

The Journey of the Coffee Bean

Over the past centuries coffee has become one of the most widely consumed and well-loved beverages in the world. Every year, 10 million tonnes of green coffee are produced in over 70 different coffee producing countries located in the area known as the Coffee Belt, located 23 degrees North and South of the Equator. According to Eurostat, in 2020, the EU imported 2.9 million tonnes of green coffee beans out of which 1.9 million tonnes of roasted coffee were produced with the remaining green coffee having been reexported or stocked.

The two main cultivated coffee species are Arabica and Robusta, with production mainly located in countries with relatively low-income levels, accounting for a sizeable share of their export earnings. In all, there are over 12.5 million coffee farms out of which 95% are smaller than 5 hectares and 84% smaller than 2 hectares. 25% of the farms are managed by women who also provide up to 70% of the labour in coffee production.

As stated by FAO, coffee actively contributes to the achievement of the Sustainable Development Goals (SDGs) by generating income, creating rural employment and alleviating poverty.

The evergreen shrub

Until the latter half of the last century most coffee plantations followed a traditional model based on coffee tree groves grown in the shade of taller trees, with farms having evolved to cultivating coffee under the full or near full sun. It has only been in the past 10 years that farming is again transitioning toward the traditional model. On average it will take 2 to 3 years for a newly planted tree to bear fruit, reaching full production maturity after 7 to 8 years.

Coffee plants can live up to 100 years when well-tended and are generally most productive between the ages of 7 and 20. To produce 1 kg of green coffee, 5 to 6 Kg of coffee cherry will be needed. Furthermore, from 1 kg of green coffee you may manufacture 830g of roasted coffee or 380g of soluble coffee.

Once the coffee cherry is harvested, there are two main ways of processing the cherry, the dry method or wet method, depending if water is used or not to remove the pulp and mucilage from the bean. There is a third processing method, called semi-washed, in which the mucilage is not removed. Independent of how the cherry is processed it will need to be dried to approximately 11% - 12% moisture and hulled to remove the parchment layer or dried husk. After a thorough grading and sorting process that will ensure the exporting requirements and standards are met, the milled beans -referred to as green coffee-, will be ready for export and shipped to consumer countries.

The coffee supply chain

Although with significant variations according to the producing country, the coffee supply chain is typically long and complex in terms of traceability to individual farms for two reasons:

- 1) Smallholder farmers' fields tend to be small, low yielding and located in remote locations. As a result, coffee from most small farms will need to be collected and consolidated, changing hands up to 4 times before it reaches the processing mill where it will be processed, hulled, sorted according to size and quality and bagged for export.

In countries such as Vietnam that accounts for 22% of European imports, you may find 640.000 smallholder farmers with an average plot of land between 1 and 3 hectares. These farmers will sell their coffee to an agent, that will in turn sell to another larger one until it eventually reaches the mill where it will be again mixed to ensure an appropriate processing. In this case agents will not provide the farmers information to the exporter, concerned that they might be by-passed.



In other countries such as Ethiopia with 2 million smallholder farmers dependent on coffee production for their livelihoods, the challenge would also rely in the capacity to transfer the information along the supply chain.

- 2) Large cooperatives with several thousand members each, will pool their coffee various times before the final batch reaches the processing mill. At the mill it will be mixed again before processing and prepared to ensure exportable grades.

Regardless of the size of the farm, farmers will tend to sell their crop piecemeal, at any given time, to any given buyer depending on their household financial needs, creating an uneven and heterogeneous daily flow of coffee.

Once the green coffee has been classified in compliance with the exporting requirements, it will be bagged and ready to be acquired by European Traders & Roasters. Because of how the coffee value chain is structured, in each 60kg bag of green coffee it would be possible to find beans from up to 100 different locations, whilst in each 1 ton big-bag you would be able to identify coffee beans from up to 1.500 different locations. Moreover, to fill up one single Twenty Foot shipping container you would require approximately 320 kg bags of green coffee. As a result, each shipping container could account for up to 4.500 different individual locations.

Each year approximately 120.000 Twenty Food Equivalent Units (TEUs), enter the EU market, consolidating our position as the largest coffee market in the world accounting for one-third of global consumption.

Coffee as a traded commodity

Coffee is usually traded in two complementary markets that are directly interlinked.

- In the physical (or cash) market, participants buy and sell physical, green coffee of different qualities that will be delivered immediately or shipped to the consuming countries according to the just-in-time schedule of the final buyers. The cash transaction therefore involves the transfer of the ownership of a specific lot of a particular quality -there are 600+ quality descriptions- of physical coffee. The cash price for the physical coffee is the current local price for the specific product to be transferred.
- In the coffee futures market, participants buy and sell forward contracts based on a *reference price* for a standardized quality of physical coffee to be settled at specified dates in the future. The price is determined in open trading on a digital platform, the futures market. The futures price represents the price one expects to pay, or receive, for a specifically defined quality of coffee at a specified future date.

For coffee, there are two main futures markets: (i) ICE New York for Arabica qualities and (ii) ICE London for Robusta. Exporters, Traders, Roasters and some producers use the futures market as a price risk management tool. The forward structure allows producers to price future crops at desirable and profitable level, relieving them from of immediate price pressure. At the same time, it allows roasters to protect their cost price for the retail market to the benefit of consumers. As for Traders, they will use the future market on the buy and sell side to protect their physical coffee purchases and sales to the industry.

To be noted that in commodity markets you will also find a considerable volume of speculators and funds that are not directly linked to the commodities trade or industry. Speculators will provide the markets with liquidity and take on risks that other market participants wish to unload whilst funds will include different commodities in their product portfolio to offer diversity and further security.

As a result, the volume traded on the futures market is estimated to be about 10 times the volume of the annual production.



Futures contracts represent coffee that will be transacted at some point in the future, based on standard contracts to deliver or accept a pre-determined quantity and quality of coffee at one of a known range of delivery ports. A certain amount of physical coffee is needed to honour a future contract if required. This coffee is known as 'Exchange Certified Stocks' which after passing the Exchange quality checks will be stored in Exchange approved warehouses across Europe and the USA. These stocks represent the ultimate supply that can meet the demand for Exchange-standard coffee in the future. It is the balance of demand and supply that sets the coffee futures price, and all other prices in the coffee industry derive from that price-setting exercise on the Exchange.

Green Coffee Stocks

There are currently over 13 million coffee 60-kg bags¹ or 800.000 tonnes of green coffee stored in warehouses across Europe, out of which approximately 2.5 million bags² correspond to certified by the Exchange coffee.

These stocks may be held for several years before being drawn upon by the coffee industry (usually when fresh origin supplies are scarce), acting as a 'reserve'. Stocks will come into their own in situations such as the one created by the current container crisis, ensuring a continuous supply of coffee without distorting prices.

It is important to highlight that all exchange certified stock coffee and part of the non-exchange-certified stock coffee will not be custom-cleared until they have a final user (not owner). At the time of import the green coffee will need to be compliant with current legislation. However, this might not be the case when custom cleared a couple of years later. Therefore, any EU legislation introducing changes in the coffee import requirements would have a strong impact on pre-existing stocks and prevent coffee lots not able to comply from being imported to Europe, diverting them to the exchange's US-based warehouses and tightening the availability of readily deliverable stocks to European end users.

In such a scenario, participants would find it hard to value the Exchange certified stocks and the price-setting mechanism could be disrupted. Prices could be volatile, introducing additional risk and making price-risk management more difficult for the industry, as well as disrupting price-signals in producing countries.

Despite the specificities inherent to the coffee value chain, the coffee sector continues committed to increasing its transparency and traceability and will continue to work on and promoting initiatives to improve the living conditions of millions of local farmers and small producers in producing countries while dedicating resources to minimising the impact upon the environment.

¹Source: <https://www.ecf-coffee.org/wp-content/uploads/2021/09/2021-Stocks-European-Ports-1.pdf>

²Source: <https://www.theice.com/marketdata/reports/173> "stock reports" filtered for EU countries and <https://www.theice.com/marketdata/reports/42> "Coffee C Daily warehouse Stocks" filtered for EU countries