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Country Coffee Profile: El Salvador

Background

In accordance with the objectives of the International Coffee Agreement 2007, the International Coffee Organization is required to act as a centre for the promotion, collection, dissemination and publication of economic, technical and scientific information, statistics and studies, as well as the results of research and development relating to coffee matters. With regard to those provisions, the Secretariat has worked in conjunction with the Salvadorean Coffee Council to produce the Country Coffee Profile for El Salvador.

Action

The International Coffee Council is requested to note this document.



COUNTRY COFFEE PROFILE EL SALVADOR



SALVADOREAN COFFEE COUNCIL



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PREFACE

This profile on the coffee sector in El Salvador is the first in a series of country coffee profiles which the ICO is launching in line with the Programme of Activities for coffee year 2015/16. This profile also meets one of the objectives of the International Coffee Agreement 2007, specifically collecting, disseminating and publishing economic, technical and scientific information, statistics and studies.

On this basis, I have provided guidelines to be used as a framework for this series, which aims to provide comprehensive and current information on the coffee sector in specific countries. These profiles are extremely important in improving the visibility of the world coffee economy and identifying key trade flows.

I would like to thank H.E. Mrs Lidia Elizabeth Hayek Weinmann, Ambassador of El Salvador to the United Kingdom, for her consistent support; Mr José Hugo Hernández, Executive Director, and Mr Tomás Bonilla, Head of Economic Studies and Coffee Statistics, from the Salvadorean Coffee Council for preparing the first draft of this report, in addition to a series of supplementary and supporting documents. Likewise, I would also like to thank the ICO Secretariat for editing the text and collaborating with the coffee authorities in the preparation of the Country Coffee Profile for El Salvador.

It is my sincere hope that this profile will be of interest and value to our Members, as well as all other stakeholders working in the field. Finally, my staff and I remain open to any observations and suggestions that will assist us in increasing the accuracy and value of the document in the future. I am confident that the wealth of information contained in this publication, and those to follow in this series, will provide delegates, researchers and readers with a better understanding of the dynamic nature of the coffee industry worldwide.

Robério Oliveira Silva
Executive Director
International Coffee Organization

FOREWORD

Coffee was first introduced in the mid-18th century, but it was only 100 years later under the government of Captain-General Gerardo Barrios that it received the consistent backing that led it to become the country's chief product and the driver of economic growth since the end of the 19th century. El Salvador has six coffee-producing mountain ranges: Alotepec-Metapán, El Bálamo-Quezaltepec, Apaneca-Ilamatepec, Chinchontepec, Tecapa-Chinameca and Cacahuatique, producing Arabica coffees.

El Salvador's coffee is established on the international market as a high-quality product. In crop year 2014/15, 70% of exports were for differentiated coffees purchased chiefly by the United States, Europe, Japan and Canada.

One of the current aims of the Government of El Salvador is to renew around 30% of the coffee plantations to ensure resilience to climate change. It is pursuing that aim through the Salvadorean Coffee Council, an independent public body responsible for coffee policy and activities related to the coffee industry.

This publication provides a detailed picture of the coffee sector in El Salvador. It is, therefore, a source of information and will be of use for analysis by the specialists in the field and all those who are interested in our coffee sector. I would like to thank the Executive Director of the ICO and his staff for their effort and undertaking setting up this country profile. We trust and hope that it will be useful and informative to a widespread readership.

José Hugo Hernández
Executive Director
Salvadorean Coffee Council



1. BACKGROUND

1.1 Geographical setting

Located in Central America, El Salvador covers an area measuring 20,740 km², and its capital is San Salvador (see Fig. 1). To the west, it has borders with the Republic of Guatemala, to the north-east the Republic of Honduras, to the east the Republics of Honduras and Nicaragua and to the south the Pacific Ocean.

El Salvador has a population of 6.3 million (2014 figures) of which 52.9% are women and 47.1% men; the population density is 304 inhabitants/km² (the highest in Latin America) and the average population growth rate is 0.6% per annum.

The country's language is Spanish. The political administration of the country comes under the responsibility of three state bodies or powers: the legislature, the executive and the judiciary.

The territory is divided into 14 departments, 39 districts and 262 municipalities; the most important cities apart from the capital are: Santa Ana in the western area, San Miguel in the eastern area and Santa Tecla in the centre.

El Salvador has a tropical climate and experiences similar temperatures throughout the year. However, due to the presence of its Pacific Ocean coastal fringe, there are significant annual variations due to the sea breeze, which brings in moisture and heat.

Figure 1: Map of El Salvador



1.2 Economic setting

El Salvador's economic activity is classified into 12 major sectors of which the most salient are trade, manufacturing and agriculture. In 2014, these sectors combined contributed 50% to the gross domestic product (GDP). Other major sectors are services, transport and communications, and housing rentals.

The legal tender is the US dollar, and the country's principal trade markets are the United States and the Central American countries. The chief destinations for trade in coffee are the United States, Europe, Japan and Canada.

Most important economic indicators

INDICATOR	2010	2011	2012	2013	2014	2015
Population (million)	6.2	6.2	6.2	6.2	6.3	6.3
Men	2.9	2.9	2.9	2.9	3.0	3.0
Women	3.3	3.3	3.3	3.3	3.3	3.3
GDP (US\$ million)	9,076.0	9,277.2	9,451.7	9,626.3	9,763.5	10,003.2
GDP per capita (US\$)	1,465.5	1,486.9	1,502.7	1,517.4	1,525.2	1,548.4
GDP growth rate (%)	1.4%	2.2%	1.9%	1.8%	1.4%	2.5%
Interest rate (%)	3.0%	2.2%	3.0%	3.7%	3.9%	4.5%
Inflation (%)	1.2%	5.1%	1.7%	0.8%	1.1%	-0.7%
Total exports (US\$ million)	3,363.6	3,754.2	4,102.6	3,801.8	3,985.3	3,947.5
Agricultural share of GDP (%)	12.6%	12.8%	12.3%	12.4%	12.2%	12.2%

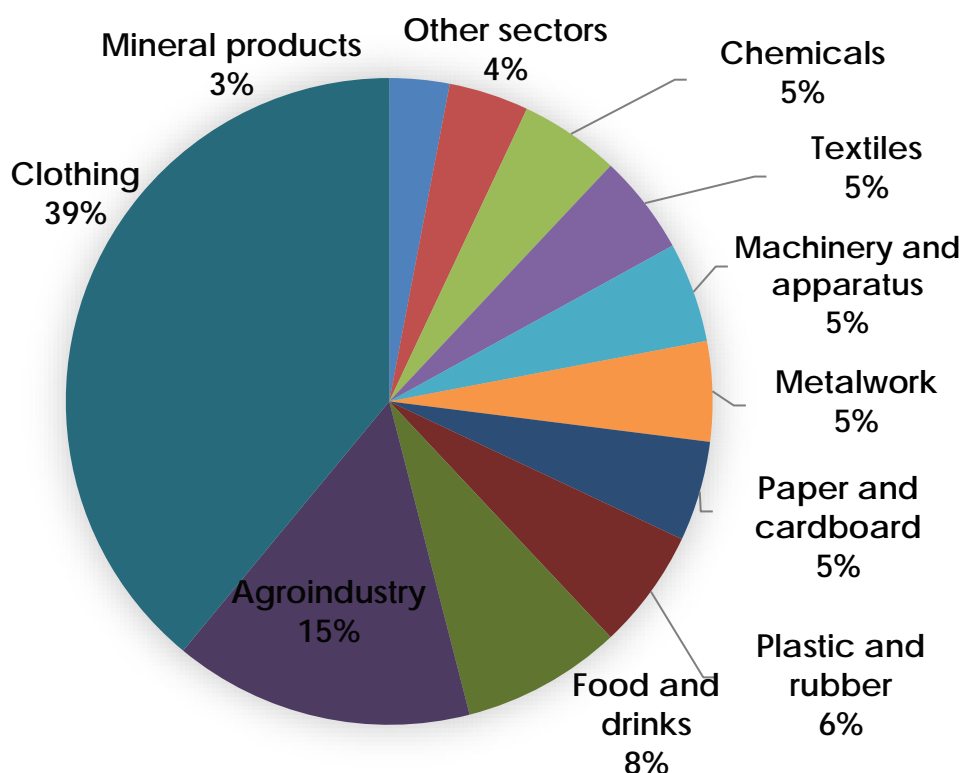
Source: Central Reserve Bank of El Salvador (BCR) and Economic Commission for Latin America and the Caribbean (ECLAC)

* Current figures

** Interest rate for one-year deposits

The pie chart below shows the principal export sectors at the present time; coffee is included under 'Food and drink'.

Graph 1:



* 2014 figures

Until the early 1990s, coffee was the main export currency earner, accounting for 40% of total export earnings. Subsequently, with the boom in the processing industry, the drop in international prices and falling production, its contribution has gradually fallen to around 5% on average during the past five years.

1.3 Summary of coffee history in the country

Coffee was first brought into El Salvador in 1740 from the Caribbean islands. The first plants were grown in the western departments of the country and in La Libertad. At the time, the economic potential of coffee-growing was completely unknown.

It was only in the 1860s and 1870s that coffee received strong support from the government in office. The first president to openly encourage coffee-growing was Gerardo Barrios (1859 to 1863). The first exports of Salvadorean coffee took place in 1855/56 consisting of 695 60 kg bags.

Since its economic take-off in 1864, coffee has been a source of work for rural workers. Coffee-growing required a communications and transport infrastructure, which led to the establishment of the rail network in 1889; inter-city roads were also considerably improved, especially in the western and central areas of the country. Coffee-growing led to improved communications which, in turn, enhanced the country's development.

In the 19th century, Arabica coffee was grown in El Salvador. Tree density was relatively low (fewer than 1,300 trees per hectare), and there was virtually no fertiliser, but this was irrelevant because most of the land was virgin territory and contained sufficient natural nutrients.

In the 1930s, there was considerable support for coffee-growing, and the sowing in new coffee-growing areas was encouraged, helped by a favourable credit policy for growers.

Modernisation of coffee-growing began in the 1950s; riding the wave of the high prices on offer at the beginning of the decade, growers began to replace the Arabica species with its cultivar, Bourbon, to use chemical fertilisers, to manage the shading of coffee plantations in different ways, to adopt new pruning methods, to introduce anti-erosion practices and to increase plant density. In the 1960s, coffee plantations contained an average of 2,850 plants per hectare, a fact which, coupled with increased fertilisation and promotion of modern cultivation practices by the Coffee Research Institute of El Salvador (ISIC), led to greater productivity, which itself helped to ensure that profitability was maintained despite the fall in prices during that decade.

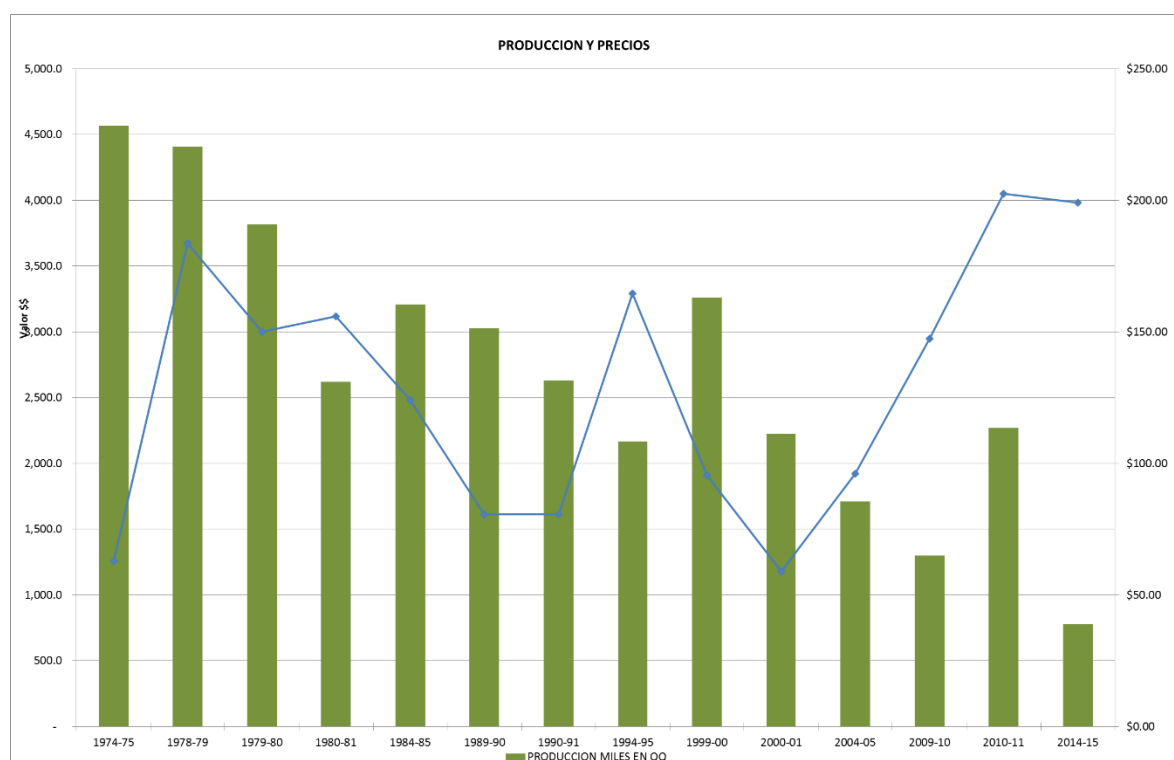
The political and social stability enjoyed by the country during that decade coupled with the profitability of the crop were determining factors in the country's industrialisation during that period.

The intensification of coffee-growing continued, spurred on by high prices in 1975 following heavy frosts in Brazil. The Pacas variety was widely planted, and the use of chemicals proliferated. At the end of the decade, the national average was 5,700 plants/ha. That decade saw the highest-ever outputs; in 1978/79, production was around 3.5 million 60 kg bags, whereas, in 1974/75, production stood at around 3.8 million bags.

The internal civil strife in the 1980s had a drastic effect on the country's economic activity and output, with coffee being one of the worst hit sectors, where production fell by an average of around 25%. In the early 1990s, with the collapse of the ICO's export quota system, there was a huge fall in prices; production was unable to recover, and output remained at around 2,3 million bags during that decade, in addition to which coffee plantations were becoming increasingly old (more than 30 years on average).

The prolonged low price crisis at the beginning of the current century led to a further considerable drop in production, which reached levels of 1.4 million bags due to the abandonment or lack of maintenance of coffee plantations and the continued ageing of plantations. A fierce attack of rust fungus led to a dramatic fall in crop year 2013/14 to just over half a million bags, although the figure improved over the two subsequent crop years.

Graph 2: Production and prices



1.4 Geographical distribution of coffee production

See below the map showing coffee production by mountain range and information on altitude and varieties (an enlarged version is contained in the Annex):

Figure 2: Coffee-growing areas in El Salvador



Main coffee-producing areas

1. Mountain range Apaneca-Ilamatepec
2. Mountain range Quetzaltepec-Bálsamo
3. Mountain range Chichontepec
4. Mountain range Tecapa-Chinameca
5. Mountain range Cacahuatque
6. Mountain range Alotepec-Metapán

Altitude



LOWLAND

(Central Standard-CS):

Produced between 600 to 800 m a.s.l.

MEDIUM HEIGHT

(High Grown-HG):

Produced between 800 and 1,200 m a.s.l.

ESTRICT HEIGHT

(Strictly High Grown-SHG):

Produced between 1,200 and above m a.s.l.

VARIETIES

Bourbon

Pacas

Pacamara

Others

Main Coffee-producing Areas	Varieties	Altitude	Area (ha)	% (ha)
Mountain range Apaneca-Ilamatepec	64.2% Bourbon 25.6% Pacas 10.2% Mixture of Bourbon, Pacas and others	From 500 to 2,365 m a.s.l. (1,640 – 7,759 ft)	66,550	50.1%
Mountain range El Bálsamo-Quezaltepec	51.8% Bourbon 22.5% Pacas 25.7% Mixture of Bourbon, Pacas and others	From 500 to 1,960 m a.s.l. (1,640 – 5,430 ft)	37,545	28.3%
Mountain range Chichontepec	71.7% Bourbon 7.4% Pacas 20.9% Mixture of Bourbon and Pacas	From 500 to 1,000 m a.s.l. (1,640 – 3,280 ft)	6,075	4.6%
Mountain range Tecapa-Chinameca	69.5% Bourbon 22.2% Pacas 8.3% Mezcla de Bourbon and Pacas	From 500 to 2,139 m a.s.l. (1,640 – 7,017 ft)	15,705	11.8%
Mountain range Cacahuatique	65.3% Bourbon 20.6% Pacas 14.1% Others	From 500 to 1,663 m a.s.l. (1,640 – 5,456 ft)	4,815	3.6%
Mountain range Alotepec-Metapán	30% Bourbon 50% Pacas 15% Pacamara 5% Others (Catuaí y Catimor)	From 1,000 to 2,000 m a.s.l. (3,280 – 6,561 ft)	2,200	1.7%

The principal varieties are Bourbon, which covers around 64% of the area under cultivation, followed by Pacas (a Bourbon cultivar) covering 28%, followed by a group of varieties, each of which covers 2% or less of the total area, namely: Pacamara, Cuscatleco, Catimor, Catisic and others.

2. COFFEE PRODUCTION

2.1 Types of coffee and areas of coffee-growing

All of the coffee produced in El Salvador is of the Arabica species.

Types of coffee are classified according to the following system:

According to height above sea level:

- Central Standard (CS), up to 800 m a.s.l.
- High Grown (HG), between 800 and 1,200 m a.s.l.
- Strictly High Grown (SHG), above 1,200 m a.s.l.

Differentiated or speciality coffee:

- Gourmet (certified by the Council)
- Fine
- Organic
- Sustainable (Rainforest Alliance, 4C)
- Fair Trade
- Natural speciality coffees

Processed

- Roast and ground
- Soluble

Section 10.1 of this document lists the volume and value of exports according to quality or type of coffee.

The growing areas are the six mountain ranges listed before.

2.2 Production systems

- All coffee plantations are grown under shade.
- Irrigation systems are not used in coffee-farming.
- The system of production depending on the size of the estate is the same for all of them, with slightly better management on large estates.
- The nursery system mainly involves individual proprietors or undertakings which are not part of the production chain, although there are some large producers and also cooperatives growing and processing coffee which produce their own nurseries.
- The average plant density on farms, that is, the distance between rows is 1.67 m x 1.67 m = 3,575 plants/ha.
- The crops can be grown with other edible crops, mostly musaceous plants or avocados, but the practice is not widespread on plantations.
- As mentioned above, the main coffee varieties grown are Bourbon and Pacas. To a lesser extent, there are plantations with Pacamara and Catimor (Catisic, Lempira, etc.), Sarchimore (Cuscatleco, Parainema, etc.) and Arabusta (Icatú).
- Pruning systems include multiple vertical pruning, cutting hard back and, in certain specific areas, training the shrubs as you would for grapevines.
- The type of fertilisers used depends on soil analyses.
- The use of pesticides is based on pest sampling to determine the type of pest and the level of infestation; using this information, an appropriate product and application rate are chosen to combat the pest identified (following calibration of equipment).
- Once weeds have been identified and the equipment has been calibrated, weeds are sprayed with the appropriate herbicide at the relevant application rate.
- Management of disease and insect pests is carried out on the basis of samples taken, and Integrated Pest Management (IPM) is carried out to an appropriate level, depending on the pest identified. The IPM determines the methodology to be used, which may be agronomic, mechanical or physical, ethological, biological or chemical.

2.3 Coffee season

- One-year-old seedlings are usually planted between May and July.
- Harvesting takes place between October of one year and March the following year.
- Various farm-management activities are conducted during the remainder of the year, such as coffee-tree pruning, shading, fertiliser treatment and pest control.

2.4 Farm size

Size	Natural persons		Legal persons	Area under cultivation (ha)	% share of area under cultivation
	Men	Women			
0.01 – 3.50 ha	10.943	5.987	57	18.399	13.8
3.51 – 7.00 ha	1.056	566	50	15.437	11.6
7.01 – 17.50 ha	315	202	199	18.049	13.6
17.51 – 35.00 ha	737	512	129	8.492	6.4
35.01 – 70.00 ha	139	78	180	19.674	14.8
Over 70 ha.	79	47	262	52.839	39.8
TOTAL	13.269	7.392	877	132.890	100

Forty per cent of the area where coffee is cultivated, is located on farms smaller than 17.50 ha. It should also be noted that there are no multinational coffee-growing companies in the country as they are only in coffee export activities.

2.5 Yields

The average number of plants for smallholders is 3.000/ha, with a yield factor of 5 to 7 bags/ha (300 to 420 kg/ha). In estate farms and companies, the average number of plants is between 3.500 and 4.000 plants/ha and yield is 8 to 12 bags/ha (480 to 720 kg/ha). There are some exceptions where yield is above 18 bags/ha (1.08 tonnes/ha), but they are very few and far between.

2.6 Other characteristics of coffee-growing

Around 33% of national coffee output is certified as sustainable by organizations such as the Rainforest Alliance and the 4C Association Code of Conduct, which regulate the use of agrochemicals. Additionally, close to 2% of coffee is certified as organic where no agrochemicals are used at all; a similar share falls under the Fair Trade classification.

Generally speaking, El Salvador complies with international standards on the use of agrochemicals with no claims in this respect in its main coffee markets.

2.7 Volume of production (60 kg)

Month	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
October	35,960	101,170	140,735	9,475	62,740	35,410
November	386,275	328,485	407,115	54,685	193,400	193,390
December	561,250	361,525	380,935	214,210	221,390	161,890
January	379,365	231,755	85,310	147,180	121,185	83,565
February	189,480	74,275	63,495	42,410	42,135	39,400
March	73,595	34,885	25,000	21,120	16,145	13,575
April and May	247,035	31,670	36,995	7,230	12,120	15,970
Total	1,872,960	1,163,765	1,239,585	506,310	669,115	543,200

The forecast for the next harvest is not yet available, but initial projections indicate that it could be close to one million bags, barring any problems.

The production structure is focused on smallholdings – over 86% of producers have 7 ha or less under cultivation. However, they contribute to only 20% of production.

The group of producers with coffee areas measuring over 70 ha contribute 40%; this group includes companies, which account for around 28% of national production.

2.8 Gender gap

As the table in point 2.4 shows, in terms of ownership and gender, 34% of all producers are women, 62% are men and 4% are companies and cooperatives.

3. PRODUCTION COSTS DURING THE LAST FIVE YEARS

3.1 Establishment costs/initial investments

Below is a detailed estimate of the establishment cost for one hectare of coffee over five years taking into account major factors such as climate, agronomy, workforce and the environment. Values are indicated in US dollars.

Variable	2011/12	2012/13	2013/14	2014/15	2015/16
Inputs	2.152,00	2.152,00	2.300,00	2.300,00	2.350,00
Labour	3.145,00	3.165,00	3.158,00	3.163,00	3.165,00
Administration	68,00	70,00	72,00	72,00	74,00
Others (Interests, unforeseen events, etc.)	490,00	508,00	510,00	510,00	516,00
Total	5.855,00	5.895,00	6.040,00	6.045,00	6.105,00

3.2 Annual production costs

The following table sets out the estimated production cost of a hectare of coffee over a period of five years. In general, the variability of the values is due to the demand for labour, depending on the size of the harvest, to the level of inputs, which varies from harvest to harvest, and also to costs, which in recent years have fallen or at least remained static. Values are indicated in US dollars.

Variable	2011/12	2012/13	2013/14	2014/15	2015/16
Labour	2,152.00	2,152.00	2,300.00	2,300.00	2,350.00
Inputs	3,145.00	3,165.00	3,158.00	3,163.00	3,165.00
Other costs (fixed and financial)	490.00	508.00	510.00	510,00	516.00
Total	5,855.00	5,895.00	6,040.00	6,045.00	6,105.00

3.3 Crop losses due to pests and diseases

In 2012, Central America and other coffee-producing countries in Latin America suffered an outbreak of coffee leaf rust (*Hemileia Vastatrix*), which was due largely to climate change. El Salvador was one of the worst-hit countries due to a very vulnerable system of coffee production, with susceptible varieties and a somewhat ageing system of plantations. It is estimated that over 60% of the crop was affected.

This was the main reason why the 2013/14 crop fell by around 60%, from 2.24 million bags to 506,300 bags.

Implementation of public policies helped to control the rust in following years; however, the damage caused also affected subsequent crops.

Another type of disease which has had an effect, but to a lesser extent, is known as Anthracnose (*Colletotrichum Coffeanum*), which is a type of fungus that also attacks the branches of the shrub. It became prevalent as a result of the weakened state of plants due to rust. The effects are as yet unknown. The extent of the disease is also being monitored.

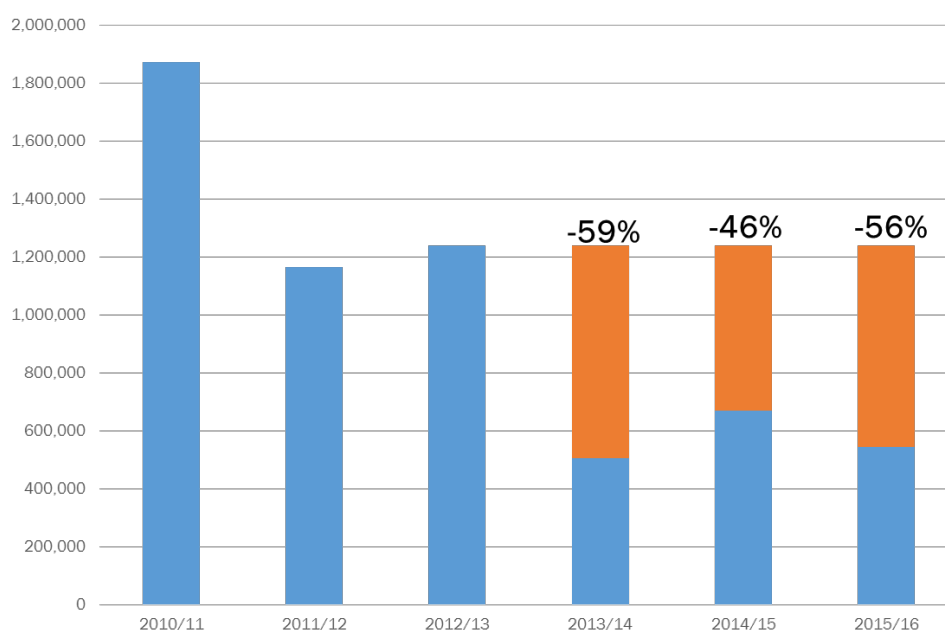
Surveys of other pests reveal that there has been no increase (for example, of the coffee berry borer).

3.4 Crop losses due to adverse weather

Climate disruption in 2012 clearly created the conditions for a severe attack of coffee leaf rust, as was the case with Depression 12E (October). Climate variability also had a significant impact on the low yield 2015/16 harvest, with prolonged drought during the normal rainy season and then, by contrast, excess precipitation during the dry season when harvesting was in progress.

These conditions affected the size and quality of the beans (drought) and the falling of ripe fruit (due to unseasonal rain). It is estimated that the harvest was reduced by 20% as a result of climatic conditions.

Graph 3:



4. FARMERS' INCOME

4.1 Farm gate prices

The table below contains the average price paid to coffee growers between 2010 and 2015.

Average price paid to coffee growers

	Grower price (US cents/lb)	Exports unit value US cents/lb	% share of Exports value
2010	109.88	143.94	76.3%
2011	186.74	189.91	98.3%
2012	120.12	212.36	56.6%
2013	95.28	159.36	59.8%
2014	117.01	177.80	65.8%
2015	87.45	194.43	45.0%

4.2 Net income by farm type

There is no available information in this regard.

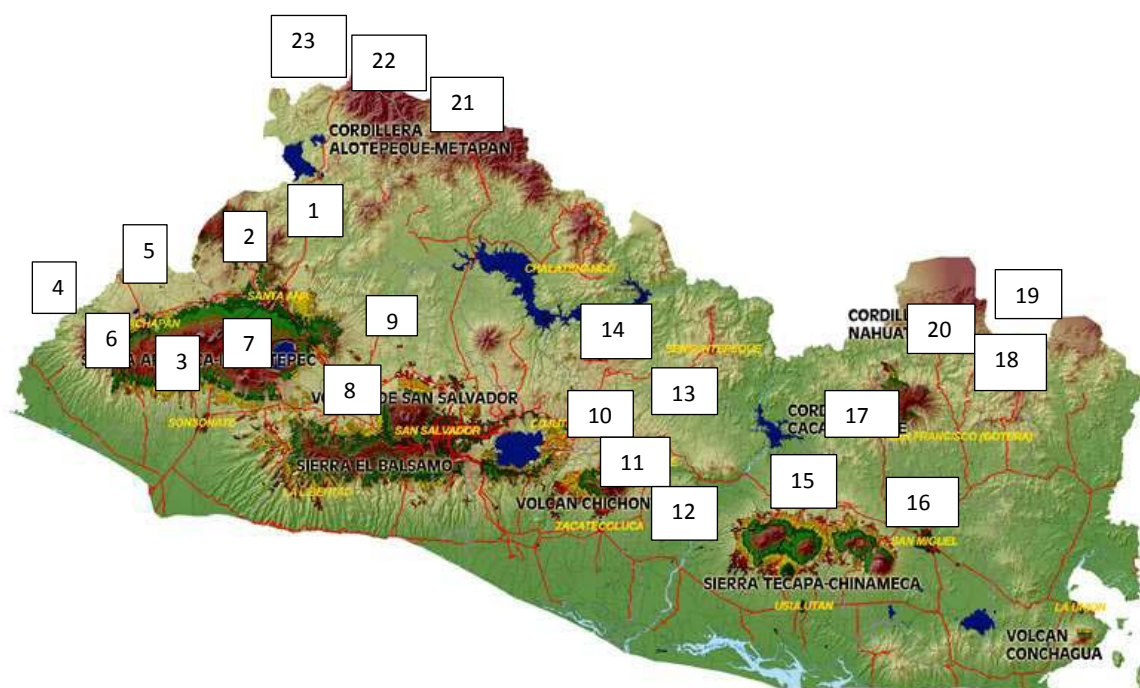
5. RESEARCH AND EXTENSION

5.1 Institutions responsible for research

CENTA (National Agricultural Technology Centre, a state body)

Management CENTA-CAFÉ

Research and extension both come under the responsibility of Management CENTA-CAFÉ, an administrative body that began operations in July 2015 under the aegis of the Ministry of Agriculture and Livestock. It has 23 offices and more than 80 extension workers in the six coffee-growing mountain ranges, as well as six researchers.



Its main functions are as follows:

- Technology transfer
- Technical assistance visits
- Training
- Preparation of investment plans
- Pest and disease identification
- Research, integrated management of pests, agronomy and soil fertility
- Specialist laboratory services.

Support projects:

- Delivery of rust-resistant plants: 18.8 million plants.
- Delivery of fungicides: 93,500 litres of systemic fungicides.
- Analysis of 12,000-soil samples and 3,000 foliage samples.

Research Programmes:

Name of the research programme	Discipline
Evaluation of various planting distances for the Cuscatleco variety (<i>Coffea arabica</i>)	Agricultural management
Evaluation of the effect of pruning on the incidence of coffee leaf rust (<i>Hemileia vastatrix</i> Berk&Br.)	Agricultural management
Evaluation of various varieties of coffee to identify productive potential in El Salvador	Generic improvement
Epidemiological study of coffee leaf rust (<i>Hemileia vastatrix</i> Berk&Br.)	Integrated pest management
Study of the incubation and latency period of coffee leaf rust (<i>Hemileia vastatrix</i> Berk&br) at various altitudes	Integrated pest management
Evaluation of the frequency of fungicide application to control coffee leaf rust (<i>Hemileia vastatrix</i> Berk&Br.)	Integrated pest management
Evaluation of various coffee leaf rust control programmes that use chemical fungicides	Integrated pest management
Study on the isolation and pathogenicity of <i>Colletotrichum pp</i> which causes Anthracnose in coffee crops	Integrated pest management
Application of zinc and boron to correct differences in coffee-farming (<i>Coffea arabica</i>)	Plant nutrition
Effect of increased application of potassium to the soil on reducing the incidence of coffee leaf rust (<i>Hemileia vastatrix</i> Berk&br) in coffee-farming	Plant nutrition
Application of organic and inorganic amendments to correct acid soils in coffee-farming.	Plant nutrition
Effect of foliar application of sources of potassium during the dry season in coffee-farming.	Plant nutrition
Determining the increase in coffee plant production using irrigation techniques.	Irrigation

Recent Investment: 9.7 million dollars

As a result of institutional changes in relation to research and technology transfer, measures have been put in place since 2015 to combat the problems of pest attack and climate change, and so there are no concrete results in this review; priority is currently being given to plant varieties and existing varieties that are used in other countries are being studied and validated.

The agency is taking part in cooperation programmes with regional entities such as PROMECAFE and the Central American Programme for Integrated Coffee Leaf Rust Management (PROCAGICA) with a view to developing various measures to combat rust and prevent pest and disease attacks and, at the same time, develop an early warning system.

5.2 Research on climate change and coffee

Policy on environmental sustainability, climate change mitigation and adaptation.

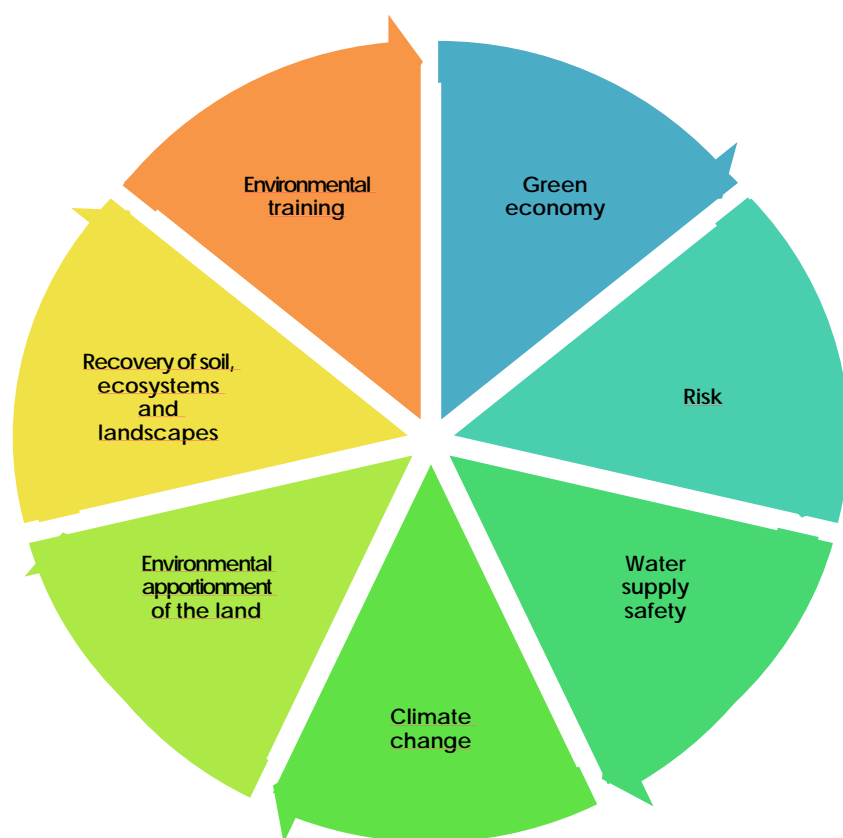
- Formulation of legislation and establishment of consultative bodies to draw up studies and proposals.
- Responsibility for implementing the Environment Law lies with the Ministry of the Environment and Natural Resources (MARN) in conjunction with other public bodies, private businesses and cooperation agencies.
- Establishment of the Climate Change Committee within the Legislature of El Salvador.
- Formulation of the proposal for Green Climate Fund.
- Creation of a committee to draft a concept note which is to be submitted in the coming months for assessment by the Green Climate Fund, with the specific objective of increasing the resilience of El Salvador's coffee plantations in the face of climate change. This diagnostic and the possible long-term climate change scenarios form part of the work to be carried out. As part of the work to be developed the current diagnostics will be included as will the impact in potential long-term scenarios.

CONASAV: National Council for Environmental Sustainability and Vulnerability

In terms of climate forecasting, a technical committee on climate change has been formed at national level and meets periodically under the auspices of a body set up this year by the central government, which is coordinated by the MARN, the body in question being the CONASAV, whose purpose is to seek proposals for the 'Plan for a Sustainable El Salvador'; its members include public and private bodies, such as the Salvadorean Coffee Council. A final proposal is expected in the course of the year. CONASAV comprises 13 sectors and 17 institutions (agencies of the Executive).

The policy of the current government embraces public and private participation through various bodies including state bodies, cooperation agencies, academia, civil society and private enterprise. It focuses on ongoing study and the formulation of proposals aimed at creating policies to adapt to and mitigate climate change. On coffee specifically, given that it makes up the equivalent of approximately 7% of the forested area of El Salvador, studies are being conducted on varieties that can adapt to new temperatures, the new fungi emerging in response to climate change, a reforestation programme, the introduction of early warning systems and other related topics.

Graph 4:



Furthermore, certain research projects relating to the topic of climate change have made observations with respect to coffee; the following is a link to one of them: <https://cgspace.cgiar.org/ElSalvador.pdf>.

5.3. Organisation of extension services

Through the offices of the state body and its management company CENTA-CAFÉ, the technologies designed to improve production levels, techniques and economic levels in the systems used for coffee cultivation were put forward to be adopted and integrated through the transfer of technical knowledge and the sharing of knowledge relating to agronomy. This was organised for 5,286 producers (69% male and 31% female).

Visits to producers' farms or nurseries – 23,943 – equivalent to 35,075 hectares.

Farmers' field schools – 128 – were provided to benefit 1,500 producers and farm workers to prepare them in different areas.

6. COFFEE PROCESSING

6.1 Field processing

Generally speaking, the wet processing method is used. Estimates put the use of other types of processing at less than 5%.

Over 96% of production takes place at processing plants, from berry to green coffee. Minimal processing occurs on farm.

6.2 Quality control

Most processing plants have quality control units, including cupping laboratories. The Salvadorean Coffee Council provides this service to producers or processors who do not have it as part of their quality control system. Additionally, by law the Salvadorean Coffee Council is responsible for verifying the quality of the coffee for export.

At present, coffee continues to be classified according to the height at which it is grown, that is:

Central Standard (CS): grown between 600 and 800 m a.s.l.

- Bean characteristics: screen size 17 holds between 45% and 55% of green coffee beans. Smooth when roasted, not hard, light coffee colour.
- Characteristics of the drink: mild, clean aroma; cupful smooth with good flavour, texture thin, no acidity and little body.

High Grown (HG): grown between 800 and 1,200 m a.s.l.

- Bean characteristics: screen size 17 holds between 50% and 60% of green coffee beans. Semi-wrinkled when roasted, even hardness and dark coffee colour.
- Characteristics of the drink: fine, pleasant aroma; cupful has good flavour and even texture, uniform acidity and good body.

Strictly High Grown (SHG): grown at altitude of 1,200 m a.s.l. upwards

- Bean characteristics: screen size 17 holds more than 60% of green coffee beans. Wrinkled, good hardness and fairly dark coffee colour when roasted.
- Characteristics of the drink: pleasant, penetrating aroma; cupful is flavoursome with good texture, plenty of acidity and body.

The most important coffee preparations are the American and European ones; the former allows for a maximum of 12 defects and the latter eight defects. Speciality coffees are defined on the basis of parameters laid down by the Specialty Coffee Association of America (SCAA), which allows for a maximum of five category 2 defects.

Notwithstanding the above, the country is in the process of implementing a strategic promotion, marketing and positioning plan with the aim of identifying coffee qualities for each of the coffee-growing mountain ranges, with emphasis on organoleptic qualities and varieties, based as always on internationally recognised physical properties and attributes.

7. STAKEHOLDERS IN THE COFFEE SECTOR

7.1 Farmers' associations/cooperatives

According to the register of coffee producers, there are 81 producers' cooperative associations covering approximately 11,000 hectares of coffee, i.e. around 8.3% of the total area of the country (under coffee cultivation). They contribute to approximately 6.5% of the national production.

Some of them hold international certification from Fair Trade, Organic and Rainforest Alliance.

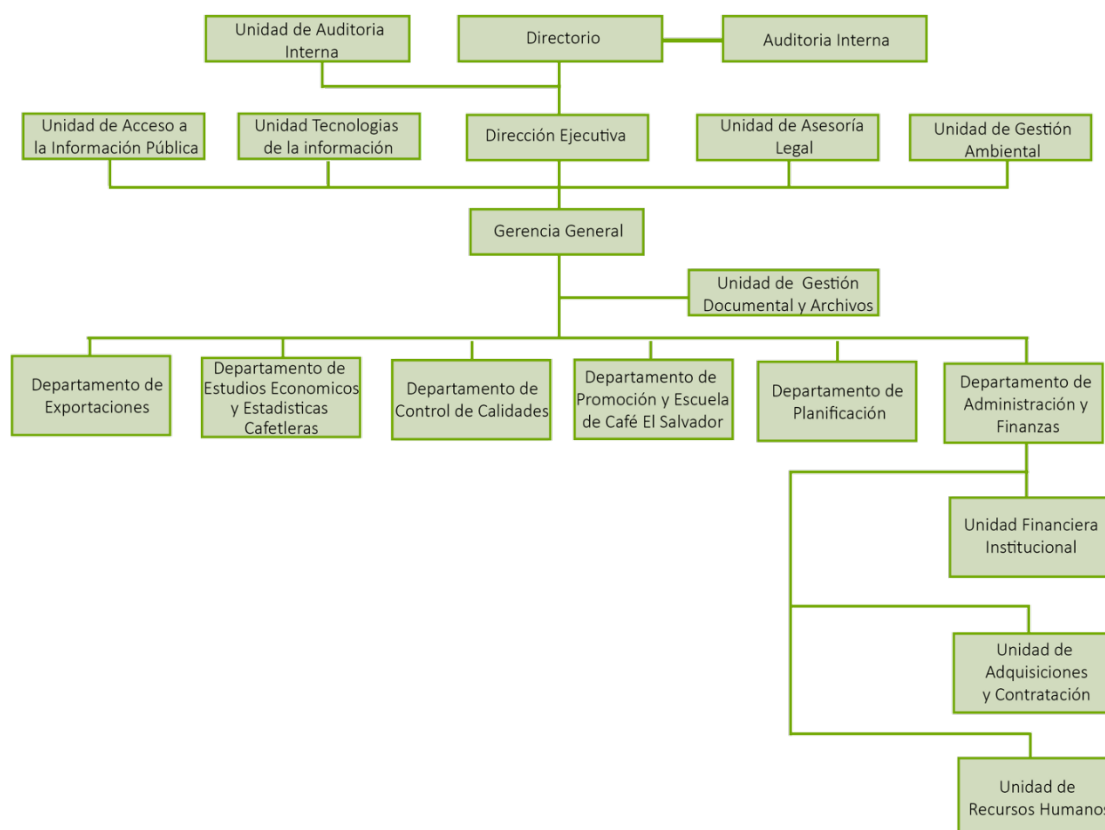
It has been calculated that, in recent years, cooperatives have accounted for around 20% of national coffee production under the above labels, the majority of the coffee being Organic and Fair Trade.

Cooperative associations and small producers are also the focus of government policies aimed at restoring productivity and competitiveness and hence making sustainability possible.

7.2 National Coffee Authority

Established in 1989 as an autonomous body with a board of representatives from the public and private sectors, the national coffee authority is the Salvadorean Coffee Council. The board is currently chaired by the Minister of Agriculture. Other public sector representatives are from the Ministry of Tourism, the Ministry of the Environment and Natural Resources and the Central Reserve Bank. There are four board members from the private sector representing the cooperatives, business associations, farmers' associations, processors and exporters.

The authority has 41 members of staff, and its organizational structure is as set out below:



7.3 Other government involvement

The Ministry of Agriculture and Livestock has direct responsibility as the policy-making body for agriculture. The Salvadorean Coffee Council and the Management of CENTA-CAFÉ form part of its organizational structure.

Its current priorities include action to control leaf rust by supplying agrochemicals in addition to fertilisers. Other priorities are to renew coffee plantations by donating rust-resistant seedlings.

The other government bodies involved are represented on the board of the Salvadorean Coffee Council, as set out above.

7.4 The private sector

There are various coffee-sector organisations in El Salvador representing one or more links in the coffee value chain, and they involve various production sectors. The most representative of these are set out below:

ORGANIZATION	REPRESENTS
Asociación Cafetalera de El Salvador	Producers
Asociación de Cooperativas Productoras, Beneficiadoras y exportadoras de R.L.	Collective cooperative associations of producers, processors and exporters
Foro del Café	Producers', processors' and exporters' associations and cooperative companies
Asociación de Beneficiadores y Exportadores de Café S.A. de C.V.	Processors and exporters
Unión de Cooperativas Cafetaleras de El Salvador de R.L.	Processors and exporters
Confederación de Cooperativas de la Reforma Agraria de R.L.	Producers' cooperative associations

7.5 Financial institutions

On the government side, there is the National Development Bank (BANDESAL). It is responsible for formulating financial policies for production activities, including coffee, and is a first-tier entity.

There are also two other public-sector banks whose remit includes support for the agricultural sector.

- **Banco de Fomento Agropecuario (Agricultural Development Bank – BFA):** responsible for financing micro and small producers and entrepreneurs.
- **Banco Hipotecario (Mortgage Bank – BH):** Its chief lending portfolio comprises small- and medium-sized enterprises.

Over the past two years, state-owned banks have been responsible for approximately 90% of finance for the sector. Private banks finance only around 10% of the overall credit amount. In 2015, they made loans amounting to around US\$50 million. The existing credit lines are as follows:

- Working capital, loans for work activities on farm and harvest
- Renewal of coffee plantations
- Restocking of coffee plantations
- Combating disease
- Planting of new areas
- Seedling production
- Production costs
- Farm purchase

Outstanding balances from state-owned and commercial banks. Some commercial banks also have credit lines for the coffee industry; however, access to financial services of this kind is more restricted than under the state-owned banks.

8. MARKETING STRUCTURE

8.1 Marketing channels

According to the existing registers held by the Salvadorean Coffee Council, the structure of the marketing channels and their various agents in the production chain is as follows:

Registered producers: 21,704
Processors: 76
Parchment coffee producers: 61
Exporters: 123
Roasters: 42

8.2 Farmers' associations/cooperatives exporting coffee

In El Salvador, there are three organizations that are made up of associations or cooperatives. They account for around 30% of all national production.

8.3 Specification of coffee grades and indicative premiums or discounts

Salvadorean coffee grades are based on the height of the farm above sea level and are used to define commercial-grade or conventional coffees. However, the grading system is undergoing an overhaul to shift its focus onto crop provenance or origin and, therefore, promoting coffee based on the mountain range where it is produced.

8.4 Export taxes and duties levied on coffee

Only two export taxes are paid by producers. Their aim is to claw back expenditure on technology transfer, scientific research and other services performed by the Salvadorean Coffee Council. The tax is levied at a rate of US\$0.85 per quintal or 46 kg/bag of green coffee exported.

9. COFFEE ROASTING AND DOMESTIC CONSUMPTION

9.1 Roasters and market size

There are 42 accredited registered coffee roasters.

It is estimated that between 8% and 10% of national production is for use in local industry. However, it is estimated that only 40% of coffee consumed nationally is produced in El Salvador. The remaining 60% is imported, mostly via the soluble coffee industry.

9.2 Distribution channels

As a result of the development and implementation of the Plan for Promoting Domestic Consumption, there has been an increase in the setting up of coffee shops cafes and restaurants. This being the case the initial stages of setting up a database are being considered.

9.3 Domestic consumption

Information is being collected on domestic consumption patterns; the most recent survey of coffee consumption nationally was conducted at the end of 2007. Significant changes have occurred since that date, in particular coffee shops have opened, the consumption of quality coffee is higher, and there is a greater presence of roast and ground coffee brands available to consumers in supermarkets.

Since the foundation in 2007 of the El Salvador Coffee Academy, the Salvadorean Coffee Council has trained more than 5,000 people in areas such as barista skills, roasting and tasting.

El Salvador has a Domestic Consumption Development Plan that aims to ensure that a framework that informs, educates and raises awareness about quality and sustainability will result in the various stakeholders in the coffee chain having an impact on the economy. It is important for our country to secure resources that will bolster the development and implementation of this plan.

In terms of domestic consumption, according to estimates from coffee imports and calculations based on national production for the local industry, domestic consumption is estimated at 2.7 kg per capita/year and has grown by 0.7 kg of green coffee equivalent over the past five years, i.e. a 30% increase.

In 2007, 81% of the population over the age of 14 years was regarded as coffee consumers; 60% of the coffee consumed was in soluble form. The pattern is thought to have shifted towards roast and ground coffee; however, it is likely that consumption of soluble coffee is still favoured among the population, partly because most people's income levels are low and it is widely accessible at low cost throughout the country, and partly because of the ongoing poor knowledge of coffee-drinking culture.

10. COFFEE EXPORT PERFORMANCE DURING THE LAST FIVE YEARS

10.1 Volume and value of exports

COFFEE YEAR	2010/2011		2011/2012		2012/2013		2013/2014		2014/2015	
	60 kg bags	Value US\$	60 kg bags	Value US\$	60 kg bags	Value US\$	60 kg bags	Value US\$	60 kg bags	Value US\$
COMMERCIAL	1,118,955.3	283,291,022.08	376,428.6	108,497,769.18	395,780.3	78,140,570.34	191,097.5	37,621,380.92	126,474.5	30,223,402.09
CS	13,641.6	\$3,405,307.97	603.8	202,456.88	5,657.7	948,840.38	949.0	224,752.05	419.8	90,414.15
HG	717,829.3	\$179,066,932.07	244,914.4	71,118,219.46	276,300.8	54,867,750.45	89,430.3	16,379,992.89	81,166.4	19,271,571.32
SHG	387,484.4	\$100,818,782.04	130,910.5	37,177,092.84	113,821.8	22,323,979.51	100,718.2	21,016,635.98	44,888.4	10,861,416.62
DIFFERENTIATED	460,403.6	136,590,103.52	523,305.1	170,076,023.20	598,771.8	148,719,511.76	244,213.1	62,148,555.99	423,734.6	116,409,520.89
Gourmet	14,819.9	\$5,924,645.86	3,870.1	1,725,211.62	1,442.3	1,034,122.86	422.8	496,246.71	346.7	433,127.97
Organic	16,847.0	\$5,193,605.40	7,041.8	2,544,638.64	9,182.8	2,515,849.88	1,199.5	356,475.00	1,973.8	709,641.38
Eco-friendly	213,186.2	\$58,518,333.74	170,928.5	52,377,842.97	154,426.3	34,942,565.12	71,009.1	15,224,458.93	96,425.8	24,434,376.94
Fair Trade	14,839.6	\$4,467,641.63	12,414.3	3,887,317.88	12,278.6	2,867,723.63	1,897.5	404,250.00	6,739.0	1,745,062.28
Fair Trade/Organic	440.5	\$154,755.00	3,783.5	1,436,385.00	3,697.8	1,123,977.90	2,711.7	750,780.00	3,162.5	1,138,500.00
Gourmet/Sustainable	667.6	\$279,425.00	169.4	68,983.55	201.0	98,913.90	219.1	113,037.34	71.5	28,964.99
Organic/Sustainable	8,496.2	\$2,857,437.75	4,961.9	1,556,983.13	3,399.2	857,221.80	3,017.5	975,878.93	4,553.5	1,577,633.40
Natural	2,283.0	\$832,429.14	6,329.1	2,371,897.41	18,172.5	4,868,247.62	1,097.6	443,916.61	1,863.9	793,949.16
Fine	188,823.6	\$58,361,830.00	313,806.5	104,106,763.00	395,971.3	100,410,889.05	162,638.3	43,383,512.47	308,597.8	85,548,264.77
SUB-STANDARD	157,854.8	39,187,713.38	160,427.3	33,736,970.87	179,019.4	24,798,732.75	62,917.7	10,101,699.57	45,009.9	7,221,905.24
RL	85,127.6	\$20,866,965.00	82,793.1	17,745,886.73	110,193.0	15,330,906.75	47,476.6	7,398,012.34	28,967.4	4,869,001.86
PV	72,727.2	\$18,320,748.38	77,634.2	15,991,084.14	68,826.4	9,467,826.00	15,441.1	2,703,687.23	16,042.5	2,352,903.38
PROCESSED	3,304.2	703,202.01	1,292.7	389,951.37	792.3	336,984.54	792.0	337,130.72	2,497.7	1,331,505.07
Soluble	261.0	\$112,344.45	342.1	123,722.31	206.3	71,381.00	442.4	151,996.03	560.3	207,445.56
Toasted	3,043.2	\$590,857.56	950.6	266,229.06	586.0	265,603.54	349.6	185,134.69	1,937.4	1,124,059.51
TOTAL	1,740,517.7	459,772,040.99	1,061,453.7	312,700,714.62	1,174,363.8	251,995,799.39	499,020.2	110,208,767.20	597,716.7	155,186,333.29

10.2 Exports by destination

COUNTRY	2010/11		2011/12		2012/13		2013/14		2014/15	
	60-kg bags	US\$	60-kg bags	US\$	60-kg bags	US\$	60-kg bags	US\$	60-kg bags	US\$
Armenia					327.75	111547.58	316.25	44859.38		
Australia	6388.85	2250182.76	7076.07	2827375.46	9261.15	3466137.44	5309.72	1697591.53	6012.09	2156665.79
Austria	332.35	114026.25	47.20	20808.75	29.29	12962.25	7.38	3536.25	146.41	50269.67
Bahamas	6.34	3820.03								
Belgium	86853.75	23924551.31	49622.50	13290845.25	67068.00	12390547.31	22456.49	4438922.10	28524.75	6516139.79
Belize	8.31	3881.53	4.23	1975.91			3.14	1477.63	3.68	1757.10
Bolivia (Plurinational State of)	948.75	231412.50	948.75	311239.50						
Canada	117468.31	30801892.23	94104.68	27879219.49	101291.53	20923616.23	37589.52	8100678.30	21031.36	5264725.67
Chile									316.25	78601.88
China	0.00		184.08	64469.40	29.49	32169.77	0.00		461.08	187395.53
Costa Rica	2001.00	318637.50	1334.00	243600.00			3018.75	785137.50	1000.50	127890.00
Czech Republic	690.00	260788.50	63.99	35246.77	57.59	22941.74	74.18	26382.57	253.64	111613.27
Denmark	1265.00	297309.38	690.00	175612.50	349.60	93229.20			0.83	840.24
England	55474.63	14939537.46	43613.41	14560743.80	26400.75	6618074.81	18541.30	4729343.52	26999.29	7749396.34
Ethiopia	11.50	4170.00								
Finland	3766.25	1175627.63	1897.50	544500.00	690.00	198054.00	2.83	2015.55	5175.00	1346413.50
France	6497.50	2152342.50	17681.25	6010089.00	5658.75	1440115.73	2013.65	681890.63	4407.95	1390875.00
Germany	501824.90	127450224.70	225035.47	63001693.18	253649.23	54782107.99	52629.43	10186882.81	60994.11	14787451.42
Greece	2.00	1051.83	11.50	5610.00	322.00	62325.00	18.98	14313.75	650.67	215671.50
Guatemala	3676.14	612209.62	543.05	92602.42	66.57	8610.56				
Honduras	239.21	116494.73	75.99	44441.08	73.07	42130.13	42.37	22482.58	131.56	71143.14
Hong Kong					5.75	3525.00			17.42	16937.25
Israel	3162.50	848945.63	632.50	195937.50	316.25	56966.25	0.00		0.00	
Italy	57397.65	17116466.85	46817.13	13452952.05	38291.55	7672489.65	18004.17	4054070.93	29323.24	7047439.97
Japan	170499.25	43891211.54	114303.36	36805968.20	144914.13	33720691.86	61734.37	15016716.58	73791.12	19462450.94
Jordan	0.00		0.00		11701.25	2216242.88	12966.25	2719201.88	8855.00	2124923.63

10.2 Exports by destination (contd)

COUNTRY	2010/11		2011/12		2012/13		2013/14		2014/15	
Netherlands	4587.35	1515993.47	7486.45	2526414.36	4512.75	1011404.86	1259.25	332680.50	689.40	248549.88
Lebanon	316.25	83056.88	632.50	175374.38	316.25	63607.50	632.50	146025.00	1897.50	404662.50
Lithuania					86.25	30575.25	105.80	40919.76	165.75	66629.14
Malaysia	1581.25	476664.38	1265.00	425865.00	3795.00	818296.88			2530.00	622866.75
Mexico	1236.25	253505.48	2063.10	350220.75	287.50	68512.50	287.50	42000.00	617.55	173085.00
New Zealand	920.00	248568.75	2503.55	811012.88	2990.15	849115.34	3016.36	953637.08	2995.75	923184.00
Nicaragua	5088.75	938550.00	6555.56	1182228.35	4911.63	567463.21	1035.56	108013.52	0.00	
Norway	3776.15	1292155.58	2691.69	1150209.39	3259.17	1264272.89	1444.98	623587.50	1106.83	448668.03
Panama									12.22	4174.79
Poland	1265.00	351450.00								
Republic of Korea	8382.15	2288298.98	17842.28	5356479.66	6798.69	2418492.30	3298.14	1228988.86	4213.13	1637433.97
Russian Federation	862.50	343125.00	253.00	79725.00	3676.55	890998.88	317.12	144570.69	1605.76	516457.59
Singapore	632.50	220089.38	11.50	5274.45	21.85	9765.00	456.10	152916.68	209.15	76136.25
South Africa	5778.75	1523242.50	4524.10	1211622.87	4766.75	958381.88	2915.25	597557.63	3921.50	958698.00
Spain			1265.00	354750.00	3218.42	708817.95	238.05	95980.41	320.65	136468.47
Sweden	53593.07	13665670.67	26221.15	7963765.28	38974.37	8693918.70	20355.24	3947615.63	22395.78	5860355.61
Switzerland	3105.00	729607.50					690.00	182700.00	66.35	27699.04
Taiwan	1141.40	380723.69	319.09	125575.44	13143.48	2764610.31	5485.46	1699654.96	4559.98	1326660.21
Ukraine									184.00	59766.00
United States	629737.19	168946554.37	383133.02	111417266.22	423101.30	87003080.57	222754.17	47386415.43	280840.73	72165302.31
Venezuela									1288.72	820934.16
TOTAL	1740517.77	459772041.11	1061453.66	312700714.29	1174363.80	251995799.40	499020.23	110208767.14	597716.71	155186333.33

10.3 Shipping

Almost 100% of exports are transported by shipping, and the average time of transport to the destination port is 15 days.

10.4 Exports of certified coffee

COFFEE YEAR	2010/2011		2011/2012		2012/2013		2013/2014		2014/2015	
	60-kg bags	Valor US\$	60-kg bags	Valor US\$	60-kg bags	Valor US\$	60-kg bags	Valor US\$	60-kg bags	Valor US\$
Sustainable/RA	213,186.24	58,518,333.74	170,928.55	52,377,842.97	154,426.30	34,942,565.12	71,009.10	15,224,458.93	96,425.80	24,434,376.94
Fair Trade	14,839.60	4,467,641.63	12,414.25	3,887,317.88	12,278.55	2,867,723.63	1,897.50	404,250.00	6,739.00	1,745,062.28
Fair Trade/ Sustainable	440.45	154,755.00	3,783.50	1,436,385.00	3,697.83	1,123,977.90	2,711.70	750,780.00	3,162.50	1,138,500.00
Gourmet/Sustainable	667.60	279,425.00	169.36	68,983.55	201.02	98,913.90	219.08	113,037.34	71.51	28,964.99
Organic/Sustainable	8,496.20	2,857,437.75	4,961.91	1,556,983.13	3,399.25	857,221.80	3,017.49	975,878.93	4,553.55	1,577,633.40
TOTAL	237,630.09	66,277,593.12	192,257.57	59,327,512.53	174,002.94	39,890,402.35	78,854.87	17,468,405.20	110,952.36	28,924,537.61

10.5 Stocks

Generally speaking, over 90% of the harvest is exported in the same coffee year. Notified stocks in recent years are as follows:

	2011/12	2012/13	2013/14	2014/15	2015/16
Opening stocks (thousands of 60 kg/bags)	82.0	80.0	72.5	18.5	10.7

11. EXPORT REGULATIONS

11.1 Exports duty and taxes

The export sector does not pay export duty or taxes.

11.2 Other levies

There are no other levies in El Salvador.

12. MACROECONOMIC ASPECTS OF THE COFFEE SECTOR

12.1 Coffee and trade balance

	EL SALVADOR (US\$ million)							Average
YEAR	2009	2010	2011	2012	2013	2014	2015	2009-2015
TOTAL	3,866	4,499	5,308	5,339	5,491	5,273	5,485	4,963
COFFEE	230	213	464	300	234	111	149	259
SHARE	6.0%	4.7%	8.7%	5.6%	4.3%	2.1%	2.7%	4,9%

12.2 Share of coffee in Gross Domestic Product (GDP)

Year	2009	2010 p	2011/p	2012/P	2013/P	2014/P
National GDP	8,954	9,076	9,277	9,452	9,626	9,814
Agricultural GDP	1,130	1,166	1,137	1,176	1,171	1,190
GDP from coffee	110	146	129	113	70	56
GDP from coffee/ GDP Country	1.2%	1.6%	1.4%	1.2%	0.7%	0.6%
GDP from coffee/ Agricultural GDP	9.7%	12.5%	11.3%	9.6%	6.0%	4.7%
Agricultural GDP/ GDP Country	12.6%	12.8%	12.3%	12.4%	12.2%	12.1%

12.3 Employment generated by the coffee sector

Coffee year	Man-days*	Employment by year**
1989/1990	45456,250.00	181,825.00
1990/1991	44213,750.00	176,855.00
1991/1992	39421,250.00	157,685.00
1992/1993	53827,500.00	215,310.00
1993/1994	42541,250.00	170,165.00
1994/1995	42007,500.00	168,030.00
1995/1996	40488,750.00	161,955.00
1996/1997	41323,750.00	165,295.00
1997/1998	37530,000.00	150,120.00
1998/1999	32773,750.00	131,095.00
1999/2000	46407,500.00	185,630.00
2000/2001	30076,225.00	120,304.90
2001/2002	27405,374.00	109,621.50
2002/2003	16688,900.00	66,755.60
2003/2004	16245,888.50	64,983.55
2004/2005	15793,170.00	63,172.68
2005/2006	20319,442.50	81,277.77
2006/2007	21750,312.50	87,001.25
2007/2008	26497,625.00	105,990.50
2008/2009	24820,312.50	99,281.25
2009/2010	18753,825.00	75,015.30
2010/2011	32675,000.00	130,700.00
2011/2012	20302,637.50	81,210.55
2012/2013	21625,000.00	86,500.00
2013/2014	8750,312.50	35,001.25
2014/2015	11564,500.00	46,258.00
2015/2016***	9562,500.00	38,250.00

* One bag generates 16.5 man-days of work, including agro-industrial activity under normal conditions.

** One year's work = 250 days.

***Preliminary data for harvest to 30 April 2016

To assist an estimation of the number of jobs created by coffee, methodology is currently being updated using research data from various links in the coffee chain.

13. ENVIRONMENTAL CHALLENGES

13.1 Impact of coffee production on the environment

Coffee is essential to the ecology of El Salvador. Although very important, the positive externalities of coffee are not currently fairly remunerated either domestically or internationally. El Salvador has continued with its traditional method of shade-grown coffee farming. The most recent field studies show that El Salvador has around 4% primary forest; coffee plantations account for around a further 7% of forested land because of the intensive use of shade. Even more importantly, almost all primary or closed forest (around 80%) is surrounded by coffee farms which act as a buffer zone against potential impact from outside. If the coffee plantations disappeared, there would be a latent danger that primary forest would disappear as well.

Coffee plantations are of great importance to El Salvador's water resources; in addition to their environmental role, they act as a source of energy, a carbon sink and a means of conserving biodiversity.

Importance for water resources: This is perhaps the most important environmental service that the coffee plantations provide to our country. The plantations protect the soil from erosion, protect the main catchment areas for watersheds and allow water to filter into groundwater reserves. The map of hydrological divisions shows that the coffee plantations are located principally in areas where there is groundwater; they are essential to groundwater replenishment and are an oasis in areas of low infiltration. It is estimated that, every hour, the coffee plantations enrich groundwater with 715 m³ of water, of which 70% is retained in the aquifer, in other words the coffee plantations contribute 500.5 m³ of water per hour.

Carbon sink: On average, the various gradients and types of shade in El Salvador from mountain trees can act as a sink for 190 tonnes of carbon per hectare per year, and the net carbon dioxide capture rate is 126 kg per day. El Salvador's coffee plantations store 32.2 million tonnes of carbon and capture 13,178 tonnes of carbon dioxide per day. These environmental services have not yet been exploited in our country and provide an opportunity for this beneficial crop to reap a reward in the future.

Contribution to biodiversity: The management of coffee-growing areas under shade, providing cover to indigenous species over an area of around 135,000 hectares, has enabled El Salvador to maintain biodiversity in its flora and fauna. The coffee plantation areas are home to 209 native and 21 exotic species of trees; 188 species of birds, of which 101 are

resident and 37 migratory (42 are under threat and 19 are in danger of extinction locally); 31 species of small mammals, of which eight are in danger of extinction; some 26 species of reptiles; and eight species of amphibians including several species in danger of extinction, among others. The areas of permanent crops in shade-grown coffee plantations have made it possible to keep these species out of danger and reduce the threat of extinction.

Coffee processors use systems to treat waste water, thereby preventing pollution of surface and ground water; additionally, they comply with the provisions of the Environment Law.

13.2 Contribution to carbon footprint

Studies are being carried out which will establish the methods used for measuring the footprint.

13.3 Environmentally sustainable coffee production

Addressed in point 2.2.

14. PROSPECTS FOR COFFEE PRODUCTION

14.1 An assessment of difficulties encountered in the sector

The current state policy in the form of a government action seeks primarily to restore coffee productivity. To that end, it has put various measures in train to which the previous paragraphs have referred, the most important of these being:

- **Renewal of El Salvador's coffee plantations**

It is estimated that about 40% of coffee plantations are of an age which renders them more susceptible to infestation by pests and rust.

Since 2015, under the aegis of the Ministry of Agriculture and Livestock, a programme has been implemented for the provision of nurseries, a measure which will be enhanced year on year. The target for 2019 is to have renewed at least 30% of the coffee plantations as a result of government policy and a further 40% as a result of private sector action. That target will underpin trends in production performance for the next five seasons.

- **Strengthening of the institutional framework responsible for the various services available to coffee growers**

The purpose of creating the Management of CENTA-CAFÉ is to offer technical assistance services, technology transfer and scientific research by means of 23 offices located throughout the coffee-growing mountain ranges and 84 extension workers, in addition to six specialist researchers. Another responsibility of CENTA-CAFÉ is to act as the operational body for implementing the various state programmes in the agronomic field such as the provision of inputs for combating rust and plants to re-stock plantations.

- **Continuing the fight against and control of rust**

Every year, inputs are being given to small and medium-sized producers to reinforce measures for the control of rust, and this has meant that the incidence of rust has been kept at acceptable levels; in addition, in situ monthly monitoring is performed in order to measure the incidence of rust.

- **Programmes or measures to strengthen the chain of production**

Other measures accompanying the production phase include the following:

- Plan to promote and market Salvadorean coffee abroad, which is undertaken systematically in the main consumer markets by the Salvadorean Coffee Council through attendance at recognised fairs, participation in commercial missions and negotiation rounds, high-quality events such as the 'Cup of Excellence', participation in the world barista championships, signature of cooperation agreements, etc.
- Promotion of domestic consumption. The Council has launched a domestic consumption programme with the emphasis on domestic production aimed at increasing coffee consumption, both in terms of the number of consumers and the amount of coffee consumed.
- Enhancing the capacity and know-how of the various actors in the chain is another task which is constantly evolving. Since the creation of the Escuela de Café de El Salvador, over 5,000 people have been trained in tasting, roasting and barista skills, coffee preparation methods, latte art, good processing practices, post-harvest and quality management.

The most important challenge facing domestic coffee production in El Salvador is climate change, which is the most consistent factor affecting production. Climatic disruption caused by drought, excess rainfall or high temperatures does not permit sustained recovery of production, with consequences for the socio-economic benefits it brings, such as employment and income.

Therefore, tackling this problem forms an integral part of national policy with a view to finding solutions to mitigate the effects and adapt to this phenomenon.

CAFÉ DE EL SALVADOR

Atopepec - Metapán Mountain Range
 Altitude: from 1,000 to over 2,000 meters above sea level (3,280 - 6,561 ft)
 Main peaks: Hill El Brujo, Miramundo, Montecristo, Cayaguania, Malcotal

Main Varieties:
 30% Bourbon
 50% Pacas
 15% Pacamara
 5% Others (Caturra and Catimores)

Apaneca - Tamatepec Mountain Range
 Altitude: from 500 to over 2,365 meters above sea level (1,640 - 7,759 ft)
 Main peak: Santa Ana volcano with an elevation of 2,365 meters (7,759 ft)

Main Varieties:
 64.2% Bourbon
 25.6% Pacas
 10.2% mixed Bourbon, Pacas and others

El Estero - Garretón Mountain Range
 Altitude: from 500 to over 1,960 meters above sea level (1,640 - 6,430 ft)
 Main peaks: San Salvador volcano with an elevation of 1,960 meters (6,430 ft)

Main Varieties:
 51.8% Bourbon
 22.5% Pacas
 25.7% mixed Bourbon, Pacas and others

Chichontepec Mountain Range
 Altitude: from 500 to over 1,000 meters above sea level (1,640 - 3,280 ft)
 Main peaks: Chichontepec volcano with an elevation of 2,181 meters (7,155 ft)

Main Varieties:
 71.7% Bourbon
 7.4% Pacas
 20.9% mixed Bourbon and Pacas

Cacaotique Mountain Range
 Altitude: from 500 to over 1,863 meters above sea level (1,640 - 5,456 ft)
 Main peak: Cacaotique hill with an elevation of 1,863 meters (5,456 ft)

Main Varieties:
 85.3% Bourbon
 20.6% Pacas
 14.1% Others

Trespe - Chaparrasca Mountain Range
 Altitude: from 500 to over 2,139 meters above the sea level (1,640 - 7,017 ft)
 Main peaks: San Miguel or Chaparrasca volcano with an elevation of 2,139 meters (7,017 ft)

Main Varieties:
 88.5% Bourbon
 22.2% Pacas
 8.3% mixed Bourbon and Pacas

EL SALVADOR THE HEART OF CENTRAL AMERICA

The predominant Bourbon, Pacas and Pacamara varieties grow on the slopes of hills and volcanoes, the richest most fertile soil in coffee growing. These varieties have a distinctive profile marked by good body, balanced acidity, excellent sweetness and rich penetrating aromas with notes of intriguing flavor that you'll love discovering.

El Salvador is considered a worldwide sanctuary of the Bourbon variety, highly appreciated by coffee connoisseurs for the unique intrinsic characteristics associated with heirloom which place this country as one of the most traditional origins in the world. Coffee plantations in El Salvador are concentrated in six regions encompassing more than 160,000 hectares.

