

The roll-out of STEP 2 in the coffee value chain of Colombia

Step 2: Mapping of the Coffee Value Chain of Colombia

1. Overview

This research was carried out within the framework of the ILO-EU Project to improve the occupational safety and health knowledge base in global value chains in support of G20 work. The project aimed to identify constraints and incentives for improving occupational safety and health (OSH) in global value chains focusing on agricultural global value chains.

In Colombia, the value chains evaluated were bananas, coffee and flowers. According to the ILO methodology, coffee scored highest because of its market position, institutional structure and the potential for transfer of results. According to the same report, OSH appears to be an important issue in the value chain, which involves thousands of small farmers, being a relevant aspect in the research process. In addition, the chain has private compliance initiatives, many of which include OSH.

2. Objectives

The overall objective is to map the coffee value chain in the country as well as outside, taking into account international buyers, and the coffee market environment in Colombia, with a special emphasis on OSH. The mapping includes an identification of the actors in the value chain, as well as the basic work processes involved and related known risks to safety and health at different stages of production.

Specific objectives:

- a) Recognise the various levels of organisation
- b) Create a rapid overview of the work processes and the OSH risk factors in the value chain
- c) Provide a detailed typology of actors and describe the structure and flow of the chain in logical clusters
- d) Develop a vision of the scale and quantifies the value chain
- e) Identify the supporting functions and provides a general overview of the market and institutional system in which the value chain is operating

3. Timeframe & Scope

The initial mapping was completed in two weeks. It is an iterative process once the field work starts (next section) where more actors may be discovered on the ground and subsequently added to the mapping.

4. Methodology

Desk review and key informant interviews realized in collaboration with research partners: the *Centro de Estudios Regionales Cafeteros y Empresariales* (CRECE) and the *Centro Agronómico Tropical de Investigación y Enseñanza* (CATIE).

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5. Mapping

5.1 Market

Over 80 per cent of the coffee produced in the world is traded internationally. Its export value totals 33.4 billion US dollars while retail sales amount to around one billion US dollars (Panhuisen and Pierrot, 2014). World production is over 150 million bags, while world consumption (coffee year 2015-2016) totaled 155.7 million bags, of which 48.3 million (31 per cent) were consumed in the exporting countries and 107.5 million (69 per cent) in the importing countries. Some 50 per cent of world consumption is concentrated in six countries: United States (25 million bags per year); Brazil, the only exporting country with significant domestic consumption (20 million bags); Germany (9.3 million); Japan (7.8 million); France (6 million); and Italy (5 million) (International Coffee Organization, 2016). The European Union consumes 42.9 million bags per year. In Colombia, they consume 1.5 million bags (less than 10 per cent of its output), equivalent to 1.8 bags per head, which is just under a quarter of Brazil's, the country with the highest per capita consumption, at 4.8 kilos per head.

During the last two decades, the market has displayed, on one hand, a growing trend in the niche for lower quality coffees in countries that did not traditionally consume coffee (2.8 per cent), with a stronger dynamic than in the traditional consumer countries (0.8 per cent); and on the other, significant growth in the supply of differentiated and high-quality coffees. Within differentiated coffees, there has been a growing involvement of producers in specialty and sustainable coffees, which has led to compliance with standards that promote social, environmental and economic considerations in production. Currently, around one quarter of Colombian producers achieve a high standard of sustainability.

5.2 Product

Coffee (*Coffea*) is the most important genus of the Rubiaceae family, which includes well over 500 genera and over 6,000 species. Two of the most common species of the genus *Coffea* are currently of economic significance: *Coffea Arabica*, which is produced mainly in the temperate and high tropical zones of Latin America and North-West Africa, accounts for approximately 60 per cent of world production; and *Coffea Canephora* (or *coffea Robusta*), which is produced mainly in Asia, Brazil, East Africa and South Africa, and accounts for the remaining 40 per cent. Other species, such as *Coffea Libérica* and *Coffea Excelsa*, are marketed in limited quantities.

Coffee production requires special soil, temperature, and atmospheric precipitation as well as altitude conditions. Altitudes of between 1,200 and 1,800 metres above mean sea level, temperatures ranging between 17 and 23 degrees centigrade and an annual precipitation around 2,000 millimetres, well distributed over the year, are considered suitable. According to Arcila et al (2007), the plant begins to produce fruits on year-old shoots and reaches its maximum productivity between 6 and 8 years, depending on the variety and conditions. Its life cycle can reach up to 25 years in commercial conditions. In Colombia, various varieties of the species *Arabica* are produced, which gives a smooth drink, characteristic of the country. According to the *Colombian Coffee Growers' Federation (FNC)*¹, Colombian coffee has a clean taste, a mild to high acidity and body and a pronounced and full aroma. The quality features are associated with a tradition of selective, bean harvesting, with an emphasis on processing

¹ See Café de Columbia website

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(post harvesting process by the wet method and the drying process) with subsequent grading by threshing.

5.3 Structure of the value chain

Colombian coffee is listed in the market in the “smooth washed” category by the varieties cultivated and the characteristics of the processing. The process consists of collecting raw coffee, pulping, removing the mucilage and then washing and drying until the parchment coffee is obtained. Parchment coffee is then threshed to produce green coffee for export.

Coffee cultivation covers 940,000 hectares, along the Andean Cordillera and from the Caribbean Sea to the Amazon Forest (FNC, 2015). These hectares cover 20 of the 32 departments in 588 of the 1,122 municipalities. In all, 552,000 producers are engaged in coffee growing, with an average of 1.7 hectares of coffee cultivation per farm. In the north, the bulk of the crop is harvested in the second half of the year; in the southern region of the country, the harvest is mainly concentrated in the first half. Meanwhile, the central zone is divided into two parts, a main crop, which produces approximately two thirds of the annual crop, and a smaller, mid-crop (*cosecha traviesa* or *cosecha mitaca*).

The country produces 14 million 60 kilo bags of green coffee, and is the third ranked producer after Brazil and Vietnam. National production has increased in recent years following a comprehensive programme to renovate coffee plantations, recovering from a marked decline of production over four successive years (2009 to 2012), influenced by the combined effect of the El Nino phenomenon, the proliferation of coffee rust (*Hemileia Vastatrix* fungus) and the increase in the price of fertilizers. The country’s coffee plantation experienced a rejuvenation (with an average shrub or tree age of 7.1 years), with greater mechanization² (97 per cent of plantations), and with a higher proportion of rust resistant varieties (71 per cent of the planted area).

The country exports around 12 million bags of coffee per year, which represents some 90 per cent of its production. In 2015, 12.7 million bags were exported worth US\$2.788 million. The main export destination is the United States, which receives 42 per cent or the equivalent to 5.3 million bags. An average of 1.2 million bags are exported to Japan (10 per cent), followed by Germany with 1.1 million bags (9 per cent), Belgium, with 900,000 bags (7 per cent) and Canada with 800,000 bags (6 per cent).

The principal form of export is green coffee (94.3 per cent), and, to a lesser extent, extract or soluble coffee (4.7 per cent). Other forms of preparation such as decaffeinated green, roasted grain and roasted and soluble, garner 1.1 per cent of export. The participation of the coffees in Voluntary Sustainable Standards (VSS) is gaining credibility in production and exports. 32 per cent of farms (out of a total of 684,000) currently produce their coffee under a sustainable production standard (FNC, 2015). Specialty coffees account for 15.2 per cent of exports, totaling 2.1 million bags in 2016. In that year, the bulk of exports were sold as conventional coffee (71.1 per cent) and the rest as processed coffee (5.8 per cent), with a smaller proportion under the label “product of Colombia” (7.2 per cent), which corresponds to approved exports, and with a different level of tolerance for defects.

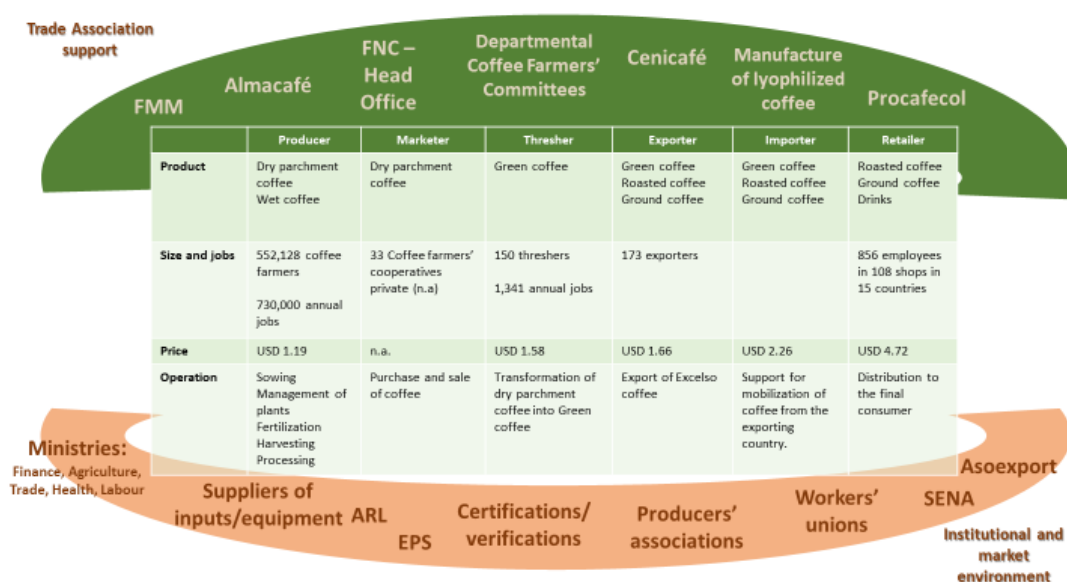
² Mechanizing cultivation has encouraged an increased productivity of the plantations (17.7 bags of green coffee per hectare), placing the country above the average for other producers of smooth coffees, such as Central America with (12 bags per hectare - bags/ha), Peru (12 bags/ha) and Kenya (8.1 bags/ha). However, it is still well below the levels recorded in Brazil (23.9 bags/ha (for Arabica and Robusta) and Vietnam (44.7 bags/ha).

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Export standards for Colombian coffee have higher levels of compliance than those required by the Green Coffee Association of New York City³. However, in 2016 the National Coffee Growers' Committee decided to grant some flexibility, allowing coffee with a greater tolerance of defects and smaller size, but keeping within international quality standards.⁴ The amendment to the quality standards for Colombian Excelso coffee exports was intended to stimulate export, better align with international standards and improve growers' family incomes, all without putting quality at risk (FNC, 2015).

The Colombian coffee value chain relies on over 500,000 producers who produce the dry, raw coffee beans and an extensive network of domestic marketing companies consisting of 33 coffee farmers' cooperatives and numerous buyers or intermediaries,⁵ 150 threshers and 173 exporters. The green coffee beans, which result from threshing go to external marketing companies, such as Excelso, or to the domestic market for use in the domestic roasting industry.

Figure 1. The coffee value chain and its institutional and market environment



Source: authors.

³ The standards of the Green Coffee Association of New York City, the governing body for the purchase and sale of Arabica coffee in the world, designated Colombian Excelso coffee bean as mesh 14/64 with a tolerance level of 5 per cent. However, internally, Colombia applied a self-imposed tolerance level of 1.5 per cent, which prevented good quality coffees being sold in international markets.

⁴ These so-called "coproducts" or "secondary" products are also subject to phytosanitary and humidity controls by the sanitary authorities.

⁵ Some unofficial FNC estimates consider that there could be around 1,500. Their involvement in coffee buying has been around 70 per cent, an average of 9 million bags, of which 1.3 million come from sales by coffee farmers' cooperatives.

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5.4 Rapid Overview of the Market System and Preliminary identification of risk factors for selecting key informants and workplace observation sites

Table 1. Preliminary mapping based on a desk review & Identification of risk factors

	National Level						Global Level	
	Transformation Process	Coffee Tree Nursery	Plantation/ Farm	Collectors	Mills	Exporters	Processing	Distribution
	Product	Seeding	Parchment	Intermediary	Green Beans	Intermediary	- Roasted Beans - Ground Coffee - Soluble Coffee	Packaged roasted beans, ground coffee & Soluble coffee
Market Overview	Type & Size of actors		611613 holdings & 511993 producers. Over 90% of coffee grown by small holders	Traders. 530 collection points from the cooperatives of <i>Caficultores</i>	Companies & Cooperatives	254 exporters of coffee in Colombia. International trading companies. Local Trading companies	Industrial roasters. Agro-food multinationals Small part of exports processed in Colombia (196 coffee roasters, 6 instant coffee plants, 2012)	Supermarkets Restaurants Cafes wholesalers Specialised franchises
	Supporting Industries	Chemical production & distribution Equipment R&D (Cenicafe)	Chemical Production / Distribution Equipment Cupping services R&D (Cenicafe) Financing (FederCafe)	Transport Equipment Cooperativas de Caficultores (33)	Equipment Laboratory services Machine production / Maintenance Quality seal (FNC) AlmaCafe	Transport Custom services Port Services	Equipment Laboratory series Machine production / Maintenance R&D	Transport Equipment Advertizing
	Other Supporting Actors	Ministry of Agriculture Federacion Nacional de Cafeteros (FNC) Cooperativas de caficultores (33)	Ministry of Agriculture Federacion Nacional de Cafeteros (FNC) Certification schemes Cooperativas de caficultores (33)	Ministry of transport Federacion Nacional de Cafeteros (FNC)	Ministry of Agriculture CeniCafe (R&D) Certification schemes Federacion Nacional de Cafeteros (FNC)	Certification companies (both locals and international) Auditing firms Ministry of transport Sector association Food safety agencies	Sector association (Importers, roasters, ect.) Local Trade ministries Food safety agencies Certification companies	Entities responsible for infrastructure , trade, ect.

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Risk Identification	Operations	Breeding Shade maintenance Spraying Storing Packing	Soil Preparation Fertilization Planting Watering Pruning Spraying Harvesting Peeling, soaking (wet method) Drying Selecting (Arabica) Packing in bags	Price negotiation Transportation Loading / Unloading	Hulling Polishing Grading Sorting Loading / Unloading Cupping	Price negotiation Transportation Loading / Unloading	Weighting Scoring Decsffeination Roasting (hot air or drum) Cooling Screening Grinding Extraction (Soluble) Packaging Storing	Transportation Loading / Unloading Grinding (if applicable) Brewing Machine maintenance Attendance to client
	Main Risk Factors	Tools Handling Chemical exposure (fertilizers, pesticides)	Tools Handling Chemical exposure (fertilizers, pesticides) Machine handling (if wet process) Local handling Insect bites Contact with unsanitary water	Traffic accident Load handling	Machine handling Heat exposure Powder residues Load handling Contact with unsanitary water	Traffic accidents Load handling	Machine handling Heat / hot liquids exposure Powder residues Load handling	

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