from private sector. Aquaculture is less problematic in terms of social performance, but the exclusion of small producers

from export chains should be addressed. The environmental performance of aquaculture needs attention in terms of use of antibiotics and other contaminating residues, but Central America has good reputation among importers in this respect (example: the region's shrimp is benchmarked by its "clean"production).

8.8. Alignment with national strategic priorities

Following the coffee rust crisis, the coffee sector is even more present on the agendas of national governments, as well as in the activities of international cooperation agencies present in the region. It has also spurred research and regional cooperation, especially regarding climate change resilience and related subjects such as genetic varieties. The coffee sector is highly institutionalized.

Central American governments and other institutions have also shown increasing interest in supporting the cacao sector, but the sector remains much less regulated than other agricultural sectors such as coffee. The cacao sector has also been supported intensively in the context of private initiatives and cooperation programmes.

The fresh fruit and vegetable sector in Central America is highly influenced by government policies related to agricultural production. These policies are mainly related to exports due to various Free Trade Agreements signed by the region in the last 20 years, and partly dictate what should be produced. The ministries of agriculture in the different Central American countries play a key role in defining priority value chains and actions in national agricultural policies, in consultation with the private sector and other public institutions.

In general, the processed fruit and vegetable sector is not a priority sector for Central American governments or donors. Procomer (Costa Rica) is the only trade promotion organisation in Central America to indicate that processed fruit and vegetables (especially frozen/IQF) is a priority sector.

All Central American countries have governmental institutions specifically for the fish and seafood sector; they represent the sector nationally and internationally, generate policies, regulate and promote it, also focusing on sustainability/sustainable use of resources, economic development, research and partnerships. The industrial fisheries and aquaculture sectors are also represented in most Central American countries by sector organizations. The focus on fisheries also provides opportunities to create synergies with the CBI programme with EU-financed project implemented by ADESEP/CENPROMYPE within this sector, in terms of intra-regional and export-market focus and activities.

8.9. Potential impact on employment generation

Coffee is a labour-intensive sector along the different steps of the value chain (production, processing, exports); in Central America, coffee production and harvesting is not subject to automation. A large share of the production and harvest stages is carried out by smallholders (household economy) rather than in specialized, capital-intensive production systems. The coffee rust crisis substantiates the sector's impact on employment: According to calculations by PROMECAFE, employment in Central America decreased by 16 % in 2012−13 and by 7 % in 2013−14 due to the coffee rust epidemic. The potential for the sector to bounce back in terms of employment creation is also aligned with the ongoing recovery of production after the coffee rust crisis. It's also important to note that more capital-intensive processes such as roasting are not significant for exports to the European market.

Cacao engages thousands of small producers (and their families), commonly organized into cooperatives and secondary cooperatives. Cacao production is more labour-intensive than capital intensive, with the exception of cacao-processing into derivatives (which is still limited to one large processing plant in North Honduras). Cacao is an increasingly important source of employment in Central America, in light of increasing production, processing and exports.

Agricultural production is generally a significant employment generator in Central America. With the exception of large plantations, fruit and vegetables grown in Central America are labour-intensive crops with high potential to generate employment ; examples: leguminous vegetables, avocado, okra. Capital-intensive plantations with high mechanization and scale (examples: bananas, pineapples) are not the focus of the CBI programme.

Processed fruit and vegetables is the most capital-intensive sector in this value chain analysis. Processors use a relatively high amount of capital to apply technology for processing and packing fruits and vegetables. Nonetheless, some processes in fruit and vegetable processing such as washing, peeling, cutting and slicing still utilize significant amounts of manual labour. Moreover, women employment is relatively high in processing activities such as cutting and packing.

Note that this analysis for PFV is limited in scope to the actual processing activities, and excludes the impact on employment generation in the raw material production. When raw material production is included, the impact would be far larger.

Within the fish and seafood sector, export-oriented/industrial companies in aquaculture and fisheries are important employment generators in their areas of activity. However, most export-oriented aquaculture production is highly professionalized and capital intensive. More labour-intense, small-scale activities are currently excluded from export chains; this is one of the main sustainability challenges of aquaculture identified by the study, and also has an effect on employment generation for more vulnerable groups. Capture fisheries, however, are on average more labour-intensive than aquaculture, mainly due to the predominance of low-productivity small-scale activities of fishermen which are included in the value chain.

8.10. Opportunities to make a positive impact on rural incomes and livelihoods

Coffee has important impact on rural incomes and livelihoods, and on the general economy of Central American countries. It involves hundreds of thousands of stakeholders: (small, medium-sized and large) producers and their communities, cooperatives/ federations/ associations, local traders, processors and exporters; not to mention service providers, technicians, institutional personnel and other value chain actors. However, the research shows that several producers still struggle in obtaining a fair pricing for their coffees due to poorer qualities and indirect connection to markets.

Cacao production and exports have significant growth prospects in Central America. Cacao is grown in agro-forestry systems, and engages thousands of small producers (and their families), commonly organized into cooperatives and secondary cooperatives. It is also a natural alternative for lower regions affected by global warming, and where higher-quality coffees can no longer be produced. Many cooperatives in Central America are already starting to grow and export cacao in addition to their current core business of coffee. This transition is also increasingly receiving institutional attention. The direct integration of cacao producers and cooperatives into export chains has generally safeguarded positive impact.

The fresh fruit and vegetable sector is significant to the development of Central America's rural areas. For large plantations, the impact on incomes and livelihoods has mixed reports - unfair payments, poor work conditions, land ownership, etc. have a negative impact on individuals and communities. Higher-value, less "commoditized" crops, shift the balance of power more towards producers, and have a more positive impact on payments, work conditions, etc. (in turn reflected on income and livelihoods in rural areas).

Within the processed fruit and vegetable sector, processing industries in rural areas have a considerable impact on rural incomes and livelihoods by providing non-farm income sources in manufacturing and related activities such as trade and transport of raw materials. Although most of the labour needs of processors consist of low-skilled labour such as cutting of fruits, processors

also create jobs which require higher skills such as management and Research and Development (R&D).

In the fish and seafood sector, both fisheries and aquaculture activities bring incomes and livelihoods alternatives to (coastal) areas in Central America otherwise considered to be peripheral. There are however limitations in both fisheries and aquaculture. Work conditions in fisheries is a matter of concern, including reports of unequal/unfair payment of fishermen for their product. For aquaculture, the impact of export-related activities on small-scale producers is limited, since they have been reportedly excluded from export chains.

8.11. Scoring and sector selection

The above-mentioned conclusions have been consolidated into a sector selection matrix. Each selection criterion has been scored from 1 to 5 (1 being the lowest, 5 being the highest in terms of potential within the framework of the INTEC project / CBI's programme) for each sector / value chain. See the table below.

Processed fruit and vegetables scored the lowest among all sectors, with a total score of 27 points, and is the sector providing the least opportunities for a CBI programme in the region. The weakest aspects of this sector can be found in its geographical distribution in Central America and in opportunities for intra-regional trade. It also scored very low in terms of alignment with national priorities, due its low level of representation in terms of associations and other sector-specific organizations and policies, and potential impact on employment generation – related to its more capital-intensive character when compared to the other sectors.

While cacao and derivatives scored very low in the number of eligible companies, the sector's potential impact and market opportunities raised its final score, as well as its potential to spur regional trade and collaboration. Other sectors had more balanced scores, though fish and seafood's general scores were lower than specialty coffee, cacao and fresh fruit and vegetables. Market opportunities in Europe are narrower for this sector, and there are more sustainability risks involved – especially in fisheries.

Table 8.1. Criteria for sector selection and scoring per value chain

CRITERIA FOR SECTOR SELECTION	Coffee	Cacao	Fresh F&V	Processed F&V	Fish and seafood
Geographical distribution in Central America	5	4	3	1	4
Export potential and competitive advantage of Central America	4	3	4	3	3
Number of eligible companies involved along the value chain, especially in exports	5	1	4	2	3
Value addition opportunities (when applicable)	2	4	3	5	2
European market demand and opportunities for Central America	4	4	4	3	3
Opportunities for intra-regional trade (as part of an extra-regional export value chain to Europe) and intra-regional cooperation	3	4	3	1	4
Sustainability risks and opportunities	3	4	4	5	3
Alignment with national strategic priorities + opportunities in EEE	5	4	4	2	4
Potential impact on employment generation	4	4	4	2	3
Opportunities to make a positive impact on rural incomes and livelihoods	4	5	4	3	3
TOTAL	39	37	37	27	32

9. Annexes

Annex I. Persons, companies and organizations consulted
Annex II. Bibliography
Annex III. Revealed Comparative Advantage of selected Processed Fruits and Vegetables product groups
Annex IV. CBI definition of Processed Fruits and Vegetables

9.1. Annex I. Persons, companies and organizations consulted

For privacy reasons, the list of interviewees has been removed. For more information, please contact CBI.

List of focus groups realized in Central America

Country	Location	Date	Sectors
Honduras	Hotel Camino Real, Choluteca	28/02/2018	Fish and seafood
Honduras	FIDE, Tegucigalpa	29/02/2018	Fresh fruit and vegetables Specialty coffee Processed fruit and vegetables
Nicaragua	CAPENIC, Managua	05/03/2018	Fish and seafood
Nicaragua	CONACAFE, Managua	05/03/2018	Specialty coffee
Nicaragua	APEN, Managua	06/03/2018	Cacao and derivatives Speciality coffee
Guatemala	SIECA, Guatemala	14/03/2018	All*
Panamá	SCAP, David	19/03/2018	Specialty coffee
Panamá	CAMCHI, David	19/03/2018	Fresh fruit and vegetables Cacao and derivatives
Panamá	Cámara de Comercio de Panamá, Panamá	20/03/2018	Fresh fruit and vegetables
El Salvador	COEXPORT, San Salvador	21/03/2018	Processed fruit and vegetables Fish and seafood Cacao and derivatives
Costa Rica	PROCOMER, San José	26/03/2018	Fresh fruit and vegetables Processed fruit and vegetables

*The focus groups were realized as part of CBI's Stakeholder Conference

9.2. Annex II. Bibliography

Specialty coffee

- CBI. 2011. CV2 Cafés Especiales en Nicaragua: Análisis de la Cadena de Valor. Rotterdam: CBI.
  Retrieved from: http://www.cei.org.ni/images/export_value_coffees_nicaragua.pdf
- FEWS NET. 2016. América Central Informe Especial: El Impacto de la Roya de Café en el Sector
  Cafetalero de América Central. Haïti: FEWS NET. Retrieved from: http://fews.net/sites/default/files/documents/reports/AMERICA%20CENTRAL%20Informe%20Especial%20-%20sector%20cafetalero%20-%202016.pdf
- CIRAD and Wageningen University. 2018. Análisis Integral de la Cadena de Valor de Café en Honduras. Wageningen: Wageningen University and Brussels: CIRAD.
- FEWS NET. 2017. Informe Especial América Central: A pesar de una Recuperación Parcial, el Sector Cafetalera sigue Afectado por la Roya. Haïti: FEWS NET. Retrieved from: https://fews.net/sites/default/files/documents/reports/Centroamerica%20-%20Informe%20Especial%20-%20Sector%20Cafetalero%202017.pdf
- Icafe. 2017. Informe sobre la Actividad Cafetalera de Costa Rica. Heredia: Icafe. Retrieved from: http://www.icafe.cr/wp-content/uploads/informacion_mercado/informes_actividad/actual/InformeActividadCafetalera.pdf.pdf
- MAG. 2017. Ley para la Creación del Fondo Nacional de Sostenibilidad Cafetalera (FONASCAFÉ). San José: MAG. Retrieved from: http://www.aselex.cr/boletines/Proyecto-20485.pdf
- MARN/Adaptation Fund/UNDP. 2016. Diagnostico de la Cadena de Café: Identificación de Cadenas Ecoproductivas y su Potencial Acceso a Mercados, en la Zona del Proyecto PPRCC. Guatemala City: MARN/Adaptation Fund/UNDP. Retrieved from: http://www.marn.gob.gt/Multimedios/9809.pdf
- USDA. 2017. Coffee: World Markets and Trade. Washington: USDA. Retried from: https://apps.fas.usda.gov/psdonline/circulars/coffee.pdf

Cacao and derivatives

- CATIE. 2012. Cadena Productiva de Cacao de Honduras. Turrialba: CATIE. Retrieved from: https://www.researchgate.net/publication/255764439_Cadena_Productiva_de_Cacao_de_Honduras
- CBI. 2016. CBI Trade Statistics: Cocoa in Europe. The Hague: CBI. Retrieved from: https://www.cbi.eu/sites/default/files/market_information/researches/trade-statistics-europe-cocoa-2016.pdf
- FHIA. 2011. Memoria: 1er Encuentro de Mujeres Cacaoteras de Honduras. La Lima: FHIA. Retrieved from: http://www.fhia.org.hn/dowloads/ayuda_memoria_primer_encuentro_de_mujeres_cacaoteras_de_honduras.pdf
- MAGA. 2016. Plan Estratégico de la Agrocadena de Cacao de Guatemala 2016-2025.

Guatemala City: MAGA. Retrieved from: http://web.maga.gob.gt/download/enac16-25.pdf

- SAN/Rainforest Alliance. 2015. SAN/Rainforest Alliance Impacts Report: Evaluating the Effects of the SAN/Rainforest Alliance Certification System on Farms, People, and the Environment. New York: Rainforest Alliance and Mexico City: SAN. Retrieved from: https://www.rainforest-alliance.org/sites/default/files/2016-08/SAN_RA_Impacts_Report.pdf
- VECO Mesoamérica. 2016. Situación Actual de las Cadenas de Valor de Cacao desde una Perspectiva Regional. San Salvador: VECO Mesoamérica. Retrieved from: https://d2vmpwbfz8sj1e.cloudfront.net/sites/default/files/paragraph/attachments/analisis_regional_0.pdf

Fresh Fruit and Vegetables

- CAC. 2007. Política Agrícola Centroamericana 2008-2017: Una Agricultura Competitiva e Integrada para un Mundo Global. San José: CAC. Retrieved from: http://www.fao.org/forestry/13772-0e3d01f7a6aa2707e127bf0bc4d796edb.pdf
- Cámara del Agro. 2012. Política Laboral Sector Agro: Coincidencias Visión al Año 2021. Guatemala City: Cámara del Agro. Retrieved from: https://www.camaradelagro.org//wp-content/uploads/sites/24/2018/01/Pol%C3%ADticaLaboralCAMAGRO.pdf
- CBI. 2016. CBI Product Factsheet: Fresh Beans and Pulses in Germany. The Hague: CBI. Retrieved from: https://www.cbi.eu/sites/default/files/market_information/researches/product-factsheet-germany-beans-pulses-2016.pdf
- Center for Global Development. 2012. Competitiveness in Central America: The Road to Sustained Growth and Poverty Reduction. Washington DC: Center for Global Development. Retrieved from: https://www.cgdev.org/files/1426258_file_Competitiveness_Central_America_FINAL.pdf
- FIBL and IFOAM. 2017. The World of Organic Agriculture: Statistics & Emerging Trends 2017. Bonn: FIBl and IFOAM. Retrieved from: https://shop.fibl.org/CHen/mwdownloads/download/link/id/785/?ref=1
- MAG. 2008. Nº 34692, Establece el precio mínimo de Salida de la Caja de Banano de Exportación. San José: MAG. Retrieved from: http://www.mag.go.cr/legislacion/2008/de-34692.pdf
- OIRSA. 2016. Plan Estratégico 2015-2025. San Salvador: OIRSA. Retrieved from: https://www.oirsa.org/contenido/2017/Plan%20estrategico_segunda%20edicion_Revision%204%201.pdf
- SAN/Rainforest Alliance. 2015. SAN/Rainforest Alliance Impacts Report: Evaluating the Effects of the SAN/Rainforest Alliance Certification System on Farms, People, and the Environment. New York: Rainforest Alliance and Mexico City: SAN. Retrieved from: https://www.rainforest-alliance.org/sites/default/files/2016-08/SAN_RA_Impacts_Report.pdf
- The World Bank. 2012. Agro-Logistics in central America: A Supply Chain Approach. Washington DC: The World Bank. Retrieved from: http://documents.worldbank.org/curated/en/951661468017360643/pdf/750970WP0Agro0

00Box374299B00PUBLIC0.pdf

- USAID. 2012. Guatemala Country Development Cooperation Strategy 2012-2016. Guatemala City: USAID. Retrieved from: https://www.usaid.gov/sites/default/files/documents/1862/GuatemalaCDCS.pdf

Processed Fruit and Vegetables

- CBI. 2014. Market Competitiveness for West African Cashew Nut Kernels. The Hague: CBI. Retrieved from: https://www.cbi.eu/sites/default/files/market_information/researches/tailored-information-cashew-nut-west-africa-market-competitiveness-west-africa-europe-processed-fruit-vegetables-edible-nuts-2014.pdf
- CBI. 2017. Exporting Frozen Fruit and Vegetables to Europe. The Hague: CBI. Retrieved from: https://www.cbi.eu/node/1955/pdf/
- CBI. 2017. Exporting Fruit Juices to Europe. The Hague: CBI. Retrieved from: https://www.cbi.eu/node/2161/pdf/
- CBI. 2018. Exporting Canned Fruit and Vegetables to Europe. The Hague: CBI. Retrieved from: https://www.cbi.eu/node/1944/pdf/
- COMIECO. 2006 Reglamento Técnico Centroamericano: Industria de Alimentos y Bebidas Procesados, Buenas Prácticas de Manufactura, Principios Generales. Guatemala City: COMIECO. Retrieved from: http://www.mspas.gob.gt/images/files/drca/normativasvigentes/16RTCA67013306BuenasPracticasdeManufactura.pdf
- SIECA. 2015. Estrategia Centroamericana: De Facilitación del Comercio y Competitividad con Énfasis en Gestión Coordinada de Fronteras. Guatemala City: SIECA. Retrieved from: http://www.sela.org/media/2463734/estrategia-centroamericana-de-facilitacion-de-comercio.pdf
- The World Bank. 2012 Road Freight in Central America: Five Explanations to High Costs of Service Provision. Washington DC: The World Bank. Retrieved from: http://documents.worldbank.org/curated/en/558341468242387382/pdf/751000WP0Road000Box374299B00PUBLIC0.pdf
- The World Bank. 2012. Desarrollando el Potencial Exportador de América Central, Liberando el Potencial a Nivel Sectorial: Análisis de Cadenas de Valor. Washington DC: The World Bank. Retrieved from: http://documents.worldbank.org/curated/en/722091468012645548/pdf/839270WP0Vol020Box0382116B00PUBLIC0.pdf

Fish and seafood

- FAO. 2014. Contribución de la Pesca y la Agricultura a la Seguridad Alimentaria y el Ingreso Familiar en Centroamérica. Panama City: FAO. Retrieved from: http://www.fao.org/3/a-i3757s.pdf

- MAG. 2013. Decreto Nº 37.587, Plan Nacional de Desarrollo de la Pesca y la Acuicultura. Costa Rica: MAG. Retrieved from: https://www.incopesca.go.cr/acerca_incopesca/normativa/decretos/decreto_37587-

mag_plan_nac_desarrollo_pesq_y_acuicola.pdf

- Monterey Bay Aquarium Seafood Watch. 2013. Caribbean Spiny Lobster, Bahamas, Belize, Brazil, Honduras, and Nicaragua: Traps, Diving with Use of Casitas. California: Monterey Bay Aquarium Seafood Watch. Retrieved from: http://seafood.ocean.org/wp-content/uploads/2016/10/Lobster-Caribbean-Spiny-Bahamas-Belize-Brazil-Honduras-Nicaragua.pdf

9.3. Annex III. Revealed Comparative Advantage of selected Processed Fruits and Vegetables product groups

Revealed Comparative Advantage (RCA(of selected Processed Fruits and Vegetables product groups in Central America, according to the CBI Value Chain Selection documents:

Product group	Product	Countries with RCA in product
Fruit Juices	Pineapple Juice, not fermented or spirited	Honduras El Salvador Costa Rica Panama
	Tomato Juice, not fermented or spirited	Honduras Guatemala El Salvador
	Single Fruit, veg Juice Nes, not fermented or spirited	Costa Rica El Salvador Guatemala
Canned F/V	Palm hearts, otherwise prepared or preserved	Guatemala Costa Rica
	Fruit, Edible Plants Nes Otherwise prepared/preserved	Guatemala Costa Rica
Frozen Fruits/Vegetables	Peas (and snaps) Frozen, uncooked steamed or boiled	Guatemala
	Vegetables Frozen Nes, uncooked steamed or Boiled	Guatemala
	Frozen pineapple, berries, mango, avocado, banana *(mentioned in peergroup)*	N/A
Purees/pulp	Mango Pulp *(mentioned in peergroup)*	N/A
	Banana Puree *(mentioned in peergroup)*	N/A
Dried fruit	Dried avocado, banana, tomato. *(mentioned in peergroup)*	N/A
	Dried superfood *(mentioned in peergroup)*	N/A
Edible nuts	Maya nuts (*mentioned in peer group*)	N/A
	Ground nuts (*mentioned in peer group)*	N/A
	Cashew Nuts *(mentioned in peer group)*	N/A
	Macadamia *(mentioned in peer group)*	N/A

Source: CBI VCS documents

9.4. Annex IV. CBI definition of Processed Fruits and Vegetables

dried fruit and vegetables	80111	Desiccated coconuts
	8030090	Dried bananas
	8041000	Dates
	8042090	Dried figs
	80620	Dried grapes and currants
	81310	Dried apricots
	81320	Prunes
	81330	Dried apples
	081340, 08135012/ 15/19/91/99	Other dried fruit and mixtures
	200600	Candied fruit
	71220	Dried onions
	71231	Dried mushrooms of the genus Agaricus
	071230, 071232, 071233, 071239	Other dried mushrooms
	07129019/30/50/90	Other dried vegetables and mixtures
	7131090	Dried peas
	71320	Dried chickpeas
	71331	Dried mung beans
	71332	Dried adzuki beans
	71333	Dried kidney beans
	71339	Other dried beans (Vigna and Phaseolus)
	71340	Dried lentils
	71350	Dried broad beans
	07139000/90	Other dried leguminous vegetables
fruit juices and concentrates	200911/12/19	Orange juice
	200921/29	Grapefruit juice
	200931/39	Juice of any other single citrus fruit (other than orange or grapefruit juice)
	200941/49	Pineapple juice
	200950	Tomato juice
	200961/69	Grape juice
	200971/79	Apple juice
	20098032/33/34/36/ 73/83/84/85/88/97	Juice of tropical fruit
	20098011/19/35/38/ 50/61/63/69/71/79/ 86/89/95/96/99	Juice of any other single fruit or vegetable
	200990	Mixture of juices
canned fruit and vegetables	20019010/91/97	Pickled fruit
	200820	Pineapples
	200830	Citrus fruit
	200840	Pears
	200850	Apricots
	200860	Cherries
	200870	Peaches including nectarines
	200880	Strawberries

	200892, 200899	Mixtures and other
	20011000	Pickled cucumbers and gherkins
	20019020/30/40/50/60/65/70	Other pickled vegetables
	200210/90	Tomatoes
	200310/20/90	Mushrooms
	200510	Homogenised vegetables
	200540	Peas
	200551/59	Beans
	200560	Asparagus
	200570	Olives
	200580	Sweet corn
	200591/99	Other canned vegetables and mixtures
	200891	Palm hearts
frozen fruit and vegetables	81110	Strawberries
	081120	Raspberries, blackberries, mulberries, loganberries, black, white or red currants, gooseberries
	71021	Peas
	71022	Beans
	71029	Other leguminous vegetables
	71030	Spinach
	71040	Sweet corn
	071080/90, 200490	Other frozen vegetables and Mixtures
jams, jellies, purees and marmelades	200710	Homogenised preparations
	200791	Citrus fruit, not homogenised
	200799	Other jams, jellies, purees and pastes
	20079910	of Plums and prunes, sugar > 30%
	20079920	of chestnut, sugar > 30%
	20079931	of cherries, sugar > 30%
	20079933	of strawberries, sugar > 30%
	20079935	of raspberries, sugar > 30%
	20079939	other, sugar > 30%
	20079950	sugar 13%-30%
	20079993	of tropical fruit and nuts, with other sugar content
	20079997	other, with other sugar content
Edible nuts	080121, 080122	Brazil nuts (in shell and shelled)
	080131, 080132	Cashew nuts (in shell and shelled)
	080211, 080212	Almonds (in shell and shelled)
	080221, 080222	Hazelnuts or filberts (in shell and shelled)
	080231, 080232	Walnuts (in shell and shelled)
	80240	Chestnuts (in shell and shelled)
	80250	Pistachios (in shell and shelled)
	080260, 08029060	Macadamia nuts (in shell and shelled)
	08029010/20/30/50/85, 200819, 08135031/39	Other nuts and mixtures
	120210, 120220, 200811	Groundnuts (in shell, shelled, preserved)